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The case of special questions expressing surprise in oral and sign language

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We all laugh in the same language…

Annotation Conventions

IX pointing sign generic
IX-1 pointing sign functioning as personal pronoun (first person)
IX-2 pointing sign functioning as personal pronoun (second person)
IX-3 pointing sign functioning as personal pronoun (third person)
IX-DEM pointing sign as demonstrative
IX-POSS pointing sign as possessive
IX-LOC pointing sign as locative
SIGN non-manual marking
SIGN type of topic
SIGN, SIGN prosodic pause
SIGN++ reduplicated sign
S-I-G-N- Fingerspelling
NEG negation

Abbreviations

ACC Accusative
CIRCUM Circumstantial
COMM Committal
DC Declarative suffix
DM Discourse marker
IE Informal ending
IMP Imperative
NML Nominalizer
NOM Nominative
PL Plural suffix
POL Polite speech level
PRES Present
PAST Past suffix
Q Question intonation or Question particle

1. Introduction

In this work, I study two types of special questions: counter-expectational questions expressing surprise and surprise-disapproval questions, i.e. sentences expressing surprise with a negative orientation. I use an experimental design involving sentence repetition and spontaneous production. As a theoretical framework, I capitalize on Giorgi's (2016; 2018) work, assigning to these sentences a peculiar syntax, obligatorily associated with special prosody and typical gesture patterns. In particular, I focus here on the realization of these sentences from a cross-cultural and cross-modal perspective and consider Vietnamese, Korean, Japanese and Italian Sign Language (LIS).

Surprise and surprise-disapproval questions are special questions in that they do not require a canonical answer but rather an *explanation*. They do not simply convey a request for information but the speaker's feeling of surprise and/or disapproval.

Previous works showed that these sentences share the same properties in Italian (Giorgi & Dal Farra 2019), German (Giorgi, Dal Farra & Hinterhölzl, forthcoming) and Spanish (Furlan 2019) and are all introduced by an adversative particle: *ma* in Italian, *aber* in German, *pero* in Spanish. As for their syntactic realization, surprise-disapproval questions are open questions, whereas counter-expectational questions are yes/no questions.

Interestingly, these sentences are perceived as infelicitous and even ungrammatical if not associated with the correct intonation and gestures.

As discussed by the authors, prosody is crucial in assigning the correct interpretation in these cases. In a minimalist framework (Chomsky 1995; 2000; 2001; 2008), sound and meaning – technically speaking, the sensorimotor interface and the conceptual interface respectively – are not directly connected but are related to each other by means of syntax. This means that the trigger read off at the sensorimotor interface, permitting the association of the appropriate intonation and gestures with the linguistic string, is present in the syntactic representation. Such a trigger is an Evaluative head (Cinque 1999), realized in the left periphery of the clause. Furthermore, I assume the syntactic analysis argued for in Giorgi (2018), who proposes that adversative *ma* is a discourse head, external to the sentential projection. This model holds for both types of special questions.

Giorgi and Dal Farra (2019) designed some experiments to check the properties of these constructions with respect to the prosodic and gestural components. They found typical prosodic patterns in both cases, accompanied by typical gesture patterns, both manual – i.e. movements of the hands – and non-manual – i.e. movements of the head, shoulders, eyes and brows. They found alignment between the stroke of the hand

gesture, and/or the head movement, and the leftmost pitch, which typically characterizes this kind of sentence. On this basis, they proposed that prosody and gesture are simultaneously activated at the interface between syntax and the sensorimotor component in both cases.

Dal Farra, Giorgi and Hinterhölzl (forthcoming) and Furlan (2019) replicated the experiments for German and Spanish, obtaining the same results with respect to alignment. Moreover, the manual and non-manual gestures turned out to be the same across languages. Thus, Italian, German and Spanish show striking similarities both in the alignment of prosody, gesture and syntax and in the gesture patterns.

Now, one possibility is that gestures are culturally determined in that the languages and cultures in question can be considered in some sense very "close". In this perspective, finding the same patterns is not particularly relevant. The only point of some significance would be the alignment of gestures with prosody. However, this cultural "proximity" is a notion less indisputable than we might expect. Indeed, this study shows that it was worth investigating the properties of these structures in languages culturally very "far" from the ones investigated before. This permitted to check on whether there is a general, perhaps universal, pattern underlying these phenomena.

In particular, I investigate Vietnamese, Japanese and Korean – besides a language where prosody and gestures are radically different, i.e. Italian Sign Language (LIS). My experimental results suggest that the peculiar non-manual components regularly associated with these surprise questions tend not to vary across languages. Indeed, we can find very similar patterns in Italian, German, Spanish, Vietnamese, Korean, Japanese and LIS. In Vietnamese, Japanese, and LIS, I found manual gestures. Crucially, the manual gestures expected have been found, i.e. I observed hands-in-prayer gesture and PUOH gesture, iterated Palm-Up Open Hand gesture - henceforth PUOH - and artichoke gesture in counter-expectational questions and surprise-disapproval questions, respectively.

The non-manual components involved in the linguistic expression of surprise and disapproval seem to be universal, and that may be considered as part of Universal Grammar: non-manual linguistic/bodily parameters seem to be regularized (synchronic alignment between syntax, prosody, and gestures) and show the same features cross-culturally and cross-modally. Furthermore, (at least) as far as the linguistic expression of surprise and disapproval are concerned, manual components seem to be not culturally determined. In all the languages investigated, I find an alignment between the gestural, prosodic and syntactic components.

Focusing on LIS, consider that the investigation of the realization of surprise questions expressing surprise and disapproval (emotional content) in a sign language is crucial in that, in many sign languages, including LIS, raised eyebrows prosodically mark yes-no questions, whereas content questions are typically associated with furrowed

eyebrows. Simultaneously, the expression of surprise and disapproval are typically associated with raised and furrowed eyebrows, respectively, as well.

I found that in LIS, counter-expectational surprise questions and surprise-disapproval questions have a peculiar emotional (pragmatic) interpretation. In all these cases, the non-manual components associated with surprise questions start regularly with the sentence and last until the end. Moreover, I observed no variation in intensity (i.e., no graduality has been revealed).

In LIS, I found the same non-manual components as in counter-expectational and surprise-disapproval questions in oral languages: raised eyebrows and widened eyes, furrowed eyebrows, and squinted eyes, mainly. These components appear to be always present, together with the movement of the head. As a matter of fact, they are always present when the emotional interpretation is triggered. The difference between LIS and other oral languages is that the non-manual components are grammaticalized, becoming actual prosodic features. As already argued for other non-manual marks, it is possible to hypothesize the role of raised eyebrows and furrowed eyebrows as prosodic features accompanying special questions expressing surprise and surprise-disapproval, respectively, in that they are activated regularly.

According to the results shown in this work, the special values of these sentences influence the realization of surprise questions: each sentence type is marked by a peculiar intonational contour and a gestural component. This is required in order to convey such an additional emotional meaning. As already said, the prosodic and gestural components make these sentences grammatical.

I registered an alignment between prosodic and head gestural components. The alignment revealed underlines the importance of gesture and suggests that the model proposed for oral languages by Giorgi (2018) and Giorgi and Dal Farra (2019) can also account for LIS and all the other languages under investigation.

One point that has to be highlighted here is that what is usually assumed on the formal differences existing between linguistic and affective non-manual components in sign languages is not supported by my data. It should not be surprising, however.

The only known study systematically testing these assumptions for any signed language is Baker-Shenk (1983). Some of the hypothesized differences in form between the linguistic and affective uses of facial expressions are not supported by her American Sign Language (ASL) findings. Specifically, the non-manual linguistic signal in her data was generally at the apex level before the initiation of the first manual sign in the sentence (Baker-Shenk 1983:267).

Moreover, she found that the intensity levels of the specific facial expressions associated with surprise (raised eyebrows) are higher in polar questions that express surprise than in neutral cases. Interestingly, the same phenomena are reported by De Vos et al. 's (2009) on surprise questions in Sign Language of the Netherlands (NGT). My results

on LIS are coherent with these data and allow me to claim that linguistic and affective functions of non-manual components in LIS can influence each other, at least in the linguistic expression of surprise and disapproval and result in a peculiar emotional prosody.

My study also contributes to the debate on intonation in spoken and sign language. In the intonation view of the first studies conducted on sign language, semantic and pragmatic factors such as discourse markers predicted the facial pattern occurring on an utterance. In the vein of Liddell's (1980) work on syntax, other researchers treated these markers as explicitly syntactic elements that necessarily occur on structures defined syntactically, such as yes-no questions, wh-questions, topics, relative clauses. The tension between these two lines of research has only recently begun to be addressed. The question is whether syntax makes the best predictions about the distribution and specification of the relevant prosodic markers (Wilbur 2000) or whether they are best predicted by pragmatic/semantic factors (Sandler and Lillo-Martin 2006).

The evidence I presented in this work suggests that intonation is projected by syntactic constituents, at least in the case of surprise questions in LIS, namely in syntactic structures expressing emotional affect and showing a peculiar interpretation. Thus, we are dealing with an integrated multimodal linguistic system rather than a partitioned system than divides language into a linguistic and a paralinguistic domain.

This research gave me also the opportunity to analyse the relationship between signs and gestures in LIS, focusing on the specific case of the surprise gesture. In order to address this issue empirically, I checked two traditional parameters typically used to distinguish gestures from signs: conventionalization and duration of the gestures (Fenlon et al. 2009).

I investigated the communication forms in LIS that show a clear resemblance to gestures accompanying oral languages and appearing in the same pragmatical contexts as in oral languages, paying attention to their conventionalization and duration. I focused on the study of the artichoke gesture in that it is ubiquitous in the production of monolingual and bilingual native signers.

My observations suggest that the artichoke gesture in the case of surprise questions in LIS has the properties of a gesture. This is not a sign in that it does not show a particular degree of grammaticalization. Moreover, this is not reduced in its realization and shows a peculiar distribution.

The literature has proposed that the artichoke gesture/sign could be seen as a generic wh-sign (Branchini et al. 2015). This could be the case, in that the artichoke gesture found in surprise contexts, according to the data presented in this work, appears both in wh-questions or in yes/no questions. Thus, it could be the lexicalization of the silent wh-operator present in polar questions in these cases and/or a particle specialized in marking rhetorical surprise questions. However, I did not find any case of improper duplication, i.e.

the only other peculiar context in which QARTICHOKE in Italian Sign Language has been observed (Branchini et al. 2015). Therefore, I suggest that the so-called QARTICHOKE and the artichoke gesture in emotional contexts are different elements that share the same form. In LIS, the existence of the QARTICHOKE on the one hand, and the presence of the artichoke gesture and the hands-in-prayer gesture - items that have not been lexicalized -, on the other hand, meet my expectations indeed: a gesture can be used to build a sign, but it has not to be used only in this way. Gestures and signs can co-exist as such, as well.

2. STATE OF THE ART

This section aims to illustrate how a few fundamental concepts relevant to the analysis of surprise questions have been considered in the previous literature. Special questions are one of the subgroups within the vast and heterogeneous macro-group of rhetorical questions. Thus, in this chapter, they will be constantly compared with other types of rhetorical questions. Therefore, this section aims to clarify and enlighten the peculiarity of special questions and isolate their properties with respect to the other types of rhetorical questions. In particular, I provide here an overview of surprise questions in spoken languages (2.1.1.), including their interpretation (2.1.2. and 2.1.3.), their syntactic structure (2.1.4.), their intonational contour (2.2.1.) and the gestural pattern they are obligatorily in association with (2.2.4.).

2.1. Surprise questions

2.1.1. Theoretical background

This work investigates two types of special questions: counter-expectational questions expressing surprise (Vicente 2010; Giorgi 2016; 2018) and surprise-disapproval questions expressing surprise with a negative orientation (Bayer and Obenauer 2011; Giorgi and Dal Farra 2019).[1]

These are special (rhetorical) questions in that they do not require a canonical answer but rather convey the speaker's feelings of surprise and/or disapproval. Consequently, these constructions are associated with a peculiar, emotional interpretation: they are not interpreted as simple requests for information; instead, the speaker uses these constructions to express her feelings and, at the same time, she requires an explanation for her interlocutor's unexpected or annoying behavior.

[1] On special questions see also Obenauer (2006), Obenauer and Poletto (2000), Obenauer (2004), Munaro and Obenauer (1999), Munaro and Poletto (2003), Hinterhölzl and Munaro (2015).

Many languages have special questions for these cases. In this chapter, I focus mainly on Italian, although I take some other European languages into account as well.[2]

Concerning counter-expectational questions, consider the following scenario: *I know you are on a diet and decided to eat only fruit. Then, I see you eating a big hamburger. I am surprised and utter* (1):

(1) Ma non mangiavi solo frutta?
But not eat-imp-2s only fruit?
'But weren't you eating only fruit?'

(From Giorgi and Dal Farra 2019, ex. 1)

In the same vein, consider the following scenario: *My dear friend Mary calls me on the phone and tells me that she has a wonderful new and costly red dress to wear at tonight's party. However, when I meet her at the party, I see that she has a blue dress. I'm surprised and say* (2):

(2) Ma non era rosso?
But not is-imp-3s red?
'But wasn't it red?'

(From Giorgi 2016, ex. 2)

These sentences would be infelicitous and even ungrammatical if not accompanied by the correct intonation, which differs from a canonical question (see section 2.2.1.).

The same holds for Spanish. Consider the following context, equivalent to the Italian context presented above for example (2): *María te llamó por teléfono ayer por la noche para decirte que compró un vestido rojo lindísimo para la fiesta de hoy y que se lo va a poner sin dudas. La ves llegar a la fiesta con un vestido azul. Estás sorprendido/a y le dices*:

(3) ¿Pero no era rojo?
But not is-imp-3s red
'But wasn't it red?'
'Ma non era rosso?'

(From Furlan 2019, ex. 4)

[2] Counter-expectational surprise questions have already been studied in Spanish (Furlan 2019) and German (Giorgi, Dal Farra and Hinterhölzl forthcoming). Counter-expectational and surprise-disapproval questions have already been studied in Italian (Giorgi 2016; 2018; Giorgi and Dal Farra 2019).

Let me add just another example. See (4) with respect to the following context, equivalent to the Italian context presented for (1): *Ayer Juan te llamó por teléfono para informarte de que, por fin, se puso a dieta y que comerá durante dos días sólo fruta. Te lo encuentras comiendo un enorme bocadillo de jamón. Estás sorprendido/a y le dices*:

(4) ¿Pero no comías sólo fruta?
But not eat-imp-2s only fruit
'But weren't you eating only fruit?'
'Ma non mangiavi solo frutta?'

(From Furlan 2019:93)

Consider now surprise-disapproval questions. A typical scenario to be deemed is the following: *I see my son with his best trousers kneeling in the dirt in the garden. I think he will ruin his trousers. So I disapprove of his activity and utter* (3):

(5) Ma cosa fai?!
But what do-pres-2s
'But what are you doing?!'

Consider the following scenario: *I know that my husband is on a diet, but I see him eating a big slice of chocolate cake when I enter the kitchen. So naturally, I disapprove of his activity and utter* (6):

(6) Ma cosa mangi?!
But what eat-pres-2s
'But what are you eating?!'

These sentences are accompanied by a typical intonation that guarantees their correct interpretation (see section 2.2.1.). Both types of sentences share the property of being introduced by the adversative particle *ma* (but). The difference is that surprise-disapproval questions are open questions and feature an overt interrogative phrase. In contrast, counter-expectational ones are yes-no questions, with an empty interrogative operator.

Furthermore, these kinds of special questions are obligatorily associated with a typical gestural pattern (see section 2.2.2.).

The context in which these (and all) rhetorical questions are realized is of primary importance (Lakoff 1971). In these cases, an implicit assumption about the background belief relating to an utterance whose truth is taken for granted in the universe of discourse is always present. It is precisely the unexpected discovery that this assumption has been 'betrayed' by the interlocutor that causes the speaker's surprise and/or disapproval. Consider again the counter-expectational surprise question given in (2) and proposed herein (7) for clarity:

(7) Ma non era rosso?
But not is-imp-3s red?
'But wasn't it red?'

In Italian (Giorgi 2016; 2018) and Spanish (Furlan 2019), the question in (7) is not a neutral question precisely because of the context in which it is uttered. The 'betrayed' presupposition taken for granted in (7) is shown in (8):

(8) Presupposition: it [the dress] is red

In these cases, the speaker's presupposition undergoes a change due to the interlocutor's unexpected behavior. The presupposition trigger is contained in the speaker's expectations, namely in the pragmatic context (see section 2.1.3.).

2.1.2. Counter-expectational *but* (*ma)*

The adversative particle introduces surprise questions: *ma* (but) in Italian (Giorgi 2018; Giorgi and Dal Farra 2019), *pero* (but) in Spanish, *aber* (but) in German (Dal Farra, Giorgi and Hinterhölzl forthcoming).

In formal semantics, attempts have been made to account for some of the relevant uses of contrast markers.[3] In literature, the idea is that a word like *but* instructs the hearer to create a contrast between two conjuncts. But 'contrast' is a vague notion, and the literature itself shows a number of different types of contrast.

Traditionally, there are three major types of contrastive relations: semantic opposition (9), adversativity/denial of expectations (10) and correction (11).[4]

(9) John is rich, but Peter is poor
(10) John is short but strong
(11) The conference is not in Berlin but in Groningen

(From Foolen 1991, ex. 1,2 and 3)

(10) is an example of denial of expectation adversative relation. The adversative relation, in this case, contains two states of affairs related by at least co-occurrence, namely if the state of affairs expressed in the first conjunct holds, the second state of affairs would hold as well, typically. The relation between the two conjuncts can be more or less strong, i.e. they have to be related at least by co-occurrence, as said before; however, in the majority of the cases, they are connected right by causality. Namely, one of the two conjuncts expresses the "cause" – in a broad sense – of the state of affairs that the other conjunct should convey. In this sense, the conjunct expressing the cause constitutes the basis for the expectation of what the second conjunct should consequently express. Then, precisely the fact that the second conjunct does not contain the expected state of affairs triggered by the "cause" described in the first conjunct creates the adversativity effect. For example, in (10), the word 'short' triggers the expectation of weakness: we expect John to be weak because of his shortness. Weakness is believed to be correlated to shortness. However, this expectation is denied by stating that John is 'strong'. Thus, the first conjunct (and its extra-linguistic context) creates an expectation dismissed by the second conjunct. Here, the presupposition trigger is associated with the specific lexical item 'short'.

The contrastive meaning has often been associated with the semantic opposition *but* as well. In literature, semantic opposition has been defined as a different type of contrastive relation with respect to the denial of expectations. However, it seems not to be

[3] See Lang (1984); König (1988); Winter and Rimon (1994); Karagjosova (2001); Zeevat (2003); Blomqvist (1981); Foolen (1991); Malchucov (2004), among the others.
[4] I do not take into account here other types of contrastive conjunctions like the cases of exception, restriction, compensative *but* (Abraham 1979), or preventative *but* (Payne 1985), because they are considered to be subsumable under the main type of adversative relation reviewed in this section, namely denial of expectation (see Foolen 1991).

the case. Indeed, presenting sentences like (9) containing contrastive conjuncts out of context is an artifice (Foolen 1991). It can be illustrated by providing different contexts and examining the expectations generated. In (9), the adversative relation contains two (but possibly more) states of affairs that seem independent. Nevertheless, the relation between the expectation present in the context and/or in the first conjunct and what is expressed in the second conjunct is vital for building a semantic opposition. Consider the following scenarios: (i) *John is a lawyer, whereas Peter does not work*. (ii) *John and Peter have the same job and have worked in the same company since they started work*. The situation in which John is rich whereas Peter is poor is odd and unexpected if only the context in (ii) is considered. In this case, we expect *but* to be present in (9). Notice that, in semantic opposition, two states of affairs can also be contrasted via *and*(- coordination). In many languages, the use of *and* instead of *but* is mandatory if more than two states of affairs are contrasted. In these cases, the reading of *and* is not additive. Given scenario (ii), the contrastive reading of *and* is possible in the case of (9) as well. If John and Peter do the same work in the same company, they are expected to earn the same salary (12).

(12) John is rich, and Peter is poor (. Unbelievable!)

On the contrary, if this is not the case, and/or no context is provided, (12) has an additive reading. Thus, the contrast may take place on the pragmatic level only. The unexpected situation in (9) is due to the fact that the interlocutors share some mutual piece of knowledge about the status of John and Peter - see context (ii). Consider the following examples:

(13) A. John and Peter don't live in the same place, do they?
B. No, John lives in Amsterdam and (but??) Peter lives in Rotterdam

(14) A. John and Peter both live in Amsterdam, don't they?
B. No, John (indeed) lives in Amsterdam but (and??) Peter lives in Rotterdam

(15) A. Where do John and Peter live?
B. Well, John lives in Amsterdam and/but Peter lives in Rotterdam

(From Foolen 1991, ex. 1,2 and 3)

In (13), the second conjunct in the answer is in accordance with the expectation created by the first conjunct and its context. For this reason, *but* is inappropriate. In (14), the second conjunct counters the context's expectation and is therefore appropriate. In (15), the neutral context question creates no clear expectations. If speaker B nevertheless

uses *but*, he acknowledges that you may have assumed John and Peter to live in the same place – as indicated by your asking about them together. On the other hand, if speaker B uses *and* no such suggestion or acknowledgement is made. Therefore, it is reasonable to conclude that the semantic opposition is, in fact, a case of denial of expectation.

Let's now analyze corrective *but* (11). In this case, the same observations just discussed hold. Corrective contrastive relation is a case of denial of expectations adversative relation. In the case of corrective *but*, the denied expectation seems to be overshadowed by the neutral contrast introduced by the conjuncts themselves, at least at the pragmatic level of interpretation. The pragmatic level of interpretation is where the integration of the different meaning aspects can be assumed to take place. In other words, the neutral context question (*Where do John and Peter live?*) does not provide clear expectations: the denied/betrayed expectations are overshadowed in the sense that there is no available presupposition that could trigger expectations (Foolen 1991). This is due to the fact that the context is not provided. So, correction is a (weaker) case of denial of expectations, as well.

To summarize, the construction of the contrast may take place on the pragmatic level with the help of world knowledge. Differences in meaning can be ascribed to the pragmatic interpretation. In particular, some aspects of the meaning may be conventionalized semantic distinctions, whereas the pragmatic principles may generate other aspects of meaning.

The adversative/denial-of-expectation meaning is the most general one. Generally speaking, by means of *but* the speaker unavoidably implicates a state of affairs other than the one that might be expected based on the first conjunct (and its context).

In Italian and English, all the semantic flavors available for the adversative particle are subsumed under the same morphological form, *ma* and *but* respectively. As is well known, polysemy is the rule rather than the exception in these cases.[5] However, the adversative particle can always substitute the more specialized (corrective/semantic opposition) conjunction in those languages that show a three-way system of conjunctions. The reverse is never possible.[6] Consider the case of Russian. In this language, we can observe three conjunctions, namely *i* the equivalent of the English *and*, *no* the equivalent of the English adversative *but*, and *a* that shows to have the weak adversative meaning discussed above, namely semantic opposition meaning (Lang 1984). Foolen (1991) points out that this conjunction lexicalizes the equivalent of those cases in English where *and* is pragmatically interpreted to convey a contrastive state of affairs. Furthermore, there are cases where *a* seems to have a denial of the expectation function. Consider the following examples:

[5] See Follen (1991) for a more detailed discussion of the topic. See also the study conducted by Malchukov (2004 whitin the 'semantic map' approach (Croft 2001; Haspelmath 2003).

[6] Many languages employ a form for correction that differs from the standard adversative conjunction: Swedish, Spanish, Hebrew, German and others (see among the others, Long 1989).

(16) Na dvore sneg, a on bosikom!
On yard snow and he barefoot
"There snow outside, and (yet) he's barefoot!"

(Yokoama 1981:435)

Interestingly, according to Foolen, in these cases, the contrastive comparative conjunction of two states of affairs is a way for the speaker to indirectly express her surprise about the co-occurrence of the two states of affairs. Indeed, the states of affairs expressed by the conjuncts are pragmatically considered incompatible because they could not co-occur together, given the context of the utterance. However, semantically speaking, nothing more than a contrastive comparison is expressed. The relation is established at the pragmatic level. Contrasting *and* can have a denial of expectation reading in these cases.

Consider (17), the analogue example in Italian:

(17) (Indovina un po') Fuori c'è un metro e mezzo di neve e Gianni è senza scarponi!
"(Guess what!) Outside there is a meter and a half of snow, and Gianni is not wearing his boots!"

The adversative conjunction *ma* can always substitute *and/e* conjunction in these cases.

(18) (Indovina un po') Fuori c'è un metro e mezzo di neve ma Gianni è senza scarponi!
"(Guess what!) Outside there is a meter and a half of snow, but Gianni is not wearing his boots!"

Ma could introduce a component of disapproval. In (17), the contrast between the two conjuncts, namely the contrast between the expectation of the speaker (if there is a huge quantity of snow outside, anyone has to wear boots) and Gianni's behavior, could give rise to a reaction of surprise (Gianni is able to walk in the snow without boots, I'm impressed). In (18), the fact that Gianni does not behave in a manner appropriate with respect to the speaker's expectation - the speaker, in this case, being Gianni's mother or Gianni's wife, for instance -, would give rise to a reaction of surprise mixed to a negative orientation as well - Gianni actually should have worn boots because there is so much snow outside, he will certainly get his feet wet and catch a cold. Consider another example of *and-surprise* sentence from Russian:

(19) Ona zan'ata, a pomogajet nam
"She is busy, yet she helps us"

(Carlson 1983:181)

The same holds in Dutch:

(20) Ze had het druk en ze hielp ons!
"She was busy, and she helped us!"

Slings (1980) proposes a similar analysis for *kai,* namely in the case of coordination word equivalent to *and* in ancient Greek. *Kai* could be considered a case of adversative and coordination with a denial of expectation value. According to Slings, *kai* can have an adversative interpretation when suggested by what he called 'the semantic relation of the two members coordinated by *kai*. Such an adversative interpretation is possible if the second member […] is incompatible with […] the first member' (Slings 1980:122).

Consider the well-known formula καλὸς καὶ ἀγαθός (*kalòs kai agathòs).* In this case, the denial of expectation interpretation of *and/καὶ* is clear. The formula in question expresses indeed the fact that the virtuous man (unlike ordinary mortals) surprisingly possesses contrasting qualities such as beauty (he is καλὸς, 'beautiful') and goodness (he is *agathòs*, 'good'). Commonly, the expectations are different: the two qualities rarely come together in the same individual. Indeed, *kalokagathia* has been considered the hero and knight's peculiar quality across the centuries.

Let's go back to the adversative *but*. The denial of expectation interpretation can be observed in the case of the adversative particle *no* in Russian (Malchukov 2004). This same morphological form is used in concessive, adversative coordination, restrictive, and contradicting evaluation (Švedova 1980; Sannikov 1989).

(21) Vanja prostudilsja, no poshel v shkolu
Vianja caught-cold but went-3p to school
"Vanja caught a cold, but went to school"

(22) Kostijum krasivyj, no dorogoi
Suit beautiful but expensive
"The suit is beautiful but expensive"

(23) On pobezhal, no upal
He started-to-run but fell
"He started to run but fell"

(Examples 1, 2 and 3 from Malchukov 2004:180)

The concessive use of *no* in (21) carries a presupposition: it expresses that if p then not normally q. (22) is an example of a contradicting evaluation in which we find a contrast between inferences of the two propositions. In this case, the second proposition is judged as more relevant with respect to the first. Given that the suit is beautiful, one should/could buy it. However, it is expensive; therefore, one could not/should not buy it. In (23) - an example of corrective *no* – the contrast arises from the fact that the second conjunct refutes the inference that the event referred to in the first conjunct one initiated has been (completely) realized.

According to Malchucov (2004), the adversative meaning is more general than the concessive one, which is, in turn, more general than the contradicting evaluation and the corrective meanings. All the constructions in question characterize situations as incompatible. However, the adversative connective is less committal than the concessive regarding the nature of this incompatibility. The concessive function seems to be a subcase of the adversative meaning. Indeed, from an empirical point of view, concessive conjunctions (for example, *xotja* 'although' and *nesmotrja no* 'in spite of') can always be replaced by the adversative *no*, but the opposite is not true (Švedova 1980). In particular, *nesmotrja no* can be replaced by *no* only in the case of the concessive/adversative *no* (20). In all the other cases, the substitution with *nesmotrja no* is not allowed.

In English, all the functions mentioned above are performed by the same morphological form *but*. The same holds for Italian *ma*, as already said above. In the French language, the distinction corrective function *versus* adversative function can be operated by the same lexeme as well (one for all, Anscombre and Ducrot 1977). In German, there is a lexical distinction between *aber* and *sodern*, namely between the proper adversative conjunction and the corrective function, respectively (see among the others, Lang 1977). The same has been observed in the case of Spanish. The denial of expectation *but* has been renamed *counter-expectational but* by Vicente (2010). In this case, the two flavors associated with the unique morphological forms *ma* and *but* in Italian and English respectively are realized in Spanish by two different morphological forms: *sino* and *pero*. *Sino* corresponds to the corrective *but*, resulting in a denial of the proposition expressed in the first conjunct.

On the other hand, *pero* corresponds to the counter-expectational *but*, namely to that value of *but* which does not deny the proposition of the first conjunct, but instead compares two states of affairs introducing the implicature that the second conjunct is

unexpected given the first conjunct. Hence, *pero* gives rise to the implicature that the second conjunct is somewhat unexpected given the first conjunct. According to Vicente (2010), in these cases, the implicature can be paraphrased as "*p* (and therefore ¬*q*), but actually *q*". Consider the following examples:

(24) a. # Mario is a taxi driver, but he has a driving license
b. # Mario es un taxista pero tiene licencia de conducir
c. # Mario è un tassista ma ha la patente di guida

(24b) and (24c) represent the Spanish and Italian translation of the English sentence in (24a). The sentences in (24) are deviant in that taxi drivers must have driving licenses ordinarily, so the second conjunct cannot be interpreted as unexpected with respect to the first conjunct.

Pero, *but* and *ma* share (at least) the value of "denial of expectation", i.e. they are used to express adversativity in the respective languages. Adversativity can be considered a universal semantic phenomenon (Foolen 1991; Malchukov 2004)).

In conclusion, *but* is exploited as a form of denial of expectation, strengthening the contrast already present in the conjuncts or in the previous discourse. Languages differ as to the basis on which the correction/semantic opposition is modelled with respect to the denial of expectation general meaning. Adversativity should be considered a universal semantic base and should be analyzed as a type of meaning that facilitates the integration of communicated state of affairs into the surrounding discourse (Foolen 1991). In particular, *but* is relevant to the integration of new information (the second conjunct) into the previous discourse (the first conjunct and/or its context). Expectations suggested as reasonable or not unreasonable by the previous discourse were shown to play a crucial role in understanding adversative constructions. [7]

[7] For a comprehensive discussion of the topic on different languages such as English, Hebrew, Russian and German see Foolen (1991) and references cited there.

2.1.3. The semantic of surprise questions introduced by the adversative particle

Considering *but*-coordination as basically "denial of expectation" is coherent with the classic semantic argumentation proposed by Lakoff (1971b). According to Lakoff, in the case of counter-expectational adversativity has been involved a presupposition and a causal relationship between the conjuncts, as in the structure simplified in (25) and formalized in (26):

(25) S_1 but S_2
(26) p (and therefore $\neg q$), but actually q

The same implicature holds in the case of the special questions analyzed in section 2.1.1.:

(27) Ma non era rosso?
But not is-imp-3ps red?
'But wasn't it red?'

In this case, S1 (p) corresponds to the speaker's expectations, namely the dress intended to be red and not of another color, therefore ($\neg q$). On the other hand, S2 expresses the 'surprised' acknowledgement of the fact that the dress is not of the expected color ($\neg p$), i.e. red, but instead of another color, i.e. blue (q). Thus, the speaker's expectations are 'betrayed' by the interlocutor, who announced she would wear a red dress. In this specific context, the adversative relation can also encode and express the precise emotional affect of surprise: the 'betrayal' of expectations is also connected to the fact that the Gricean conversational norm of quality has been violated. The speaker was expected to be truthful. At this point, two evaluations can be made by the speaker. (i) the interlocutor 'lied'/behaved in an inappropriate manner not on purpose; something occurred that made her change her plan; (ii) the interlocutor 'lied'/behave in an inappropriate manner on purpose. In (i) the speaker's reaction is surprise, in (ii) the speaker's reaction is surprise with a negative orientation (disapproval).

Finally, consider that the adversative *ma* can be omitted in the case of surprise questions.

The adversative particle can be omitted in these cases and the omission in question does not influence the grammaticality of the sentences. Moreover, the first conjunct can be omitted without causing ungrammaticality. On the contrary, this is not possible in the case of canonical *ma/but* coordination. Commonly, regular adversative coordination can be introduced by an adversative particle only in contexts such as the following one:

(28) Mario è ricco, ma non è felice
"Mario is rich, but (he) is not happy"

(29) *Mario è ricco, non è felice
*"Mario is rich, (he) is not happy"

(30) *ma non è felice
*"but (he) is not happy"

(31) Ma non era rosso?
"But wasn't it red?"

If *Mario è ricco* is not realized, the clause *ma non è felice* cannot stay by itself (30), and the sentence is ungrammatical. In the case of special surprise questions, there is no overt antecedent for the adversative particle; however, the sentences are grammatical (31). The antecedent is present in the pragmatic context.[8] In particular, it coincides with the speaker's expectations.[9] On the contrary, in common cases, the presupposition trigger is associated with a lexical item in the first conjunct.

[8] In these cases, the context, i.e. what is present in the universe of the discourse, is of primary importance, as already discussed in this section. This is not a novelty, in fact, that the notion of adversativity pertains to the domain of pragmatics rather than to truth-conditional semantics (Malchukov 2004).
[9] Moreover, these sentences are obligatorily associated with a peculiar intonational and gestural pattern. Without the correct intonation, the omission of the first conjunct is not possible. According to Giorgi (2016; 2018), this is due to the fact that they are associated with a typical intonation, which makes them special questions. Prosodic and gestural cues can be considered contextual information.

2.1.4. The syntactic structure of surprise questions

As shown in the previous sections, counter-expectational surprise questions and surprise-disapproval questions are mainly characterized by the presence of the adversative particle *ma* (but). Interestingly, the adversative particle can be omitted in these cases, and the omission does not influence the grammaticality of the sentences. Moreover, the first conjunct can be omitted without causing ungrammaticality. The hypothesis proposed in the previous section (2.1.3.) is that adversative particles can be omitted in these cases because an overt antecedent for the adversative particle is present. In particular, the antecedent is present in the pragmatic context, i.e. in the speaker's expectations. Moreover, special questions cannot be embedded (Giorgi 2016).[10] See the following examples:

(32) *Gianni ha detto che ma non mangiavi solo frutta?
*"Gianni said that but weren't you eating only fruit?"

(33) *Gianni ha detto ma che fai?
*"Gianni said but what are you doing?"

(From Giorgi 2016, ex. 8 and 9)

Giorgi (2016) notes that it is not possible to embed these sentences under those predicates selecting the so-called indirect questions:

(34) *Gianni si domanda ma non mangiavi solo frutta?
*"Gianni wonders but you weren't eating only fruit?"

(35) *Gianni si domanda ma che fai?
*"Gianni wonders but what are you doing?"

(From Giorgi 2016, ex. 10 and 11)

[10] On the syntactic structure of surprise questions see also Giorgi (2018) and Giorgi and Dal Farra (2019).

Therefore, these emotional sentences cannot be embedded without losing their specific interpretation. Consequently, they must be considered root phenomena.

(36) Gianni si domanda se non mangiavi solo frutta
"Gianni wonders whether you weren't eating only fruit"

(From Giorgi 2016, ex. 12)

Consider now the distribution of the (obligatory) adversative particle *ma* in special questions. Giorgi (2018) analyzes the distribution of this element when co-occurring with phrases occupying the left periphery, such as Clitic Left Dislocation (CLLD), Hanging topics (HT) and focused phrases (FOC).[11] According to Giorgi's (2016; 2018) analysis, *ma* is a discourse head external to the sentence. Indeed, FOC and CLLD can never precede *ma*, whereas this ordering is possible for HT. This is expected given Giorgi's (2015) analysis of HT in Italian. Indeed, according to the author, HT must be considered a discourse head in its turn, as "surprise" *ma*.

(37) *A Luca, ma non gli avevi dato un libro?
To Luca, but not (you) to him.CL had.IMPF given a book?
"But didn't you give a book to Luca.TOP?"

(38) Ma, a Luca. Non gli avevi dato un libro?
But, to Luca, not to him.CL (you) had.IMPF given a book?
"But didn't you give a book to Luca.TOP?"

(39) *UN LIBRO (non un vestito) ma non avevi comprato a Maria?
"But a book.FOC (not a dress) (you9 not had bought to Maria?
"But didn't you buy a book (not a dress) to Maria?"

(40) *Ma UN LIBRO (non un vestito) non avevi comprato a Maria?
But a book.FOC (not a dress) (you) not had bought to Maria?
"But didn't you buy a book (not a dress) to maria?"

(From Giorgi 2018, ex. 37, 39, 41 and 45)

[11] With respect to the structure of the Left Periphery, Giorgi (2018) assumes Rizzi's (1997) Split-CP hypothesis, mainly: Force … TOP(P)* … FOC(P) … TOP(P)* … Fin(itness).

(37) and (38) are examples of CLLD. The speaker uses this construction to express (given) topic: a phrase is dislocated on the left, and a corresponding clitic appears inside the sentence. The correspondence concerns gender and number and case marking. As is clear from the examples in (37) and (38), a dative clitic (*gli*) corresponds to a phrase marked by the proposition *a* (*a Luca*). This case is different from Hanging Topic constructions, where the dislocated Noun Phrase appears with no case-marking prepositions (41).[12]

(41) Mario, ma non gli avevi comprato un libro?
Mario.HT but (you) not to him.CL had-IMPF bought a book?
"Mario, but haven't you buy a book for him?"

(From Giorgi 2018, ex. 46)

(39) and (40) are examples of contrastive focus constructions.

To summarize, the left dislocated phrase (a Luca) cannot occur on the left of *ma*, but only on its right. Contrastive focus cannot precede *ma*. Furthermore, a focused phrase on the right of *ma* is ungrammatical as well. This is because, in Italian, questions are incompatible with a contrastive focus in the left periphery. The grammaticality of (41) contrasts with the ungrammaticality of (37). The Noun Phrase in (41) *Mario* is an HT.

The properties illustrated above for counter-expectational questions hold for surprise-disapproval questions as well. For example, Giorgi (2016) proposes the following scenario: Luca is a teenager, and Gianni is a toddler. You bought a toddler toy, which I think you mistakenly bought for Luca. In this scenario, (42) and (43) are ungrammatical.

(42) *A LUCA (ma non a Gianni) ma cosa hai comprato?
To Luca.FOC (not to Gianni) but what have you bought?
"But what did you buy to luca (not to Gianni)?"

(43) *Ma A LUCA (non a Gianni) cosa hai comprato?
But to Luca.FOC (not to Gianni) what have you bought?
"But what did you buy to Luca (not to Gianni)?"

(From Giorgi 2016, ex. 22 and 23)

[12] For further details, see Giorgi (2015).

The ungrammaticality of (43) is the same already discussed above, for example (40). The significant observation here is that FOC cannot appear on the left of *ma,* as shown by the ungrammaticality of (42).

Consider now the following examples of CLLD:

(44) ?Ma a Luca cosa gli hai comprato?
But to luca what to-him.CL have you bought?
"But what did you buy for Luca.TOP?"

(45) ??A Luca, ma cosa gli hai comprato?
To Luca, but what to-him.CL have you bought?
"But what did you by for Luca.TOP?"

(From Giorgi 2016, ex. 24 and 25)

The scenario provided by Giorgi for (44) and (45) is the following: *I see a toddler toy and think you bought it for Luca, a teenager*. The sentences in these examples are quite marginal concerning the proposed scenario. However, if we compare (44) and (45) with surprise-disapproval special questions, it stands out clearly that the formers have lost their emotional interpretation, resulting in less surprise and anger than expected.

Finally, consider HT in cases of surprise-disapproval constructions (46). It can sit on the left of *ma* as well.

(46) Luca, ma cosa gli hai comprato?
To Luca, but what to-him.CL have you bought?

(From Giorgi 2016, ex. 26)

Concluding, except for HT, no phrase can occupy a position on the left of *ma*.

In these cases, the distribution of the adversative particle is quite peculiar and differs from the distribution of the adversative particle involved in canonical coordination. In particular, consider that the adversative particle in the surprise question can be omitted (Giorgi 2016; 2018: Giorgi and Farra 2019). Consider the following scenario: *I know you are on a diet and decided to eat only fruit for a month. Some days later, I see you eating a big hamburger. I am surprised and utter*:

(47) (Ma) non mangiavi solo frutta?
"(But) weren't you eating only fruit?"

Now consider this other scenario: *I see my son with his best trousers kneeling in the dirt in the garden. I think that he will ruin his pants. So I disapprove of his activity and utter*:

(48) (Ma) cosa fai?!
"(But) what are you doing?!"

The sentences are grammatical even if the adversative particle is omitted, and its spontaneous omission is very frequent in the experimental observations. Interestingly, in these cases of omission, the sentences carry an extra-emphatic intonation.

In canonical adversative coordination, the omission of *ma* is not possible.

(49) Maria è povera, *(ma) felice
"Maria is poor, *(but) happy"

Finally, in canonical adversative coordination *ma* cannot introduce sentences out-of-the-blue, so to say. This means that in (50) if *Maria è povera* is not realized, the clause *ma è felice* cannot stay by itself. Therefore, (50) is ungrammatical.

(50) *Ma è felice
*"But she is happy"

The first sentence can also appear as a part of a dialogue uttered by a different speaker:

(51) A: Maria è povera
A: Maria is poor
B: (Si,) ma è felice
B: (Yes,) but she is happy

As already discussed in section 2.2.2., (47) and (48) can be paraphrased as follow:

(52) S_1 but S_2
(53) *p* (and therefore ¬*q*), but actually *q*

S1 corresponds to the speaker's expectations. In the case of special surprise questions, there is no overt antecedent for the adversative particle; however, the sentences are grammatical because the antecedent is present in the pragmatic context. In particular, it coincides with the speaker's expectations. The universe of the discourse provides the presupposition trigger.[13]

Giorgi and Dal Farra (2019) point out that in (50) there is no overt antecedent for the adversative particle. On the contrary, (47) and (48), the sentences turn out to be grammatical because they are associated with a typical intonation, which makes them felicitous. Prosodic and gestural cues can be considered as contextual information as well. Namely, they also contribute to triggering the presupposition.[14]

To capture the properties of the expression of surprise in both types of special questions, Giorgi (2016; 2018) proposes a syntactic representation for these structures, integrating their various components, namely syntax, prosody, and gesture, in that all these components as relevant at the sensorimotor interface. Giorgi moves from the minimalist theoretical framework and assumes no direct link between the sensorimotor and interpretive components. Instead, the relation between *sound* and *meaning* is mediated by syntax. [15] As Giorgi (2016) points out, this approach is usually adopted when considering phenomena such as interrogative sentences in Italian.

(54) È arrivato Gianni
Lit: is arrived Gianni

(55) È arrivato Gianni?
Lit: is arrived Gianni?

(From Giorgi 2016, ex. 1 and 2)

(54) is an assertion, whereas (55) is a yes/no question. There is no apparent difference in the word order between (54) and (55); however, it is well known that assertions and questions differ in their syntactic structure. Indeed, the interrogative sentence contains an operator – in this case, an empty operator – in the left periphery,

[13] Consider also the pragmatic notion of Common Ground (Stalnaker 1978; Gunlogson 2001; Krifka 2008).
[14] This topic will be discussed in detail in the following sections, in particular in sections 2.2.1 and 2.2.2..
[15] Chomsky (1995; 2000; 2001; 2008; 2011).

whereas no operator is present in the assertion. Thus, the hypothesis is that the presence/absence of the operator in the syntactic representation results in a particular interrogative or assertive intonation at the sensorimotor interface and in an interrogative or assertive interpretation at the conceptual-intentional interface. The idea is that whenever we find a systematic and characteristic prosodic - and gestural - pattern at the sensorimotor interface corresponding to a peculiar interpretation, a specific syntactic representation mediating between the two must be hypothesized.[16]

Consider that the same observations hold for Italian Sign Language (LIS) as well. Consider the following example from Branchini and Mantovan (2020:182):

(56) HOUSE (IX) BUY
"Have you bought the house?/You have bought a house"

(56) could be an assertion or a question in that its interpretation depends on the non-manual components associated with the sentence, namely the interpretation of (56) depends on the prosody associated with the sentence itself. In LIS, the prosodic non-manual component associated with yes/no questions is raised eyebrows, mainly. This non-manual marking, obligatorily, interests the whole sentence. The highest peak is collocated at the end of the sentence (Branchini and Montovan 2020). Thus, if raised eyebrows feature is present, (57) is interpreted as a yes/no question, whereas if no peculiar intonation is present, the sentence is interpreted as an assertion (58).

(57) $\overline{\text{HOUSE (IX) BUY}}^{\text{Raised eyebrows}}$
"Have you bought the house?"

(58) HOUSE (IX) BUY
"You have bought the house."

In the case of surprise questions in Italian, Giorgi hypothesizes that the adversative particle *ma* plays an important role in licensing an empty evaluative head in the left periphery of the sentence. This syntactic head determines the properties of the sentences at the sensorimotor and interpretive interfaces. This head is a gesture/prosody oriented

[16] Notice that this approach has revealed to be of significant heuristic value also in those cases of Parhentetical of Free Indirect Discourse constructions (Giorgi 2016). Broadly speaking, in those cases as well, the role of the indexicality and the speaker's coordinates play a crucial role in association with a (mandatory) peculiar prosodic realization of the sentence (see Giorgi 2016 for further details). The same seems to hold for Parenthetical of Free Indirect Discourse in Italian Sign Language as well (Petrocchi 2018, MA Thesis), however further studies are needed.

head in the sense of Giorgi (2014). Indeed, as I have illustrated above, *ma* is obligatory in these cases, and, if omitted, the sentence remains felicitous. When in non-emotional contexts, *ma* cannot appear at the beginning of a conversation in that a non-emotional sentence introduced by *ma* uttered out-of-the-blue gives rise to a violation arising at the syntax-interpretation interface. In the case of canonical *ma/but* coordination, the omission of the first conjunct is not possible in that the presupposition trigger has to be necessarily associated with a lexical item precisely in the first conjunct, thus it can not be eliminated. As a result, it would not be interpretable (see example 59 below). Without the context, the adversative value of the sentence (i.e. the contrast between the expectation triggered by the first conjunct and the contradicting state of affairs conveyed by the second conjunct) cannot be interpreted.[17]

(59) #Ma Maria è felice
#"But Mary is happy"

(From Giorgi 2016, ex. 29)

In other words, the context enables the interpretation of the adversative value of the particle.

Moreover, *ma* cannot be labelled as a complementizer:

(60) *Luca ha detto ma Maria è partita
Luca said but Maria left

(From Giorgi 2016, ex. 27)

Thus, to account for this evidence, Giorgi proposes that *ma* does not syntactically belong to the sentence on its right. On the contrary, *ma* is a *discourse head*, connecting two separate sentences. In this perspective, discourse is not just a simple sequence of unconnected sentences but a hierarchical structure, where each sentence is an ordered structural relation with the other ones.[18] In Giorgi's view, the minimal discourse can be syntactically represented as follows:

(61) [$_{DIS}$ [$_{CP1}$ …][DIS [$_{CP2}$ …]]]

[17] See section 1.1.2.
[18] See also Cinque's (2008) analysis of non-restrictive relative clauses.

In (61) a discourse head (DIS) connects two sentences, CP1 and CP2, one appearing as the Specifier of its projection and the other as its complement. Consequently, the syntactic representation of the discourse in (62) will be the one in (63):

(62) A: Maria è povera
A: Maria is poor

B: (Sì,) ma è felice
B: (Yes,) but she is happy

(63) [$_{DIS}$ [$_{CP1}$ Maria è povera [ma$_{DIS}$ [$_{CP2}$ è felice]]]
Maria is poor but (she) is happy

(From Giorgi 2016, ex. 33 and 34)

In (62), CP1 contains the presupposition which triggers the expectations about the awaited content of CP2. In Lakoff's (1971b) terms:

(64) S_1 but S_2
(65) *p* (and therefore ¬*q*), but actually *q*
(66) p: Mary is poor
q: (and therefore she cannot be happy)
(67) Mary is poor (and therefore, she cannot be happy), but actually, she is happy

As shown above and (more extensively) in section 2.2.2., the semantics of *ma* is such that, given the expectations provided by CP1, CP2 comes as an unexpected consequence. The syntactic representation given in (63) can account for the fact that the roles of CP1 and CP2 cannot be inverted. CP1 and CP2 cannot be inverted freely. *Maria is poor but she is not happy* does not have the same interpretation as *Maria is happy but she is poor*. In (63) CP1 *Maria is poor* c-commands CP2 *Maria is happy*. In this configuration, the unexpected consequence is that Maria is happy. Instead, in the configuration in (68) the unexpected consequence would be that Maria is poor.

(68) [$_{DIS}$ [$_{CP1}$ Maria è felice [ma$_{DIS}$ [$_{CP2}$ è povera]]]
Maria is happy but (she) is poor

(69) S_1 but S_2
(70) *p* (and therefore ¬*q*), but actually *q*

(71) p: Mary is happy
q: (and therefore she cannot be poor)
(72) Mary is happy (and therefore, she cannot be poor), but actually, she is poor

Giorgi (2016) points out that this effect follows from the hierarchical structure when interpreted at the interface, combined with the intrinsic meaning of *ma*.

In surprise questions, CP1 on the left *ma* is not overtly expressed in that it is part of the beliefs in the speaker's mind. Consider the example (1) I gave in section 2.1. and that I propose again herein (73) for clarity:

(73) Ma non mangiavi solo frutta?
But not eat-imp-2s only fruit?
"But weren't you eating only fruit?"

Consider that (73) is uttered as a reaction to the following scenario: *I know that my friend Gianni is on a diet and decided to eat only fruit. Then, I see him eating a big hamburger. I am surprised and utter*. In this case, the speaker's expectations are triggered by the information she has in her mind: Gianni is on a diet, and he eats only fruit because he decided to do so. However, this content is not present in the sentence in (73).

(74) $[_{DIS}\ [_{CP1}$ … $[ma_{DIS}\ [_{CP2}$ non mangiavi solo frutta]]]
but weren't you eating only fruit

In these special cases, *ma* can be omitted. Indeed, the missing information in CP1 is provided by the context, contextual cues such as prosody and gestural pattern included.

This hypothesis is coherent with what has been found by previous studies on the semantics and pragmatics of *ma*. As illustrated in section 2.1.2., the construction of the contrast may take place on the pragmatic level only. In this case, world knowledge (/speaker's belief) plays a crucial role. Differences in meaning can be ascribed to the pragmatic interpretation only. In particular, some aspects of the meaning may be conventionalized semantic distinctions, whereas the pragmatic principles may generate other aspects of meaning.[19] This means that *but* can be exploited as a form of denial of

[19] See section 1.1.2, Malchukov (2004), Foolen (1991) and references cited there.

expectation, strengthening the contrast already present in the conjuncts or in the previous discourse. However, the speaker's expectations - suggested as reasonable or not unreasonable by the previous discourse - take the leading role in understanding adversative constructions. In the case of rhetorical questions, the pragmatic context plays a crucial role, which can be formally represented in generative linguistics. Indeed, generative syntax can capture this generalized observation made in semantics and traditional pragmatics. In Giorgi's view, discourses can be elegantly represented as syntactic hierarchical structures. For instance, consider the fact that surprise-*ma* and Hanging Topic (HT) can co-occur.

(75) A: Credo che Maria abbia litigato con Gianni
A: I think that Maria quarreled with Gianni

B: Gianni? Ma Maria non gli ha fatto un bellissimo regalo?
B: Gianni.TOP? But Maria to him-gave a very nice present

(From Giorgi 2016, ex. 51 and 52)

According to Giorgi (2015), HT has the structure in (43):

(76) [$_{HP}$ DP [H CP]]

H is an empty discourse head, connecting the Hanging Topic phrase in [Spec; HP] with the sentence in its complement position. In this vein, the representation hypothesized for (75B) will be the one in (77).

(77) [$_{HT}$ Gianni [$_{H}$ Ø [$_{DIS}$ […] ma$_{DIS}$ [[$_{CP}$ Maria gli ha fatto un bellissimo regalo]]]]

In (77) *ma* projects a Discourse-P, which in its turn is the complement of the Discourse-P projected by the zero HT Discourse Head.

Let's now focus on the peculiar interpretation of surprise questions. They are associated with an evaluative interpretation. The evaluative component plays a crucial role in the interpretation of both counter-expectational surprise and surprise-disapproval questions. According to Cinque (1999), adverbs in Italian appear in the specifier position of the phrase projected by a dedicated head. In particular, evaluative adverbs such as *luckily* (*fortunatamente* in Italian) appears in the specifier position of the evaluative phrase

projected by the dedicated head Eval°. According to Cinque's (1999) data, this projection occupies a high position in the syntactic structure, appearing in the left periphery of the sentence:[20]

(78) Cinque (1999), left periphery: … [speech act [evaluative [evidential [epistemic …

According to Giorgi (2016; 2018), the evaluative head can be lexically empty in the case of surprise questions. It can correspond to any lexical material, but it can be realized as typical intonation and gesture. The evaluative head takes the whole sentence in its scope. Thus, the complete representation of (77) is the following one:

(79) [DIS [CP …] [maDIS [EVAL Ø [WH Ø [non mangiavi solo frutta]]]]]
But weren't you eating only fruit

Counter-expectational and surprise-disapproval questions share the same properties. Thus, on the same line of (79), (80) illustrates the syntactic representation of surprise-disapproval questions (see section 2.1.):

(80) [DIS [CP …] [maDIS [EVAL Ø [WH cosa [fai]]]]]
But what are you doing

The evaluative head is higher than the interrogative one. In the case of counter-expectational yes/no surprise questions, the interrogative operator is empty.

As noted above, the evaluative head can be lexically empty in the case of surprise questions. However, it is possible to find surprise-disapproval questions in which a swear word lexicalizes the evaluative head. In these cases, the wh- raises to Eval° incorporating it.[21]

(81) Ma che cazzo fai?!
But what the fuck are you doing?!

[20] See also Giorgi and Sorrisi (2018) for an analysis of an evaluative head Romance.
[21] These data converge also with Obenauer and Poletto (2000). The authors hypothesized that the position of the wh- in special questions is higher with respect to the normal cases.

Interestingly, the experimental data provided by Giorgi and dal Farra (2019) on surprise-disapproval questions show that in many cases, participants who were asked to repeat a sentence like the one in (80) spontaneously ended in realizing (81). I.e., the speakers naturally tended to insert a swear word in these constructions. The same does not take place in the case of counter-expectational surprise questions, at least in Giorgi and Dal Farra's data. However, the insertion of a swear word in counter-expectational questions would not make the sentence deviant:

(82) Ma cazzo non mangiavi solo frutta?
Lit: But the fuck weren't you eating only fruit?

However, it is not perceived as perfectly natural. Plausibly, this is because the swear word is connected preferentially with the disapproval value (see also Giorgi and Dal Farra 2019). Indeed, the swear word expresses negative content, which is not straightforwardly included in the generic surprise reaction (counter-expectational surprise value). On the contrary, the same negative content is included in the expression of surprise with a negative orientation (surprise-disapproval value).

Finally, recall that special questions are root phenomena. They cannot be embedded. This is due to the fact that this evaluative head has an indexical value and can only refer to the speaker. Thus, it cannot refer to the subject of the superordinate clause. This is coherent with the empirical fact that the speaker typically uses these sentences to express her emotional state, concerning a contextual situation she is experiencing simultaneously to the utterance time (the *here and now* of the speaker).[22]

Thus, concluding, the complete syntactic representation of surprise questions for Italian is given in (83):

(83) [DIS [CP …] [DIS° [EVAL [WH [CP2]]]]]

The same syntactic representation has been found to be valid for German (Giorgi, Dal Farra and Hinterhölzl to appear) and Spanish (Furlan 2019).

[22] Indeed, this seems to be a quite general characteristics of evaluative sentences (see also Giorgi and Sorrisi 2018).

2.2. The realization of surprise questions. At the Syntax/Pragmatic Interface

2.2.1 The prosodical component

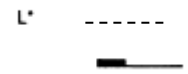
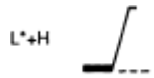
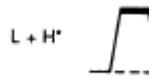
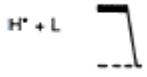
2.2.1.1. The compositional theory of tune interpretation (Pierrehumbert and Hirschberg 1990)

This section provides a short outline of the compositional theory of tune interpretation developed by Janet Pierrehumbert and Julia Hirschberg (1990). Some notes on the meaning of intonational contours in the interpretation of the discourse are needed for the reader to fully understand the following section on the prosodical component of rhetorical questions. Moreover, this classic study has been the basis for (almost) all the prosodic analysis on genuine and rhetorical questions proposed in the literature in recent years.

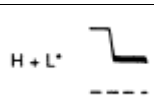
Pierrehumbert and Hirschberg (1990) (P&H, from now on) examined the particular contribution of the choice of tune, or intonational contour, to discourse interpretation. In particular, the authors proposed that a speaker chooses a specific tune to convey a particular relationship between an utterance, currently perceived beliefs of a hearer or hearers, and anticipated contributions of subsequent utterances. In P&H's model, these relations are considered compositional, composed of pitch accents, phrase accents, and boundary tones that make up tunes. In their account, the different aspects of tune meaning can be associated with different phonological domains - lexical word, intermediate phrase, intonational phrase. Tune is the abstract source of fundamental frequency patterns, whereas phrasing refers to dividing a complex utterance. Each intonational phrase provides an opportunity for a new choice of tune, and some parts of the tune mark the phrase boundaries. Phrase boundaries are also indicated by the duration pattern and by pausing.

In P&H's system, tunes are described as a sequence of low (L) and high (H) tones, which determine the shape of the F0 contour. Some of these tones participate in pitch accent and go with stress syllables, whereas others mark the edge of phonological phrases (phrasal tones). In particular, pitch accents mark the lexical item with which they are associated as prominent. There are six different types of pitch accents in English: two simple tones H(igh) and L(ow) and four complexes (bitonal).[23] See Table 1. The star "*" indicates that the tone is aligned with a stressed syllable.[24] The bitonal English accents have two tones, of which one is selected to align with stress. In the column dedicated to representing the pitch accents, I present a personal adaptation of figures 14.13 and 14.14 from P&H (1990:281).

Table 1. Pitch accent in English

	Pitch Accent	**Phonological characterization**	**Notes**	**Representation**
1	H*	A peak on the accented syllable	The high tone is the most frequently used accent	
2	L*	It occurs on the stressed syllable, which is much lower in the pitch range than H* and is realized as local F0 minima.		
3	L*+H	The low F0 value continues, and the peak occurs on the second syllable		
4	L+H*	There is a pronounced valley before the peak on the accented syllable.		
5	H*+L	There is a pronounced valley after the peak on the accented syllable.		

[23] See also Beckman and Pierrehumbert (1986a).
[24] *Stress* refers to the rhythmic pattern or relative prominence of syllables in an utterance.

6	H+L*	The F0 decreases and the stressed syllable occurs on the F0 minima		

Generally speaking, all accent types can be used to convey information to the hearer about how propositional content of (perhaps partially) instantiated expression corresponding to the utterance is to be used to modify what the hearer believes to be mutually believed.

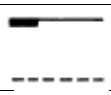
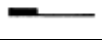
According to Avesani (1995), the pitch accents available in Italian are the following ones: H*, L*, H+L*, L+H* and L*+H.

The tones involved in other levels of phrasing – i.e. intermediate phrase and intonational phrase - contribute to the interpretation of the prosodic contour of an utterance. A well-formed intermediate phrase consists of one or more pitch accents, plus a simple high or low tone, which marks the end of the phrase - this is called phrase accent (Pierrehumbert 1980). The phrase accent controls the F0 between the last pitch accent of the intermediate phrase and the beginning of the next intermediate phrase or the end of the utterance. Intonational phrases are composed of one or more intermediate phrases. The end of an intonational phrase is marked with an additional H or L tone, the so-called "boundary tone", which is indicated by the diacritic "%". This tone falls at the phrase boundary. Consider that the end of every intonational phrase is also the end of an intermediate phrase. Thus, there are four ways the tune can go after the last pitch accent of an intonational phrase: L-L%, H-L%, L-H% and H-H%. A phrase's tune - i.e., melody – is defined by its particular sequence of pitch accent(s), phrase accent(s) and boundary tone.

Table 2. The F0 contours' schematization results from different combinations of pitch accent, phrase accent, and boundary tone (Adaptation of figure 14.13 and 14.14 from P&H (1990: 281)).

Legenda

STRESS
BASELINE

Pitch accent	Phrase accent + boundary tone	Representation
H*	L-L%	
H*	L-H%	
H*	H-L%	
H*	H-H%	
L*	L-L%	
L*	L-H%	
L*	H-L%	
L*	H-H%	
L*+H	L-L%	
L*+H	L-H%	
L*+H	H-L%	
L*+H	H-H%	
L+H*	L-L%	

		
L+H*	L-H%	
L+H*	H-L%	
L+H*	H-H%	
H*+L	L-L%	
H*+L	L-H%	
H*+L	H-L%	
H*+L	H-H%	
H+L*	L-L%	
H+L*	L-H%	
H+L*	H-L%	
H+L*	H-H%	

The theory of tune interpretation elaborated by P&H and related transcription methods are motivated by phonetic and phonological considerations.

As expected from what has been elaborated in the segmental domain, in the autosegmental domain, linguistic categories have to relate to differences in sounds and articulations and differences in semantic interpretation. The compositional approach developed by P&H (1990) can account for the evident dependency between the context and the interpretation of the sentence uttered in a specific context. Indeed, P&H propose that speakers use tone to specify a particular relationship between the "propositional content" - realized in the intonational phrase over which the tune is employed - and the mutual beliefs of participants in the current discourse. Although the interpretation of any token of a tune type may vary along many (contextual) dimensions - such as voice quality, pitch range, non-intonational features – any instance of a given tune will convey the same relationship.

The mutual beliefs of discourse are intended as those beliefs that conversational participants come to believe to be shared among them as a direct result of the conversational interaction. In particular, P&H make use of the notion of one-sided mutual beliefs. Namely, they consider the speaker's beliefs about what is mutually believed by her and her interlocutor. Their idea is that a basic goal of a speaker is to modify what a hearer believes to be mutually believed. Thus, the speaker uses tune to add to what she believes the hearer believes to be mutually believed – or not – or to call attention to certain relationships between the propositions realized by an utterance and other propositions that the speaker believes the hearer believes to be mutually believed.

Moreover, the speaker's beliefs are not specified by choice of tune. For example, the speaker chooses the declarative contour H*L-L% for proposition *p*. In this case, the speaker wants to inform the hearer on the proposition *p* by communicating that *p* is to be added to what the hearer believes to be mutually believed between her and the hearer. Thus, the declarative contour does not mean that the speaker herself believes *p*, but that the speaker's beliefs in *p* may be inferred from the combined meanings of pitch accent, phrase accents, and boundary tone as they are used in the specific contexts.

Let me add another example: the contour L*+H L-H% has been considered expressing incredulity, politeness, irony and uncertainty in different contexts. Moreover, it is advisable to divorce intonational meaning from speaker's beliefs in that L*+H L-H% contour can be used to convey either that the speaker believes p (84) or that the speaker does not believe p (85):

(84) A: Who ordered the veal?
B: I'm having beef
L*+H L-H%

(85) A: Here's your roast beef, sir
B: I'm having beef
L*+H L-H%

But I'm vegetarian. There must be some mistake

(From Pierrehumbert and Hirschberg 1990:284, examples 3 and 4)

P&H idea of compositionality of tune meaning is based upon a hierarchical model of phonological domains. The scope of interpretation of tones is the node to which they are attached. Namely, the components of tune – pitch accents, phrase accent, and boundary tones – are each interpreted with respect to their distinct phonological domains – phonological world, intermediate phrase and intonational phrase, respectively. Each type of tone is interpreted over a distinct domain, but contributes a distinct type of information to the overall interpretation of a tune.

Pitch accents convey information about the status of the individual discourse referents, modifiers, predicates, and relationships specified by the lexical items with which the accents are associated. In general, accenting or deaccenting of items appears associated with the speaker's desire to indicate the relative salience of accented items in the discourse. The type of accent chosen conveys other sorts of information status. As far as the interpretations of pitch accent are concerned, P&H claim that H* conveys that the item made salient are to be treated as "new" in the discourse. In other words, the item marked by H* has to be added to the hearer's mutual belief space.

Table 3. The H* accent. The schematization of the F0 contours resulting from different combinations of H* pitch accent and other phrase accents, and boundary tones

Pitch accent	**Phrase accent + boundary tone**	**Type sentence**	**Meaning**
H*	L-L% L-H%	Declarative	It is appropriate when the speaker's goal is to convey information. This contour can also be employed when the speaker believes that the hearer is already aware of the

			information if the speaker wishes to convey that it is mutually believed.
H*	H-H%	High-rise polar question	When the questioned phrase simultaneously conveys information. It is more often used when the speaker believes that the answer to a question is yes – a confirmation question.
H*	H-L%		It is used to elaborate upon some previous statements, for example, in order to provide some details

In all the possible configurations in Table 3, H* maintains its meaning: it represents the attempted adjunction of information to the hearer's mutual belief space.

Approaching tune meaning in terms of hearer's mutual beliefs permits, indeed, a generalization of the H* meaning across both declaratives and interrogative contexts.

Summarizing, using H* the speaker attempts to establish that some particular information is shared in the sense that it has been supplied by the speaker or by the hearer – after being questioned.

The L* accent marks items that the speaker intends to be salient but not to form part of what the speaker herself is predicating in the utterance. In other words, the items marked by this accent are not to be instantiated in the open expression that is to be added to the hearer's mutual beliefs. As already seen, L* typically occur in standard yes-no questions.

(86) Do roses have thorns?

L* L*H-H%

In (86) both *roses* and *thorns* are marked as salient by the L* accent. However, the speaker predicates nothing of these entities. The speaker's motivation for making these items as salient is her will that the hearer makes such a predication. According to P&H, one common interpretation of the exclusion of salient items from the predication of an utterance is that the speaker is not able to include them in some predication.

The same contour L* H-H% may also be used to convey incredulity. In such cases, the L* accent's "salience-without-predication" may be interpreted as signalling that the speaker believes the current instantiation of the open expression to be incorrect. The speaker may also employ L* accents when the instantiated expression is believed already part of the hearer's mutual beliefs. The following example is from P&H (1990:292):

(87) Well I'd like a Pavoni …

L* L* L* L-H%

(from P&H 1990, example 17)

The example (87) is related to the following context: the speaker is asked to supply a list of things she wants for her birthday when her desire for a Pavoni espresso machine is already mutually believed. The speaker communicates that her desire for this gift is already mutually believed by her interlocutor. In this way, the speaker conveys that the desire for her gift is already mutually believed by the hearer. Such utterances may be made for the sake of completeness in listing, as a reminder, or to reassure the interlocutor that she still wants a present that she has already purchased.

Summarizing, the speaker employs L* accents to convey a sense of existing mutual belief. The same prosodic contour can also be used when the speaker does not believe that this mutual belief exists. For example, when the speaker instructs, reprimands, or contradicts the interlocutor, conveying that the information should already be mutually believed even if it is not.

Finally, consider cue phrases. In this case, L* accent is also used as excluding items from the predication of an utterance.[25] According to P&H, cue phrases are expressions such as *ok*, *but*, *now*, *in any case* that function to indicate discourse structure explicitly. Interestingly, Hirschberg and Litman (1987) analyzed the intonation of 100 instances of the word *now* in a corpus of recorded naturally occurring dialogues. When *now* was used

[25] On cue phrases, see also Hirschberg and Litman (1987) and Cohen (1984).

to signal discourse structural – rather than temporal – information, it often received a L* accent. When deictic *now* formed part of a larger phrase, it received a H* or a bitonal accent, never L*. It would mean that the communication of structural information correlates with the use L*.[26] So, L* accents are used by the speaker to exclude the accented item from the predication the speaker intends to be added to the hearer's mutual beliefs. There may be various reasons for and interpretations of this exclusion - including the use of L* in yes-no questions. The speaker requests the interlocutor to make some predication, or conveys her denial of some part of a previous predication, or conveys that the accented item already figures in what the hearer currently believes to be mutually believed. Finally, L* is often used with items that have been independently analyzed as outside the predication of an utterance – this is the case of cue phrases.

Table 4. The L* accent. The schematization of the F0 contours resulting from different combinations of L* pitch accent and other phrase accents, and boundary tones

Pitch accent	**Phrase accent + boundary tone**	**Type sentence**	**Meaning**
L*	H-H%	Standard yes-no questions Incredulity	
L*	L-H%		It is used to convey a sense of existing mutual belief, also when the speaker actually does not believe that this mutual belief exists

[26] As P&H noted, however, *now* can receive a L* pitch accent also in case it would be questioned (it does not occur in their corpus, though).

Let's now consider L*+H pitch accent. Generally speaking, L+H accent is employed by the speaker to convey the salience of some "scale" linking the accented item to other items salient in the hearer's mutual beliefs. L*+H pitch accent vehicles the lack of speaker commitment to convey lack of predication and to evoke a scale. In the context of a L phrase accent and H boundary tone, L*+H conveys uncertainty about a scale evoked in the discourse.[27] For example, in the following example, B expresses uncertainty about whether being a good badminton player provides relevant information about the degree of clumsiness:

(17) A: Alan's such a klutz

B: He's a good badminton player

L*+H L H%

(From P&H 1990, example 26)

Table 5. The L*+H accent. The schematization of the F0 contours resulting from different combinations of L* pitch accent and other phrase accents, and boundary tones

Pitch accent	**Phrase accent + boundary tone**	**Type sentence**	**Meaning**
L*+H	L-H%		Uncertainty Incredulous reading[28]

According to P&H, the "incredulous" and "uncertain" readings of L*+H L-H% contour hypothesized by Ward and Hirschberg (1985; 1986) can be unified under the notion of "lack of speaker commitment" to the proposed scale or scalar value proposed in

[27] The interpretation of the L*+H accent in the context of a L phrase accent and a H boundary tone has been intensively investigated by Ward and Hirschberg (1985; 1986).
[28] See Ward and Hirschberg (1986)

the discourse. P&H idea is that the contour interpretations in questions are more properly to be considered as associated with the pitch accent L*+H. For example, it is possible to see that at least the "uncertainty" interpretation is still available when a H phrase accent is substituted for a L phrase accent as in (88):

(88) Leo

L*+H H-L%

(From P&H 1990, example 29)

In (88), a pet owner calls a missing and somewhat recalcitrant pet.

Due to their analysis, P&H proposes that the speaker chooses a L*+H accent to convey a lack of predication and to evoke a scale. Together these can give the impression of a lack of speaker commitment.

L+H* pitch accent evokes a salient scale. In this case, the accented item should be mutually believed. The evocation of a salient scale along with predication can convey the effect of speaker commitment to the instantiation of the open expression with the accented item. The most common use of L+H* in P&H data is to mark a correction of contrast (89). In such cases, the speaker substitutes a new scalar value for one previously proposed by the speaker or by the hearer or for some alternative value available in the context.

(89) A: It's awfully warm for January
B: It's even warm for December
L+H* L-H%

(From P&H 1990, example 31)

This pitch accent is also involved also in those contexts of "background" information already studied by Jackendoff (1972). Consider the following example:

(90) A: What about the beans? Who ate them?
B: Fred ate the beans
H* L L+H* L-H%

(From P&H 1990, example 33)

The meaning of the exchange in (90) is something along the following line: "As for the beans, Fred ate them. As for the other food, other people may have eaten it". B produced two different intermediate phrases: "Fred" and "ate the beans". The second intermediate phrase represents the background information and carries the fall-rise pattern on "beans". The "contrastive" interpretation proposed by Jackendoff (which did not give a phonological analysis of the L+H* L-H%) can be accounted for in the P&H framework as a speaker's commitment to a particular instantiation of an open expression with an item chosen from a salient scale (food). In other words, L+H* conveys a strong sense of commitment to the accented item.

Consider now the last two bitonal pitch accents: H*+L and H+L*. Generally speaking, the H+L accents evoke a particular relationship between the accented items and the hearer's mutual beliefs. A salient scale for the accented items is evoked as well. The speaker uses H+L accent to indicate that support for the open expressions instantiations with the accented items should be inferable by the hearer from her representation of the mutual beliefs. The inference can be direct or indirect, and usually is pragmatic - rather than logical - in character. Specifically, when using H*+L accent, the speaker appears to be making a predication in the same sense as when using H*, but H*+L conveys that H should locate an inference path supporting the predication. In the case of items accented by H*, the support in question is not explicitly evoked by the tune. H+L* seems to convey that the desired instantiation of an open expression is itself among the hearer's mutual beliefs. H+L* seems to have the same meaning as H*+L with the difference that H+L* does not make a predication. Probably, this pitch accent is used when the predication is already mutually believed. However, P&H collected only a few examples of the H+L* and they show to be less confident on its interpretation. More data are needed. Consider some examples:

(91) I know you have great credentials
H* H* H* L-H%

a. I'm looking for someone with just such credentials
H* H*+L H*+L H*+L L-L%

b. I'm looking for someone with just such credentials
H* L L%

(From P&H 1990, example 36)

By (91a), the speaker conveys that the instantiation of "I'm looking for someone with x" is particularly salient and that the interlocutor should infer it from the hearer's mutual beliefs. Perhaps, the fact that the speaker has mentioned hearer's credentials is included in the relevant beliefs while the interview is in progress. On the other hand, in (91b), the speaker does not impart additional salience to the interlocutor's credentials. Nor does he convey that the interlocutor should look for an inference path between 'I'm looking for someone with x" and other interlocutor's mutual beliefs. H*+L accent can also have a pedagogical flavor in the sense that it facilitates pointing to inference relationships between old and new information – a very useful technique used by teachers. The same is used as well when reading instructions.

When followed by an H phrase accent, the same pitch accent gives rise to a very distinctive pattern that has been defined in literature as "calling contour" (24).[29]

(92) Jimmy
H*+L H-L%

Dinner
H*+L H-L%

(From P&H 1990, example 40)

Interestingly, as P&H have already noted, according to Ladd (1978), the same contour is inappropriate for calling out in a real emergency:

(93) #Fire
H*+L H-L%

(From P&H 1990, example 42)

As far as H+L* pitch accent is concerned, there is some difficulty in separating the meaning of H+L* from the meaning of H*+L. However, based on the few data available P&H

[29] See Pike (1945).

hypothesized that H+L* is used to convey that the instantiation of the expression is already present among the hearer's mutual beliefs.

(94) It's unconceivable that we'll make that connection

H* H+L* L-L%

(From P&H 1990, exemple 44)

The idea is that in (94), the hearer should already know this fact.

Thus, in conclusion, the meanings of the starred tones are shared by the different types of accents. When the starred tone is L (L*, L*+H and H+L*), the speaker does not convey that the instantiation of the open expression by the accented item should be added to the hearer's mutual beliefs. When the starred tone is H (H*, H*+L and L+H*), the speaker does intend to instantiate the open expression in the hearer's mutual beliefs. Items differing only in the location of the star have closely related meanings. L*+H and L+H* evoke a salient scale, whereas H*+L and H+L* convey that the interlocutor should be in a position to infer support for the instantiated expression. Generally speaking, the observations of P&H suggest that the meaning of each pitch accent may be derivable from the meanings of its constituent tones along with some generalization about the interpretation of the star. However, the interpretation of bitonal accents has to be further investigated.

Phrase accents have scope over intermediate phrases and may consist of either H or L tone. These tones appear to indicate the presence or absence of an interpretive as well as a phonological boundary. An H phrase accent indicates that the current phrase is to form a larger composite interpretive unit with the following phrase. An L phrasal tone emphasizes the separation of the current phrase from a subsequent phrase. For example, the use of an H phrase accent in listing conveys that the resulting list is intended to be exhaustive.

(95) Do you want apple juice or orange juice
H* H

(96) Do you want apple juice or orange juice
H* L

(Adaptation from P&H 1990, examples 48 and 49)

By using an H phrase accent in (95), the speaker emphasizes that "apple juice" and "orange juice" form an entity, i.e., the set of (all the) available juices. By using an L phrase accent in (96), the speaker emphasizes the separate status of each type of juice and thus does not evoke a larger interpretive entity.

P&H conclude that the presence or absence of a phrase boundary can influence the interpretation of the scope of disjunction. The type of phrase accent conveys whether or not the resulting disjunction will be as exhaustive.

P&H also demonstrate that the phrase accent's choice can also influence the interpretation of the relationship between conjoined clauses. They analyze some structures with the so-called asymmetric "and".[30] The notion of asymmetric "and" capture that "and" can convey temporal, causal or enablement relationships between conjoined clauses. According to P&H, choice of phrase accent can influence or not if such an interpretation is conveyed. In particular, an H phrase accent can favor such an additional meaning, whereas an L phrase accent does not.

(97) George ate chicken soup and got sick
H* H* H* H H* H* L-L%

(98) George ate chicken soup and got sick

H* H* H* L H* H* L-L%

(From P&H 1990, examples 55 and 56)

In (97), an H phrase accent favors the interpretation that George's ingestion of chicken soup caused his illness, whereas in (98), the causal link just mentioned - though

[30] See also Schmerling (1976).

still inferable – is not intonationally reinforced. Generally speaking, the H phrase accent led to extend interpretations of the second conjunct.

Finally, consider boundary tones. These may also be H or L but have scope over the entire intonational phrase.[31] As such, they appear to play a considerable role in the conveyance and perception of discourse segmentation. P&H proposes that the choice of boundary tone conveys whether the current intonational phrase is "forward-looking" or not – whether it is to be interpreted with respect to some succeeding phrase or whether the direction of interpretation is unspecified. In this perspective, the H boundary tone indicates that the speaker wishes the hearer to interpret an utterance with particular attention to subsequent utterances. An L boundary tone does not convey such directionality. Consider the following examples:

(99) a. My new car manual is almost unreadable
L L%

b. It's quite annoying
L H%

c. I spent two hours figuring out how to use the jack
L L%

(From P&H 1990, examples 59)

In the example proposed in (99), in (99b), the H boundary tone conveys that (99b) is to be interpreted with respect to the following sentence (99c). Crucially, (99b) is not particularly intended to elicit a response (H%). Now contrast (99) with (100).

[31] The P&H (1990) theory has two tones rather than the four proposed in Pike (1954) and Liberman (1975), H and L. The primitives in the model are tone levels rather than tone rises or falls. This permits to describe H*HH% and H*LL%, for example, as involving the same pitch accent (for a different account see Bolinger 1958; Gusshoven 1983). Moreover, the inventory of pitch accents is the same in the nuclear as in prenuclear position. Nuclear configurations differ from prenuclear ones because of the phrasal tones following the accent (for a different model see Crystal 1969; O'Connor and Arnold 1961). For further details, see Pierrehumbert and Hirschberg (1990).

(100) a. My new car manual is almost unreadable
L H%

b. It's quite annoying
L L%

c. I spent two hours figuring out how to use the jack
L L%

(From P&H 1990, examples 60)

The use of H% in (100a) suggests that the sentence itself is to be interpreted with respect to the succeeding sentence (100b). Namely, in (100b), the pronoun "it" refers to "my new car manual", whereas the referent in (100c) is likely to be understood to be "my spending two hours figuring out how to use the jack". In this model, the H boundary tone used in yes-no questions contours also convey "forward reference".

2.2.2. The prosodical contour of rhetorical questions

In this section, I provide a short survey of the most relevant studies available on the prosody of rhetorical questions compared to the prosody of string-identical information-seeking questions. In particular, I will focus on the literature on polar and constituent rhetorical/genuine questions. I take a cross-linguistic approach and the languages considered are typologically different. Therefore, I included some of the so-called head-prominence languages - German, English, Italian and Icelandic - two head-prominence tone languages – Cantonese and Standard Chinese - and one head/edge-prominence language – Japanese.[32]

As it will be clear at the end of the following section, the main finding is that rhetorical and information-seeking questions differ reliably in terms of the following

[32] For further details on the typologically different prosodic systems of the languages included in this survey see Jun (2014) and Dehé at al. (to appear).

characteristics: the position and type of pitch accent and the type of boundary tone (F0-features).

No unambiguous descriptions of the prosodic realization of rhetorical questions have been provided yet (Dehé et al. to appear). In the semantic literature, what has preferentially considered is the path of the boundary tone, namely if the sentences show high vs low terminus (e.g. Han 2002).

Rhetorical questions are deemed to have assertive properties, low boundary tone included, whereas genuine questions are considered to have high boundary tone. However, corpus and experimental studies on English (Dehé & Braun 2020b), German (Braun et al. 2019; Wochner et al. 2015), Icelandic (Árnason 2011; Dehé & Braun 2020a), Cantonese (Lo et al. 2019) and Japanese (Miura & Hara 1995) do not fully confirm this difference between rhetorical and genuine questions. In these languages, polar rhetorical questions commonly end in a final fall; however, they can end in a final rise (H%) as well. The same holds for Italian. Traditionally, it has been assumed that rhetorical questions are associated with low boundary tone (Crisari 1974; Lepschy 1978; Stati 1982). However, recent experimental studies do not fully confirm this hypothesis (Sorianello 2018; 2019). The case of wh-questions is even less clear: in languages such as English – Icelandic and German – information-seeking wh-questions and rhetorical questions typically share the same falling intonation contours.[33] This controversy is because rhetorical questions have always been studied as a heterogeneous group; they have not been classified as separated types and studied as such. Moreover, not enough studies have been conducted using objective experimental methodologies such as acoustic analysis and F0 contour inspection. This inhibited a fully comprehensive account (Dehé et al. to appear). For these reasons, the present – experimental and theoretical - work focuses on a unique and well-described category of rhetorical questions, i.e. surprise questions. For this type of rhetorical question, a syntactic and prosodic analysis is available (Giorgi 2018; Giorgi and Dal Farra 2019). This analysis presents an elegant and not *ad hoc* syntactic hypothesis that accounts for the (i) peculiarity of the form and functions of the structures at issue and (ii) for the close correlation observed among prosody, gesture and rhetorical interpretation.

[33] Árnason (2011) for Icelandic; Bartels (1999); Hedberg and Sousa (2002); Hedberg et al. (2010) for English; Grice et al. (2005); Kholer (2004) and Oppenrieder (1991) for German.

2.2.2.1. The boundary tone of rhetorical questions in head-prominence intonation languages

In this brief survey, I consider those studies that have been dedicated to the comparison between rhetorical questions and string-identical genuine questions. Consider the following examples:

(101) a. Who like liver?
b. Does anyone like liver?

Consider (101a-b) as uttered in the following situation: we are a big group of people seated in a restaurant deciding what to order for dinner. I don't know all the people in the group. I want to eat liver and know how many diners – beyond me - like the same dish to check how many portions I have to order. Now consider (101a-b) as uttered in the following context: we are a small group of old friends seated in a restaurant and deciding what to order for dinner. In the restaurant, they also serve liver, and I know that all my friends hate liver. In the first scenario, (101a-b) are interpreted as genuine questions, whereas if uttered in the second scenario, they are interpreted as rhetorical questions. In the latter case, the answer is obvious: "nobody".

Rhetorical questions are considered formally (i.e. syntactically and semantically) interrogatives (Dehé et al. to appear). Nevertheless, they would differ from genuine questions in their discourse function. In particular, according to the previous literature, rhetorical questions do not expect an answer (Biezma and Rawlins 2017)[34] and have the feel of an assertion (Caponigro and Sprouse 2007; Rhode 2006). [35] However, it has also been noted that an answer is still possible with rhetorical questions uttered in spontaneous speech. Thus, it has been hypothesized that rhetorical questions would be uttered by virtue of a sort of "uncoupling" – divorce - between meaning and sound.[36] In this perspective, rhetorical questions have the (syntactic) form of real questions but the meaning and the pragmatic force of assertions. They are not requesting information but rather affirmations or communicating a personal opinion. For instance, according to Rohde (2006:143), rhetorical questions do not function as canonical questions, but, instead, they are employed by the speaker to express a personal opinion. In the same vein, Biezma and Rawlin (2017) claim that rhetorical questions are used to extract a commitment to the

[34] Banuazizi and Creswell (1999); Hudson (1975); Ilie (1995); Quirk et al. (1985); Wilson and Sperber (1988); Sorianello (2019).
[35] Gutiérrez Rexach (1998); Han (2002); Quirk et al. (1985); Sadock (1971).
[36] Sorianello (2018; 2019)

rhetorical point from an interlocutor.[37] According to the same authors, in the case of rhetorical questions, even if an answer is possible, it is redundant in that it is in the common ground and obvious to all interlocutors, or it is intended to be added to the common ground.[38] As it is clear from the examples in (101), in the case of the genuine questions, there is a high degree of uncertainty as to the answer on the part of the speaker, whereas for rhetorical questions, there is no uncertainty.

The semantic differences sketched above are considered to be related to the peculiar prosodic patterns associated with rhetorical questions. Rhetorical questions are deemed to have assertive properties, low boundary tone included, whereas genuine questions are considered to have interrogative prosodic properties such as high boundary tone. However, corpus and experimental studies do not fully confirm this difference between rhetorical and genuine questions. Rather, it seems that the terminus of the utterance is not the key criterion across the board. Therefore, another parameter is to be considered: pitch accent.[39]

The opposition between rising and fall has been proposed in particular for English. It has been observed that English genuine polar questions typically have rising intonation (H-H%) and are in association with a low accented syllable (L* H-H%) or with a high rise (H* H-H%).[40] English content questions are typically associated with a nuclear high fall (H* L-L%). Rhetorical questions are assumed to be falling like declaratives (Han 2002). Nonetheless, as far as Western Canadian English is concerned, the edge tone turns out to be distinctive only for polar questions (Dehé and Braun 2020b). Wh-questions predominantly fall to a low terminus (L-L%) in both rhetorical and canonical questions (Bartels 1999). Moreover, polar questions mainly rise in that canonical polar questions rise continuously to a high level in the speaker's range (H-H%), and polar rhetorical questions rise to a mid-level (H-L%). It is true in 85% of the cases in Dehé and Braun's data. When this mid-high plateau occurs, the interpretation of a polar question as rhetorical is highly likely to be correct. Within canonical wh-questions, the typical accent is the peak accent (H*, !H*), whereas rhetorical questions show a rise to a high peak (L-!H*). Within polar questions, the difference between rhetorical and canonical questions is less obvious in that, in both cases, the typical pitch accent is L* across the board. However, taking nuclear accent and edge tone together tells the difference: a final rise to high is more frequent in information-seeking questions.

Interestingly, in polar questions, the position of the nuclear accent also plays a role. A rising nuclear accent (L*+H) was associated with the syntactic subject in about one quarter of rhetorical questions (Dehé and Braun 2020b). It was the case in less than 5% of

[37] See also, among the others, Anzillotti (1982), Han (2002), Sadock (1971), Quirck et al. (1985), Chen (2006), Gutierrez-Rezach (1988), Caponigro and Sprouse (2007).
[38] See also Rohde (2006) and Caponigro and Sprouse (2007).
[39] In this work I do not consider two other relevant parameters such as duration(/speech rate) and voice quality.
[40] See Bartels (1999), Hedgberg et al. (2017); Hedberg and Sousa (2002), Pierrehumbert and Hirschberg (1990).

canonical questions. Thus, a nuclear accent early on in the utterance, unless due to information structure, hints to rhetorical interpretation. If the early nuclear accent combines with H-L%, it strengthens signalling rhetoricity. Summarizing, a nuclear accent on the subject (nuclear area) followed by H-L% for polar questions, and L-!H* on the object noun followed by L-L% for wh-questions have the highest possibilities to signal rhetoricity, according to Dehé and Braun (2020b).[41] Consider now Banuazizi and Creswell (1999) data on American English. The authors investigated the intonation of polar questions in the American English SWITCHBOARD corpus. Of the 102 rhetorical polar questions they analyzed, only 45 ended in a final fall, whereas 57 ended in a final rise (H%).[42] Finally, in another corpus study, Hedberg et al. (2010) analyzed 26 content rhetorical questions. Out of these, 21 ended in falling contours, but five were rising. Therefore, a simple distinction between rising and fall is insufficient for marking the difference between genuine and rhetorical questions in English. Indeed, the nuclear accent contributes to this distinction as well.

In German, genuine wh-questions typically have falling contours, such as rhetorical wh-questions (Grice et al. 2015).[43] An investigation of the prosody of rhetorical questions in German in spontaneous speech, conducted by Bettina Braun and colleagues (2019), shows that content rhetorical questions ended in a low edge tone (L-L%) in mostly 94% of the cases. In Braun et al.'s data, the L-L% terminus is predictive of rhetorical interpretation at a level of 68%, but if combined with an L*+H nuclear accent, the level goes up to 100%. Conversely, canonical content questions are typically realized with a nuclear fall (L+H*) and a falling terminus (L-L%). Within polar rhetorical questions, both illocutionary types generally are rising. However, genuine polar questions are mostly realized with a high-rise edge tone (H-H%), whereas polar rhetorical questions are realized with a mid-high plateau (H-L%) or a low rise (L-H%). Thus, in German, polar rhetorical questions frequently rise

[41] The symbol "!" signals downstep (a downstepped accent). Downstep lowers and compress the pitch range after any of the two-tone (phrase and boundaty) accents. The rules applies iteratively, so that a succession of such accents creates a descending staircase in the F0 pattern. Downstep affects a H phrase accent when one of the two tone accents occurs in nuclear position. The result is a kind of mid-tone, lower than the preceding H tone but still well above the bottom of the speaker's range. The effects of downstep disappear at an intermediate phrase boundary; for each new intermediate phrase, a fresh selection of overall pitch range is made (Pierrehumbert and Hirschberg 1990). Let's see an example from Italian. Consider that it has been hypothesized that downstepped accents in Italian mark less prominent syllables. For instance, a downstepped H+L* pitch accent has been observed in statements tunes. It means that the L target of the H+L* accent lies on the speaker's baseline, whereas its H target is not that high as the peak of accents such as H*, L+H* or L*+H. This might suggest that the H target of H+L* has undergone downstep: !H+L* (for further details see D'Imperio 2002).

[42] Consider that a phrase tune (namely, melody) is defined by its particular sequence of pitch accent(s), phrase accent(s), and boundary tone. Pitch accent render salient the material with which they are associated. This hold regardless of the type of accent involved (L*, H* or bitonal accents). Salience goes with accent location and not with accent type. hrase accent As far as boundary tone is concerned, consider that it contributes information about the intonational phrase as a whole.

[43] For German, see also Kholer (2004) and Oppenrieder (1991).

to a level not as high as genuine questions. However, a relatively high number of rhetorical questions end in H-H%.

Interestingly, the rise in rhetorical questions shows a smaller F0-range with respect to the correspondent information-seeking questions. If the rise to a mid-level (H-L%) occurs in polar questions, hearers can be almost sure that the intended interpretation is the rhetorical one (Braun et al. 2019). As far as the pitch accent is considered, genuine polar questions show a low target, L*, whereas polar rhetorical questions typically show an L*+H pitch accent. When present, the early rise signals rhetoricity very reliably, even reaching 100% in combination with L-L% edge tone. In German, it emerges that a simple binary distinction between a final rise and a final fall, which have been suggested in some of the semantic literature on the basis that rhetorical questions have assertive properties, is insufficient (Braun et al. 2019; see also Dehé et al. to appear). The last consideration: according to Braun et al. (2019), the low and the high tonal target of L*+H accents in rhetorical questions are aligned within the stressed syllable, whereas the peak of L*+H accents is commonly reported to be aligned with the post-tonic syllable.[44]

Unlike in German and English, in Icelandic, the default intonational contour of both polar and content genuine questions is a fall to a low terminus (L-L%), just like in declaratives (Árnason 2011; Dehé 2018; Dehé and Braun 2020a). Consequently, the edge tone generally does not contribute to the distinction between interrogatives and declaratives. The crucial difference between canonical and rhetorical questions is in the pitch accent type employed (Dehé and Braun 2020b). In polar questions, the timing of the nuclear rise distinguishes between genuine polar questions and polar rhetorical questions. There are more late rises (L*+H) in genuine questions and more early rises (L+H* in rhetorical questions). As far as content questions are concerned, genuine content questions have monotonal peak accents (H*, !H*, ∧H*). In contrast, rhetorical wh-questions have bitonal rising accents with the peak aligned with the stressed syllable (L+H*, L+!H*, L+^H*) (Dehé and Braun 2020a).

Finally, consider Italian. Traditionally, it has been assumed that rhetorical questions are associated with low boundary tone (Crisari 1974; Lepschy 1978; Stati 1982). However, recent experimental studies do not fully confirm this hypothesis. According to Grice et al. (2005b), the typical intonation pattern for canonical polar questions in Bari Italian is an early rising nuclear accent followed by a fall to low: L+H* L-L%. The peak in the nuclear accent is reached in the middle of the accented syllable. The typical boundary tone associated with genuine polar questions in Bari Italian consists in a fall to low: L-L%.[45] However, they can also have L-H%, resulting in a final rising contour.[46] Savino (2012)

[44] See among the others, Braun (2006); Lommel and Michalsky (2017).
[45] Italian intonation shows a vast range of regional variability as well as inter-variety variation (see among the others Gili-Fivela et al. 2015). The prosody of Italian rhetorical questions has recently been studied for the Bari variety by Sorianello (2018; 2019). Thus, in this section, I will focus on Bari variety mainly.
[46] See also Gili-Fivela 2015

studied the intonation of genuine polar questions in 15 Italian varieties, including the Bari variety. For the latter, she identifies L+H* L-L% as the most common contour, with an occasional extra terminal rise after the pitch accent (H%). Canonical content questions in Bari Italian are associated with either an H+L*L-H% or H+L* L-L% nuclear contour, namely a nuclear fall to a low accented syllable followed by a final rise or fall (Gili-Fivela et al. 2015). Notice that wh-questions share the nuclear accent with statements. Sorianello (2018) finds differences between edge tones realized in canonical and rhetorical questions. In her data, genuine questions rise more often than rhetorical questions, and L% is the frequent boundary tone for rhetorical questions. Information-seeking questions terminate either in H% or L-H% in over 50% of the cases. Sorianello's data are not in line with previous research on Italian. Commenting on her results, Sorianello (2019) argues that the edge tone reflects pragmatic functions within rhetorical questions. In particular, rhetorical questions used to mitigate the assertion predominantly end in H%, whereas rhetorical questions that amplify a personal opinion have a falling contour, i.e. L%.[47]

I summarize all the data presented in this section in Table 6 and 7.

Table 6. The schematization of the typical prosodic contour associated with polar rhetorical questions in German, English, Islandic and Italian

Language	**Pitch accent**	**Phrase accent + boundary tone**
German	L*+H	H-H%
English	L*	H-H% H-L%
Icelandic	L+H*	L-L%
Italian	L+H*	L-L%

Table 7. The schematization of the prosodic contour associated with rhetorical wh-questions in German, English, Islandic and Italian

Language	**Pitch accent**	**Phrase accent + boundary tone**
German	L*+H	H-L%
English	L+!H*	L-L%
Icelandic	L+H*/L+!H*/L+∧H*	L-L%
Italian	H+L* L+H* L*	L-L%

[47] In Sorianello's data, the difference between content and polar rhetorical questions is in the pitch excursion which in rhetorical wh-questions is approximately three semitones larger than in genuine wh-questions.

The studies reported in this section have shown that we lack a clear and uncontroversial description of the (syntactic) form and functions associated with rhetorical questions. Likewise, we have no clear descriptions of the prosodical pattern accompanying rhetorical questions, in general. This is because the vast majority of the studies conducted on rhetorical questions have inserted many types of different rhetorical questions into a unique category. Moreover, it has been taken for granted that genuine and string-identical rhetorical questions share the same syntactic structure and that a sort of 'uncoupling' between meaning and sound would be possible. However, in all those studies where the category of rhetorical questions has been kept "clean", the data seem to be less ambiguous and confirm what has been traditionally assumed: real rhetorical questions show a low boundary tone. Furthermore, the data on rhetorical content questions are even more clear cross-linguistically: in the vast majority of the cases, rhetorical wh-questions end in a fall. Probably, the morphological cue that marks these constructions (the wh-phrase) easily disambiguate if an answer is required/needed or not.

2.2.2.2. The boundary tone of rhetorical questions in head-prominence tone languages

Unlike intonational languages, which have lexical stress, tone languages have lexical tone; namely, F0 is used to distinguish meanings at the lexical level or mark grammatical distinctions such as tense or case (Yip 2002).[48] The tone languages included in this brief survey – Standard Chinese and Cantonese - belong to head-prominence languages because phrasal prominence is derived from the tonal specification in the lexicon. The overall shape of the F0 contour is considerably constrained by the canonical form of the lexical tones. Post-lexical prominence is achieved by manipulating phonetic parameters such as pitch range and duration.[49] Along with its lexical function, F0 in tone languages also serve post-lexical functions such as information structure and speech acts (Xu 2019).

In Standard Chinese, every syllable carries one of four lexical tones (Chao 1956). Standard Chinese frequently employs particle to signal questions such as 么 (ma), or 吧 (ba). The sentence-final particle *ma* is commonly used to turn statements into polar

[48] Gussenhoven (2004); Yip (2002).
[49] See Jun (2014).

questions. However, sentence-final particles are optional; thus, declaratives and polar questions can be string-identical. In these cases, genuine polar questions are produced with higher overall F0 than string-identical declaratives (Liu and Xu 2005; Yuan 2006), with the difference in F0 becoming larger towards the end of the utterance. For instance, in Standard Chinese tone 4 is still a falling tone in questions, but its range is reduced; tone 2 is rising in questions, but compared to declaratives, it is realized with an enhanced F0 range in the rise. Furthermore, except for the last syllable, syllables are shorter in polar questions than in declaratives (Yuan 2006).

When genuine and rhetorical wh-questions are string-identical, we can see that rhetorical wh-questions exhibit higher F0 contour than the corresponding canonical question, mostly towards the end of the utterance. Yang (2008) observed an increased F0 range in the case of the wh-phrase. Finally, utterance and word duration are shorter in rhetorical content questions than declaratives, except for the wh-word (Yang 2018). The same results have been shown by Zahner et al. (2020), who followed the experimental protocol devised by Braun et al. (2019) for German. In Zahner and colleagues' experiment, all four tones occurred on the last syllable of the sentence. The authors observed that rhetorical questions and string-identical genuine questions differ in F0 properties, duration and voice quality. In particular, rhetorical questions were globally produced with lower mean F0 in the illocutionary type. Regarding local F0 properties, the first constituent ("anyone") showed a wider pitch range in rhetorical questions than genuine questions, mainly due to a lowering in the low tonal target. The target sentences are reported in (102) AND (103):

(102) Yourén chi ningmen me?
Anyone eat lemon Q?
"Does anyone eat lemons?"

(103) Shei chi ningmeng?
Who eats lemons
"Who eats lemon"

At the end of the utterance, rhetorical questions were also lower in pitch than genuine questions, but the overall shape of the lexical tone was preserved. Within both polar and wh-questions, the first constituent showed the largest relative difference between canonical and rhetorical questions.

Cantonese has six basic lexical tones (see among the others, Fox et al. 2008). In addition, Cantonese employs sentence-final particles as well as F0 modifications to convey speaker attitude or emotions (Cheang and Pell 2009). As far as I can see, the study on the prosody of rhetorical questions in Cantonese mainly focused on the wh-question type. Rhetorical content questions in Cantonese are typically falling. However, rising rhetorical

content questions have been found as well. Lo et al. (2019a, 2019b) investigate the prosody of genuine and rhetorical wh-questions in Cantonese using the same experimental protocol devised by Braun et al. (2019). Lo and colleagues find that genuine and rhetorical questions start at a high F0 level, fall throughout the utterance, and terminate at a low level. However, the two illocutionary types differ in the general height of the F0 contour in that rhetorical wh-questions are realized with overall lower F0 and had longer durations.

Let's now consider Japanese. This language belongs to head/edge-prominence languages (Jun 2014) and has a lexical accent and edge tone. In particular, Japanese marks the left edge of an accentual phrase with a rising accent and the right edge with a low tone. About half of the words of the Japanese lexicon carry a lexically specified pitch accent, specifically a pitch fall on one mora (Gusshoven 2004). In Japanese wh-questions, wh-phrases occur in sentence-initial position or in-situ. Questions can be marked by the sentence-final particle *ka*, which is not obligatory, especially in informal speech. According to some authors, *ka* can also be used in exclamatives as non-declarative markers expressing desirable thought (Itani 1993).

Miura and Hara (1995) conducted an experimental study on Japanese's rhetorical and genuine polar and content questions. These authors found that rhetorical questions were longer in duration with respect to the corresponding genuine questions, especially when they started at a low pitch level. Moreover, rhetorical questions had a larger F0 excursion. In Japanese, the F0 is higher. This finding contrasts with the results shown for the other languages. According to Dehé et al. (to appear) this is because Miura and Hara elicited rhetorical questions expressing disbelief or incredulity along with other types of rhetorical questions, and incredulity is signaled by higher F0. According to Dehé and colleagues, it is conceivable that incredulity became part of the interpretation of rhetorical wh-questions. To summarize, rhetorical questions in Japanese are characterized by longer duration, lower initial pitch and higher final pitch.

2.2.2.3. The prosodical contour in rhetorical questions

F0 is used to mark the difference between genuine and rhetorical questions in all the languages included in this brief survey. In head-prominent intonation languages, F0 is relevant in the variation of pitch accent and edge tones. Two characteristics of nuclear pitch accents are relevant: (i) position and (ii) type. According to the literature presented in this section, the position is relevant in English only and only in polar questions. The

nuclear accent in rhetorical questions may fall on the subject rather than the sentence's final object (Dehé and Braun 2020b). However, this placement is not the typical one: it does occur in only one-quarter of the cases in Dehé and Braun's data. By type of nuclear accents, we relate to two properties: (i) whether a pitch accent is bitonal or monotonal, and (ii) within bitonal accents, alignment of tonal targets with respect to the segmental string.

All intonation languages surveyed here make use of pitch accent types to signal rhetoricity. Nevertheless, Italian does so to a lesser extent: in Bari Italian L* accent in wh-questions seems to be the safest prosodic cue to the rhetorical meaning found (Sorianello 2018). In English and Icelandic wh-questions, the main difference is between a monotonal high accent in genuine wh-questions and a bitonal rising accent in rhetorical content questions, both typically followed by a fall to low. In contrast, the main difference in German is the tonal alignment of rising L+H accents (L+H* in canonical questions, L*+H in rhetorical questions). In polar questions, German mainly uses the difference between monotonal and bitonal accents (L* in canonical questions and L*+H in rhetorical questions). It suggests that L*+H is generally a pitch accent used in rhetorical questions, whereas in Icelandic, alignments are different: L*+H in genuine questions and L+H* in rhetorical questions. in English polar questions, only L* is used. Icelandic does not make use of the final part of the F0 contour at all (both illocutionary types end in a fall, i.e. L%) (Arnason 2011). However, Icelandic questions may use rising intonation to signal "special connotation" such as surprise (Arnason 2011:323). Unlike Icelandic, German and English use the intonational terminus of the utterance to distinguish between canonical and rhetorical questions. However, this does not hold for wh-questions in English typically falling. The most significant difference can be observed in German and English in polar questions: genuine questions are realized with a steep rise. In contrast, rhetorical questions are realized with a mid-high plateau. In these cases, it turned out that it does not present the expected low boundary tone caused by rhetorical questions' alleged assertive-like pragmatic nature (Bartels 1999; Han 2002). Bari Italian has more falling rhetorical questions, which is not perfectly in line with the previous literature (Savino 2012).

In the head-prominence language Japanese and the head-prominence tone languages, Standard Chinese and Cantonese, rhetorical questions have a lower F0 range than genuine questions. In Japanese, which has a larger F0 excursion in rhetorical questions than in genuine questions, the lower initial pitch in rhetorical questions was the strongest cue to rhetorical question meaning. Properties of F0 generally play a crucial role in distinguishing between genuine and rhetorical questions.

2.2.2.4. The prosodical contour in surprise questions

In this section, I propose two examples of surprise questions again. Consider the following scenario: *You know that your friend John is allergic to cats. One day you see him with a big cat in his arms. You are surprised and utter*.

(104) Ma non eri allergico ai gatti?
But not be-past2ps allergic to cats
"But weren't you allergic to cats?"

Now consider the following context: *You know that your son has to study math, but you see him reading a comic when entering his room. You disapprove of his activity and utter*.

(105) Ma cosa leggi?
But what read-2pss
"But what are you reading?"

(104) is a counter-expectational surprise question, whereas (105) is a surprise-disapproval content question. The syntactic representation of the two sentences is given in (106) and (107):[50]

(106) [$_{DIS}$ [$_{CP1}$ …] [ma$_{DIS}$ [$_{EVAL}$ Ø [$_{WH}$ Ø [non eri allergico ai gatti]]]]]
But weren't you allergic to cats

(107) [$_{DIS}$ [$_{CP1}$ …] [ma$_{DIS}$ [$_{EVAL}$ Ø [$_{WH}$ cosa [leggi]]]]]
But what are you reading

As I pointed out in the previous sections, canonical *ma* clauses are not acceptable if CP1 is missing.

(108) [Maria è povera]$_{CP1}$, ma felice
[Maria is poor]$_{CP1}$, but happy
"Maria is poor, but she is happy"

[50] For further details, see section 2.1.4.

(109) ([Maria è povera]$_{CP1}$)*ma felice
([Maria is poor]$_{CP1}$)* but happy
"*but she is happy"

However, when *ma* clauses express an emotional content and are accompanied by peculiar prosody and gesture, the omission of CP1 is allowed (104)-(105). Without CP1, surprise questions are felicitous.

According to Giorgi (2016; 2018) and Giorgi and Dal Farra (2019), this is due to the fact that the missing information in CP1 is available in the context, contextual cues such as prosody and gestural pattern included. Moreover, the authors claim that CP1 on the left of *ma* is not overtly expressed in that it is part of the beliefs in the speaker's mind.[51]

Giorgi and Dal Farra (2019) addressed this issue from an experimental perspective and ran some experiments to test prosodic and gestural components in counter-expectational and surprise-disapproval questions.[52] The authors expected these structures to show a peculiar intonational pattern along with their peculiar emotional interpretation. This prosodical pattern should be different from the one associated with the corresponding canonical questions. The initial empirical observation was the following one: these sentences, in order to be felicitous, need to be accompanied by the appropriate intonation - and co-speech gesture. Thus, the authors devised an experiment able to elicit the components involved in the realization of these sentences, in such a way to highlight their interaction.[53]

In the case of counter-expectational surprise questions, two different tasks were used: production and elicitation. In the former, participants were asked to repeat some sentences introduced by specific contexts, read aloud by the interviewer. After hearing the contexts, participants were presented with the sentences they had to produce. The sentences were in a written form not to suggest a particular intonation. For the same

[51] These observations are coherent with what is generally assumed in the literature on semantics, pragmatics and prosody of rhetorical questions in many languages: the pragmatic context - intended as the beliefs shared by the speaker and her interlocutor - plays a crucial role in making a question rhetorical (see the previous section and section 2.1.).

[52] In this section, I address the role prosodical component. The next section will be dedicated to gestures.

[53] In particular, working in the theoretical framework of the *Minimalist* approach (Chomsky 1995 and related works), Giorgi and Dal Farra (2019) and Giorgi (2016; 2018) hypothesized an integrated model of the three components involved in surprise questions: prosody, gesture, and syntax. These sentences are obligatorily associated with a peculiar intonation and interpretation. In the *Minimalist* approach, the syntactic representation of a sentence interfaces with the sensorimotor component, which yields its phonological and prosodic form, and with the conceptual system, which give rise to its interpretation. The idea is that no direct link exists between the interpretation of a sentence – i.e., its meaning -, and its phonological and prosodic realization – i.e., its sound. This relation must be mediated by syntax, namely, if a sentence is associated with a peculiar interpretation and prosody, this means that it must be associated with a peculiar syntactic representation as well. In the case of surprise questions, the appropriate special emotional interpretation and the mandatory typical prosodical pattern would be triggered by a dedicated projection in the syntactic structure, which is read off at the interface with the sensorimotor component (for all the details see section 2.1.4. and Giorgi 2016; 2018 and Giorgi and dal Farra 2019).

reason, no punctuation was indicated in the written form of these sentences. The participants were asked to produce the sentences in the most natural way. In the second task, the authors elicited spontaneous production. The interviewer read four specific scenarios meant to introduce a counter-expectational value. After each of them, the participants were asked to utter an appropriate sentence as a reaction to that context. No instruction was provided other than "say it in the most natural way". 15 Italian speakers (9 female and 6 males) participated in the repetition task. Out of these 15, 8 participated in the elicitation task as well. In these cases, the elicitation task has been administered first in order to avoid priming effects. The age range was between 16 and 64 years. The variety of Italian investigated is one of the North-Central ones (Ferrara's area). There were a total of 6 contexts presented to participants and 6 consequent counter-expectational questions for each condition. Participants were videotaped. For the prosodic analysis, audio files have been extracted from the videos, annotated and analyzed with Praat and ToBI system.

Interestingly, Giorgi and dal Farra (2019) found that these sentences are associated with a characteristic prosodic contour. Counter-expectational surprise questions and surprise-disapproval questions prosodic contours differ from the ones of the corresponding canonical questions.

In particular, as far as counter-expectational questions are concerned, the distribution of the pitches signals the special values of these sentences, given that, typically, there is an emphatic pitch on the verbal form and/or negation. Crucially, the pitch occurring in these cases has to be distinguished from a contrastive one and other prosodical phenomena. It has a greater extension of the maximum and is positioned late in the accented word (see Dal Farra, Giorgi and Hinterhölzl forthcoming). Moreover, the authors found an alignment among the nuclear syllable of the verbal form and/or negation - carrying the relevant pitch accent - and the stroke of the gesture typically employed by the speakers in these cases of special questions.

This means that there is an alignment among the three components involved in the realization of the sentences in question, namely syntax prosody and gesture.

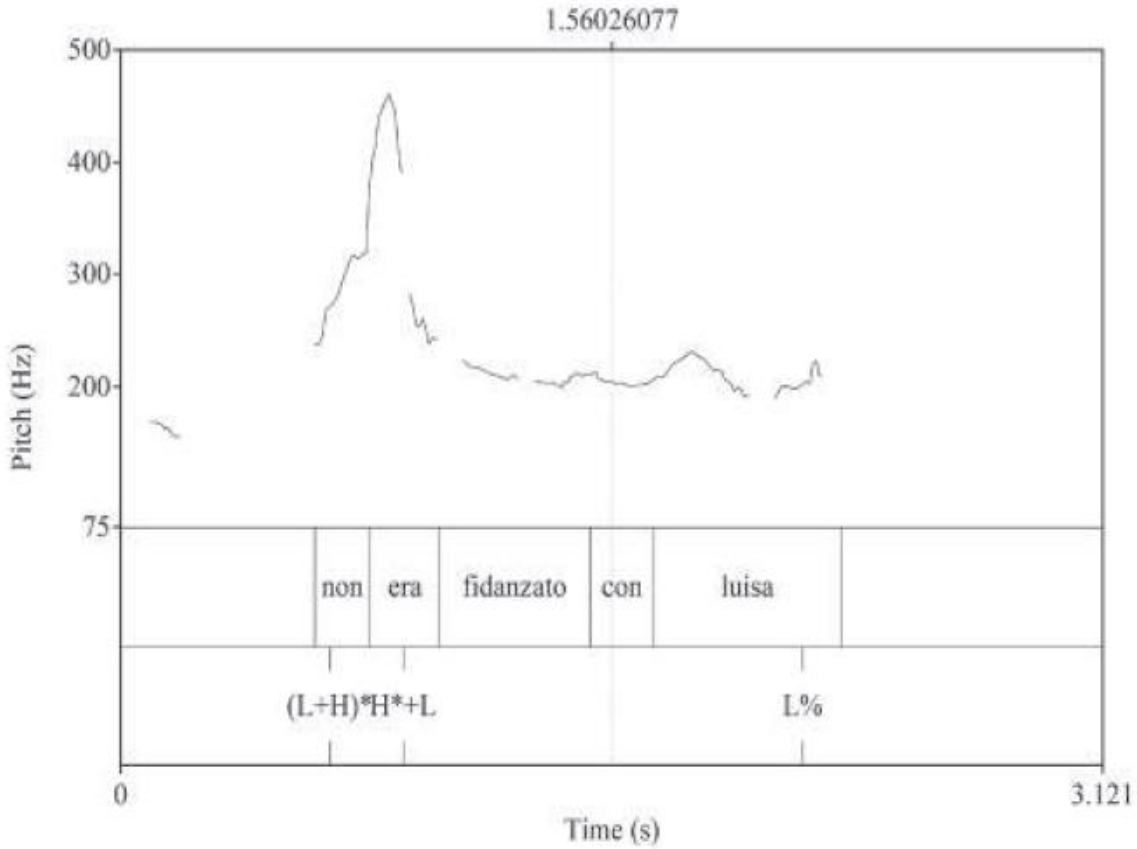


Figure 1. Praat representation of a female speaker uttering the counter-expectational surprise question: "ma non era fidanzato con Luisa?" (From Giorgi and Dal Farra 2019, figure 1)

In figure 1, I reported the Praat analysis of the counter-expectational surprise question "ma non era fidanzato con Luisa?" proposed by Giorgi and Dal Farra (2019:345). This sentence has been uttered in the following context: *You know that Gianni is going to marry Luisa soon, but one day, while you are walking around with a friend, you see him with another woman. You are surprised and say to your friend*.

As said above, the distribution of pitches identifies the special value of these sentences. The most common is a pitch on the verbal form, H*+L. The higher tone can be on the nuclear syllable or even on the post-nuclear one. The pitch is an emphatic one, but crucially it is different from contrastive accents and other focus accents by the greater extension of the maximum, its late position in the accented syllable and by the effect of the lengthening of the accented syllable.

This bitonal accent is usually used to evoke a particular relationship between the accented items and the speakers' mutual beliefs. Generally speaking, the speaker uses H+L accents to indicate that support for the open expressions instantiations with the accented items should be inferable by the hearer from her representation of the mutual beliefs.

Specifically, H*+L accent marks a predication conveying that H should locate an inference path supporting the predication. In this case, the desired instantiation of an open expression is itself among the speakers' mutual beliefs. Indeed, in the counter-expectational surprise question presented in Figure 1 the mutual beliefs consist in the shared knowledge that the man the interlocutors are referring to, i.e. Gianni, is going to marry Luisa soon. In the Italian culture (the concrete linguistic and extra-linguistic "space" in which the mutual beliefs instantiate), this means that the man in question has to be faithful to his girlfriend and strictly monogamous. In other words, he cannot freely walk alone with another woman. The fact that he walked alone with another woman, then, questions the fact that he is going to marry Luisa soon. From a semantic point of you, we can paraphrase as follows: in the speakers' mutual beliefs p about Mario is true – he is going to marry Luisa soon -, but Mario is behaving as ¬p is true – Mario is not behaving like a person that is actually going to marry Luisa soon.

The pitch accent is used to bring into play the shared knowledge and the expression of surprise is due to the clash between the shared knowledge evoked – CP1 in Giorgi and dal Farra's terms - and Gianni's behavior. Notice that, commonly, the pitch accent interests the non-indexical verbal form. Let me explain more in detail: in Italian counter-expectational questions, the presence of the non-indexical verbal form, i.e. the imperfect, is mandatory (Giorgi 2016). In Italian, the imperfect in this case is an anaphoric verbal form that can have non-temporal readings, namely is not interpreted as a past. For instance, it can co-occur with future-oriented temporal phrases. Consider example (110) and confront it with the ungrammatical sentence in (111).

(110) Mario partiva domani
Lit: Mario left (IMPF) tomorrow

(111) *Mario è partito/partì domani
Lit: Mario has left/left tomorrow

(From Giorgi 2016:3, Examples 15 and 16)

(110) has a special modal meaning, in that it can be paraphrased as follows: "Mario had the intention/was committed to leaving tomorrow". The opposition shown in (110)-(111) demonstrates that this property is a peculiarity of the imperfect and not a general feature of past temporal forms in Italian. Now consider example (112).

(112) Ma non partivi oggi?
Lit: But not left (IMPF) tomorrow?

(112) is a counter-expectational surprise question in which the use of the perfect is the same as the one we can observe in (110). (112) can be paraphrased as follows: "But hadn't you the intention to leave today?". (112) has to be understood as uttered in the following context: the speaker knows that her interlocutor, let's say Mario again, said he was leaving in the day their conversation is taking place. However, the day is almost finished, and the speaker has just learnt that Mario didn't buy any ticket for his trip nor he had prepared any luggage at all. She thinks it is impossible for him to leave without any preparation, thus she concludes that he said he intended to leave but he didn't behave as such, actually. Probably, Mario did not have any real intention to leave or something happened that kept him from leaving. (112) is a rhetorical question in that the speaker knows that Mario intended to leave because he had announced it. The answer to (112) is obvious in the given context. In conclusion, the speaker uses the rhetorical surprise question in (112) to express her surprise in discovering that Mario didn't behave as a person that intends to leave contrary to her expectations.

In this context, such as in the case of fictional, narrative or dream contexts, the verbal form is used to express a plan/a fictive event and does not refer to a past event. The imperfect tense does not have any temporal value, in that it does not contribute to locating the eventuality in the past with respect to the utterance time – where the utterance time ultimately coincides with the speaker's temporal location.[54] The speaker knows that Mario said he would leave, but he did not. Consider another example of counter-expectational surprise question:

(113) Ma non era rosso?
But not was (IMPF) red?
But wasn't it red?

(113) is uttered in the following scenario: *Your friend Mary calls you on the phone and tells you that she has a wonderful new red dress to wear at tonight's party. When you meet her at the party, you see that she has a blue gown, you are surprised*. As Giorgi (2016:6) noted, in (113) the embedded verbal form cannot be anchored to the indexical context, in that the redness of the dress is not a fact, but belongs to the realm of the speaker's expectation (CP1). In Giorgi's terms, the sentence in (113) is counter-expectational precisely because the dress is indeed not red. "To be red" in this case cannot be anchored to the utterance event, because the predicate does not refer to the context where the speaker is temporally located. On the contrary, the indicative would have force anchoring to the speaker's temporal location. Consider the exclamative sentence in (114):

[54] For further details, see Giorgi (2016). On the imperfect, see also Giorgi and Pianesi (1997; 2001). For different perspective see Delfitto and Bertinetto (1995), Defitto (2004).

(114) Ma è rosso!
But is red
"But it is red!"

For (114), to be appropriate the dress must indeed be red and the surprise, when entailed, stems from other considerations. For instance, (114) can be uttered in the following situation: Maria and Paolo are in front of a shop looking at the window. Maria points a dress in the window and says to Paolo: "Look at that wonderful blue dress". However, Paolo is seeing the same dress as red rather than blue and thus answer to Maria "But it is red!" In this case, the redness of the dress is a real fact, according to Paolo, and the imperfect cannot be inserted:

(115) #Ma era rosso!
But be-IMP-3ps red
#"But it was red!"

Summarizing, the imperfect stresses the fact that the predicate holds with respect to the speaker's expectations, and not in the real world. It turns out to be coherent with the prosodic feature associated with the verbal form itself – i.e. H*+L pitch accent - and with the analysis proposed for this by Pierrehumbert and Hischberg (1990).

Consider now the boundary tone associated with counter-expectational surprise questions. There is a crucial difference with respect to the intonation of normal polar questions in Italian, in that the boundary tone is usually not high, as in information-seeking questions, but low (L%).

Table 8. The schematization of the prosodic contour associated with counter-expectational surprise questions in Italian

Language	**Pitch accent**	**Boundary tone**
Italian	H*+L	L%

The pitch accent found in Italian counter-expectational surprise questions is different from the pitch accent typically associated with polar questions in Italian and with rhetorical polar questions in Italian as well (see the previous section). The boundary tone is peculiar, in that it is low whereas polar questions usually show a mid-high or high rise at the terminus (L+H%, H-H%).

Consider now surprise-disapproval questions. Giorgi and Dal Farra (2019) investigate the realization of these constructions from an experimental point of view. They devised a repetition task conducted in the same way as the one described for counter-expectational questions presented above. It concerned 8 Italian speakers. The variant of Italian investigated is the one spoken in the Ferrara area.

In this case, the experimenters found a pitch on the verb and/or on the wh-phrase. The intonation is different from the one of a normal content question, in that the boundary tone is low, and not high (H%, L-H%; see Sorianello 2018), and there is a lengthening of the vowels (nuclear and post-nuclear).

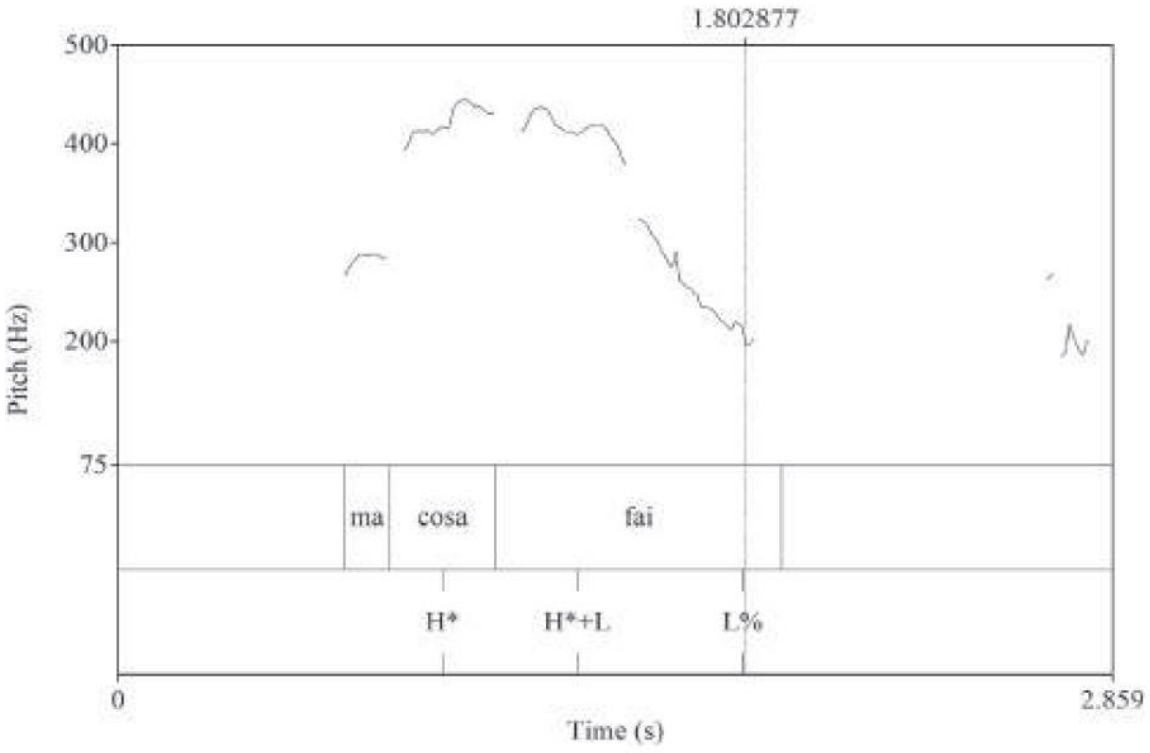


Figure 2. Praat representation of a female speaker uttering the surprise-disapproval question: "ma cosa fai?!" (From Giorgi and Dal Farra 2019, figure 2)

In Figure 2, I reported the Praat analysis of a surprise-disapproval question conducted by Giorgi and Dal Farra (2019:22). This is the uttering of a female speaker of the

sentence “Ma cosa fai?!” (“But what are you doing?!”). The sentence has been uttered in the following scenario: *You see your brother wearing his best trousers kneeling in the dirt in the garden. You think that he will ruin his trousers. You are annoyed and utter*.

Interestingly, surprise-disapproval questions and counter-expectational questions share the same pitch accent type and the same boundary tone type. This bitonal accent is usually used to evoke a particular relationship between the accented items and the speakers’ mutual beliefs. This accent is employed to recall an inference path supporting the predication, namely the speakers’ mutual beliefs. On the basis of the mutual beliefs recalled, i.e. the speaker’s expectations, the speaker uttering the sentence presented in Figure 2 knows what her brother is doing, precisely kneeling in the dirt in the garden. This is not the expected behavior of a person who knows he is wearing new trousers. This is a rhetorical question that does not require the obvious answer to be expressed. The speaker, in this case, just wants to bring up the speaker’s expectations (CP1) and the mutual beliefs relating: she and her brothers know that he is supposed to not ruin his new trousers. This bringing up highlights the clash existing between the speaker’s expectation and the actual behavior of her interlocutor and permits the expression of the related surprise and disapproval emotions.

The same intonational contour has been analyzed by Pierrehumbert and Hirschberg (1990).[55] In their analysis, the contour H* H*+L L-L% is used to convey that the instantiation the predicated items is particularly salient and that the interlocutor should infer it from the hearer’s mutual beliefs. According to the authors, in these cases, an additional salience on the accented item is signalled. In Figure 2 we can see that the wh-phrase receives an H* and the verbal form receives a H*+L accent. Interestingly, the prosodic expression of surprise in these cases differs from the prosodic pattern associated with incredulity – H*+L H%. The surprise in surprise questions arises from the clash between what the interlocutor is “seeing” with her own eyes and her expectations. In this perspective, the retrieve of the speaker’s expectation (CP1) is crucial.

The fact that the two kinds of sentences share the same pitch accent and the same boundary tone is not so surprising. First of all, they are supposed to share the same syntactic representation. Moreover, from an empirical point of view, Giorgi and Dal Farra (2019) found cases of mixed interpretations. Namely, participants tended to add a disapproval value to counter-expectational surprise questions. It was inferable also by the fact that sometimes participants enriched counter-expectational questions realizing them in association with the typical (manual and non-manual) gestural pattern commonly associated with the disapproval value - i.e. furrowed eyebrows and artichoke gesture, mainly. Furthermore, in one case, a speaker contemporarily uses both his hands realizing a PUOH surprise gesture and a disapproval iterated artichoke gesture.[56]

[55] See also section of the present work.
[56] See the next section for further details.

Similar experiments have been conducted on surprise questions in Spanish. Furlan (2019) adapted the same methodology devised by Giorgi and Dal Farra (2019) and employed it in her investigations on counter-expectational surprise questions in Spanish. 8 native speakers have been tested. In this case, as well, an alignment is found among syntax, prosody and gesture.

The pitch accent is found on the verbal form and/or negation. The pitch accent is a bitonal one, in this case as well, i.e. L*+H. Generally speaking, L+H accent are employed by the speaker to convey the salience of some "scale" linking the accented item to other items salient in the speakers' mutual beliefs. The L*+H accent in particular vehicles the lack of speaker commitment to convey the lack of predication and to evoke a scale. According to Pierrehumbert and Hirschberg (1990), L*+H conveys uncertainty/incredulous reading about a scale evoked in the discourse, when associated with H% or H+L%.

As I propose above, the "scale" evoked in the discourse must be intended here as the speaker's expectations evoked by the speaker herself and that serve to highlight the contrast between the speaker's expectation and her interlocutor's behavior – precisely, the interlocutor is betraying the speaker's expectations. However, in this case, the speaker seems to express surprise along with uncertainty. Indeed, in some cases, Furlan (2019) found sentences with the following pattern: L*+H L-H%. Unfortunately, the author reported only a few examples of Praat analysis in her work. My idea is that, at least in some of the cases she reported, further comparisons are needed. It would be useful to compare the sentences in question and their relating Praat and ELAN analysis in order to check the actual (pragmatic and semantic) interpretation that the speaker/participant intended to vehicle. In this kind of comparative analysis, the use of gestures could have a crucial role in disambiguating and characterizing the pragmatic interpretation of the utterance, for instance, as suggested above.[57] These comparisons could be enlightening also because, beyond these L*+H L-H% cases, Furlan found that in the majority of the sentences participants produced, her data show a low boundary tone (L%). It would be interesting to see if in those L% cases, the same L*+H pitch accent has been found, or whether a H*+L one has been observed, as well. Indeed, whereas H*+L pitch accent has been never found in the previous literature concerning (non-surprise) rhetorical questions in western and tonal languages, L*+H pitch accent has already been found in German (Braun et al. 2019) and in English (Pierrehumbert and Hirshberh 1990). In these cases, already discussed in the literature, this pitch accent signals an incredulous or uncertain reading. It should be noted, in conclusion, also that Furlan found that the syntactic representation proposed for Italian surprise questions can be proposed for Spanish surprise questions as well.

Finally, the fact that in Italian and in Spanish a "scale" is always evoked confirms the central role of the speaker's expectations (CP1) in the interpretation of these constructions.

[57] It will become clear in the following section.

2.2.3. Prosody in sign language

2.2.3.1. Prosody in sign language: The role of linguistic non-manual components

Researchers began paying attention to the prosodic system of sign languages quite early in the history of the field. So early as the late Seventies, it has been noted that different types of utterances in American Sign Language (ASL), such as questions, topics, and relative clauses, were consistently characterized by particular configurations of the face, head, and body, accompanying the signs made by the hands.[58] The pragmatic function of some non-manual markers in ASL was pointed out by Coulter (1978) in the same period. From then on, descriptions of non-manual markers have made their way into nearly all linguistic studies of many sign languages. Nowadays, we have a proper theory of sign language prosody, and we dispose of a considerable quantity of cross-linguistical evidence that substantiate it.

As shown in the previous sections, all the nuances of meanings in utterances are permitted by intonation, namely by particular pitch contours or tunes and the timing of these contours. Different intonational patterns yield different interpretations of a sentence.[59] In particular, part of the meaning of the utterance is conveyed by the intonation and the way it aligns with the linguistic string. At the phonological level, the elements of the intonational systems are the tones L (Low) and H (High), which, accented or not, combine in different ways to form all tunes of the language.[60] Pitch accents are assigned to prominent elements within a prosodic constituent, and intonational contours, made up of several tones including a pitch accent and constituent boundary tones, tend to cluster at the edges of prosodic constituents.

Furthermore, in spoken language literature on prosody, it has been argued that intonation is componentially structured (Pierrehumbert and Hirschberg 1990). It means that any individual tone is associated with a particular meaning or pragmatic function. It is possible to combine the tones and put them together to produce a combined meaning (Hayes and Lahiri 1991).

There is alignment between syntactic and prosodic constituents. However, a kind of non-isomorphism is possible in this domain. Indeed, whereas specific tunes are typically

[58] Liddell (1978; 1980); Baker and Padden (1978).
[59] For spoken languages, see Gussenhoven (2004); Pierrehumbert and Hirschberg (1990).
[60] For spoken languages see Pierrehumbert (1980).

identified with particular syntactic structures, pragmatic contexts such as knowledge, expectation, or uncertainty often result in an atypical intonational tune. Interestingly, in this domain, the literature on intonation of spoken languages emphasized that a declarative can get a questioning, incredulous intonation if the fact told in the declarative is unexpected. It has been noted that the reverse is also possible in that rhetorical questions, which have the syntactic form of questions, can be accompanied by a declarative intonation. In this perspective, intonation, thus, expresses meanings often determined by pragmatics and conveys illocutionary force and other discourse meanings like shared or expected information. Intonation is also considered as the marking for emotional affect, in a way that has been termed paralinguistic (Ladd 1996).

The idea that facial expression and other non-manual markers function in sign language like prosody in spoken language is a long-standing idea. Also, in this area, the first works on the topic are dated to the late Seventies.[61]

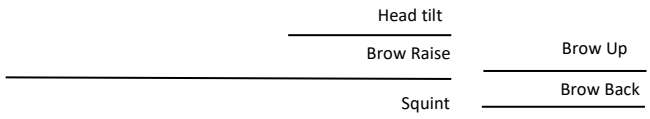
Studies on ISL showed that the facial intonation markers of sign language co-occur simultaneously and typically span the entire prosodic constituent. However, as in spoken language, the most salient intonational arrays are aligned with prosodic boundaries. Liddell (1980) describes certain articulations, such as brow raise and head tilt, in various sentence types. Later studies in ASL show that forward head or body leans denote inclusion/involvement and negation (Wilbur and Patschke 1998). In sign language, rhythmic (temporal) structure is conveyed by the hands mainly, while the equivalent of intonation is articulated by the face. Prominence relies on features associated with manual articulators conveying signs and is also enhanced by leans of the body[62].

In ISL, the meanings of individual facial expressions are shown to combine to create expressions with complex meanings. For example, a combination of the raised eyebrows of yes/no questions and the squint of 'shared information' is found on yes-no questions about shared information, such as in questions like the one proposed in Nespor and Sandler (1999): *Have you seen that movie we were talking about?* Similarly, the furrowed brow of wh-questions combines with the 'shared information' squint in wh-questions about shared information, such as in the following question (see Sandler 1999b; 2003): *Where is the apartment we saw together?* In these cases, each facial feature contributes its meaning to the complex whole in a componential system.

The occurrence of combined expression is also reliable in ISL counterfactual conditionals. These structures have been investigated by Dachkovsky (2008). She argues that brow raising conveys a general meaning of dependency and/or continuation, much like High Tone (H) in spoken language.[63] In questions, the continuation marked by brow raise leads to the answer to be contributed by the addressee. In conditionals, the

[61] See for example Baker and Padden (1978).
[62] See Pfau et al. (2012) for a systematic overview.
[63] See also Dachkovsky (2005) and Dachkovsky and Sandler (2009).

continuation marked by raised eyebrows leads from the if clause to the consequent clause. Brow raise characterizes both yes/no questions and conditionals in many sign languages. The facial action squint, common in ISL but not widely reported in other sign languages, instructs the interlocutor to retrieve shared but not readily accessible information. It occurs on topics, relative clauses, and other structures. Put together with brows raised in conditionals, the squint conveys a meaning of an outcome that is not readily accessible because it is not realized – i.e., what the authors termed counterfactual conditional. One example of the counterfactual conditional in ISL is given in (5):



(5) IF GOALKEEPER HE CATCH-BALL WIN HAME WIN
"If the goalkeeper had caught the ball, they would have won the game"

(Adapted from Figure 1, Dachkovsky and Sandler 2009:292)

As Pfau et al. (2012:67) note, interestingly, Dachkovsky (2008) presented some cases of non-isomorphism between syntactic structure and intonational meaning. Thus, in sign language prosodic phrasing can vary and undergo restructuring. Prosodic and syntactic constituents are not always isomorphic.[64]

Dachkovsky (2005) observed that whereas wh-questions typically occur with the furrowed brow facial expression in ISL, other expressions are also possible. Consider the example and the related context and instruction she gave: *You went to a party in Haifa and saw your friend Yoni there. If you had known he was going, you would have asked for a ride. The question you ask him is: "Why didn't you tell me you were going to the party"?.* Syntactically, this is a wh-question. However, the facial expression is different from the expected one, i.e. furrowed eyebrows. She found, instead, exaggerated raised eyebrows, widened eyes and open mouth, namely an expression that can be attributed to affect (see Figure 3). The idea, in this case, is that, as in spoken language, intonation conveys something about the pragmatic assumptions and the emotional attitude of the signer that cannot be predicted by syntax.

[64] In spoken language, prosodic phrasing can vary and undergo restructuring, depending on such factors as rate speech, size of constituent and semantic reasons related to interpretation.

Figure 2. Atypical facial expression coextensive with a wh-question in Israeli Sign Language (Figure 4.7 from Pfau et al. 2012:67)

2.2.3.2. Affective non-manual components in sign language: affect in communication among signers

As in spoken communication, the face also conveys paralinguistic meanings such as affect in communication among signers (Campbell, Woll, Benson and Wallace 1999, McCullough, Emmorey and Sereno 2005). In sign language, activation of the same articulator may serve a variety of grammatical functions.[65] However, physical properties alone cannot distinguish prosodic units from other kinds of non-manual elements. Movements of the face, head and body often play an important role in prosody, but not all non-manual articulations are prosodic. For instance, the head performs the prosodic functions of delineating constituency and marking prominence, but it is also active in the syntax, as logophoric pronoun expressing point of view.[66]

Some facial actions are considered affective (Baker-Shenk 1983; Dachkovsky 2005; 2010; de Vos et al. 2009). The system would employ at least some of the same articulators as linguistic facial expressions, but has different properties in terms of temporal distribution, number of articulators involved and pragmatic functions. The idea is that some intonational facial configurations are affective and are to be termed paralinguistic (Ladd 1996). These elements, attributed to prosody or intonation, are instead - at least sometimes - non-linguistic gestures. For instance, according to Pfau and Quer (2007), this is the case of headshake negation. The authors assume that the signal is part of the syntax; however, it seems unclear whether this signal has prosodic properties or whether it belongs to the same grammatical component in different sign languages.

[65] See also Pfau and Quer (2010).
[66] See Lillo-Martin (2005) and Mazzoni (2009) for LIS.

To summarize, the face can carry both linguistic and paralinguistic information. However, it has always been argued that these elements are distinct in their formal properties such as scope, onset, and apex (Corina, Bellugi, and Reilly 1999): (i) while linguistic facial signals are hypothesized to align with phrasal boundaries within the signed sentence, affective facial signals may spread over longer periods of conversation and not line up strictly with phrasal boundaries, (ii) the onset and offset of affective expressions are more gradual compared to the abrupt appearance changes in a linguistic facial expression, (iii) with linguistic non-manual components the intensity of the facial expression rises suddenly to its peak and stays constant before again going down abruptly. Affective facial expressions, on the other hand, would have less constant apexes, and their intensity varies over time.

2.2.4. The gestural component

In this work, surprise questions are investigated in a theoretical framework that privileges a multimodal account, i.e. a theoretical account integrating syntax, prosody and gesture. The main idea is that the appropriate interpretation and pragmatic properties of these sentences can be fully captured only by analysing all these components as relevant at the sensorimotor interface (Giorgi 2016; Giorgi 2018; Giorgi and Dal Farra 2019). This theoretical assumption is based on empirical evidence.

In the formal study of the realization of surprise questions in Western oral languages, the three components in question turned out to be aligned in that the most (left-peripheral) relevant pitch accent is realized in correspondence with the stroke of the manual (and non-manual) gestures (Giorgi and Dal Farra 2019; Giorgi, Dal Farra and Hinterhölzl forthcoming; Furlan 2019).[67]

A syntactic hypothesis exists to account for this evidence in a multimodal perspective. Indeed, it has been hypothesized that in surprise questions, a dedicated evaluative head in the left periphery of the sentence is read off at the interface and is realized as typical prosody and gestures. This prosody/gestural - head has the whole sentence in its scope. Indeed, even if, necessarily – for performance reasons –the most relevant prosodic pitch only is aligned with the stroke of the gesture, in the vast majority

[67] This alignment interests the verbal form, negation and/or the wh-word - when present - essentially.

of the cases, the gesture itself begin to be produced at the very beginning of the sentence and lasts for the entire sentence.[68]

Furthermore, gestures that have been found in the case of surprise questions in Western oral languages seem to be less cultural-related than expected. The same type of gestures has been observed in German (Giorgi, Dal Farra and Hinterhölzl forthcoming), Italian (Giorgi and Dal Farra 2019) and Spanish (Furlan 2019). In all these languages, an alignment among syntax, prosody and gestures have been found. Gestures seem to play a crucial role in disambiguating and characterizing these sentences and their peculiar pragmatic features.

Therefore, the present section aims to present what has been observed in the literature on gestures in general and the gestural component associated with surprise questions. This will help the reader tackle the central sections of this work dedicated to my new study on the realization of surprise questions conducted on non-Western languages and Italian Sign Language (LIS) in a cross-cultural and cross-modal perspective.

Since this work investigates LIS among other languages, some brief considerations on sign languages and gestures will be included in the following sections.

2.2.4.1. Introduction

Most researchers in the field of gesture studies agree on the fact that gesture can be considered part of linguistic competence. Gestures and speech form a unified system and are equally involved in the processing and learning of language.[69] Gestures and speech are realized in two different modalities, but they indissolubly integrate. Gesture is central to language and cannot be considered merely an add-on; this means that language includes both the more categorial elements (speech) and the more imagistic (gestural) components (Kendon 2008; 2014). Thus, a full analysis of language needs to include both gesture and speech in their multimodal unfolding.

If this is true for oral languages, it has to hold equally for sign languages, in that these are full-fledged natural languages as well. In the latter case, gestures and signs would be realized in the same modality.

[68] For further details see Giorgi (2016; 2018) and Giorgi and Dal Farra (2019).
[69] See among the others, Goldin-Meadow and Brentari (2012).

Gestures and signs have been given different theoretical treatments, having developed independently along with diverging research fields. Nonetheless, recently the two line-ups are getting closer. Researchers in the field of gesture studies agree on the fact that gestures are part of the linguistic system, whereas sign language linguists are discovering that modality does influence the structure of language, and some of them have revived the claim that sign could be considered (at least in part) gestural. In particular, there are differences between signed and spoken languages that seem impossible to be accounted for within a grammatical framework. These differences could be analyzed using tools developed to code the co-speech gestures that hearing speakers produce when they talk (Goldin-Meadow and Brentari 2017). For instance, this could be the case of the so-called 'agreeing' verbs in sign languages. Sign languages realize the person and number features of the arguments of a verb through agreement in that the verb is signed in the space indicating the position of its arguments explicitly.[70] However, the number of locations toward which the verbs can be directed is not a listable or finite set as the agreement morphemes in spoken languages are. In addition, it is not possible to list all the loci that could serve as possible morphemes for these verb signs.

Indeed, the form of these signs varies as a function of the referents they identify or with which they agree (e.g. Fischer, Gough 1978). For these reasons, Liddell (2003) prefers to call verbs of this sort 'indicating' verbs (rather than 'agreeing' verbs) because they indicate, or point to, referents just as a speaker might gesture toward a person when saying *I told her*.[71] The idea is that the variable components of these signs make them more gestural than linguistic (e.g. Dudis 2004). Howbeit, if gesture can be considered part of linguistic competence, we have to compare signers' productions and speech-plus-gesture directly, suggesting the natural alignment sign-plus-gesture versus speech-plus-gesture (Goldin-Meadow and Brentari 2017). This approach includes sign languages in the theoretical framework presently shared by formal linguistics, psycholinguistics[72] and gesture studies: gestures and categorial components form an integrated system. Signed and spoken languages are coordinate functionally equivalent modes of communication.[73] If this is true, gestures should serve the same linguistic and cognitive functions in both languages. This implies, in principle, that it would be possible to find in sign languages gestures along with signs. Therefore, I focused on the commonalities found in signers' and speakers' gestural forms in this brief survey.

[70] Mathur, Rathmann (2010 a,b); Rathmann, Mathur (2012).
[71] See also Liddel and Metzger (1998).
[72] See Holler et al. (2018) and Holler and Levinson (2019) among the others.
[73] Stokoe and Marschark (1999:164).

2.2.4.2. Gestures in oral languages

This section aims to briefly review the literature on gestures focusing on those gestures that turned out to be typically present in association with surprise questions (see the previous section). Considering that the PUOH gesture has been already fully treated by Kendon (2004), I decided to focus mainly on the artichoke gesture. In my analysis, according to the definitions proposed to date in the literature, the surprise-disapproval artichoke gesture could be defined as neither a co-speech gesture nor an emblem. Furthermore, this gesture is crucially semantically-unrelated. I will show that the categorization of emblematic gestures is not unproblematic, and a more fine-grained classification is needed.

According to the pioneering work by Ekman and Friesen (1969), there are mainly four types of non-verbal behavior. These are co-speech gestures of the following types: regulators, adaptors, emblems and affect displays.

Co-speech gestures are gestures realized in concomitance with speech. They are co-expressive but not redundant in that gesture and speech express the same underlying idea but express it in their own ways and when they represent overlapping aspects, they do so in distinctive ways (McNeill 2005).

In particular, illustrators are movements that are directly related to speech in that they serve to illustrate what is being said orally. In this case, the gesture is related to the content of the utterance and can be used to repeat, substitute, contradict or argument what has been said.

Co-speech gestures or representational gestures are speech dependent in the sense that they do not convey the whole message but rather integrate the information conveyed by the speech. These are semantically-related gestures in that they are related to the words they appear with.[74] Gestures and lexemes cooperate in conveying meaning through two different channels simultaneously. These gestures show a close relationship between their form and their meaning.

In these cases, gestures and speech are organized, such as the gesture, and the linguistic segment representing the same information as the gesture, are aligned temporally.[75] The stroke of the gesture – i.e. the element that can be identified as the strongest movement within the gesture, and that expresses the meaning associated with the gesture - is synchronized with the tonic syllable of the word with which it is

[74] See among many others Chui et al (2018) and Sekine et al. (2020).
[75] See among the others Kendon (1972; 1980; 2004) and McNeill (1992).

semantically related, as pointed out by Kita (1993) and Nobe (2000). Thus, gesture and speech are part of a single production process.[76]

Finally, for the sake of completeness, consider adaptors. These gestures can be considered semantically unrelated in that they are habitual gestural not intended to transmit any message. The gesturer uses them without awareness and to satisfy a bodily need such as scratching or to manage emotions. These gestures are not temporally aligned with the linguistic string.

2.2.4.3. Emblems

Despite the fact that emblems are well-known gestures, there is little systematic understanding of them. Notwithstanding the wealth of empirical studies documenting visual aspects of language existing nowadays, experimental works included, well-controlled stimuli have been scarcely used (Agostini et al. 2018). Most of the existing lists of emblems provide pictures, photographs and glosses for these gestures, but rarely report how glosses are arrived at, how widely the meaning associated to the gesture and expressed by the related gloss is common across a specifiable set of individuals, and what the scope of the gloss may be in terms of how the gesture is used.[77] Crucially, very little is known about the specific, pragmatic contexts in which different emblems can appear. Finally, we have no detailed information about any possible variations in form, modes of inflexion of the gesture, or what significance these may have.[78]

Moreover, the nomenclature for these gestures is not unique. In the literature, we can find different labels to refer to these gestures according to the different aspects the authors want to draw attention to.

The term 'emblem' has been used for the first time by Ekman and Friesen (1969). However, other authors prefer to use the term 'symbolic gesture' (Calbris 1990; Poggi and Zomparelli 1987). In the latter perspective, what counts is that the form of these gestures is not related to what they refer to. Kendon (1987; 1990; 1992) prefers to use the label 'quotable gestures' in that in his perspective, their most outstanding feature is that they

[76] Gesture and speech turn out to be systematically related in time even when the speech production process goes awry. For instance, gesture production is halted during bouts of stuttering (Mayberry and Jaques 2000).
[77] See for a recent and notable exception Agostini et al. (2018).
[78] Except for Sherzer (1973).

can be quoted or cited in a 'correct' or 'citation' form, even though they are not semiotically of the same type. Thus, the category 'emblem' is actually less unified and consolidated than usually perceived. Therefore, it is important to draw a more precise and systematic description of the types of emblems existing.

The need for such a categorial scheme has indeed already been signalled in gesture studies, in that it is hard to classify gestures on how that behavior became part of the people's repertoire, the circumstances in which they are used, and the rules which explain how the nonverbal behavior contains and/or conveys information (Belío-Apaolaza 2019). The task of unravelling nonverbal behavior becomes 'impossible if we fail to consider the possibility of multiple categories of nonverbal behavior' (Ekman and Friesen (1969:49)). Therefore, what we need is a more fine-grained definition of emblematic gestures.

Emblems are gestures that can be used as a substitute for something that might be expressed in words, and that can often be given 'a more or less stable definition' (Kendon 1992:92), as opposed to the improvised nature of co-speech gestures. Emblems are characterized by the fact that their form and their meaning are not directly related: there is no analogy between the form of the gesture and what it refers to (Ekman and Friesen 1969; Ekman 1976; Poggi and Zomparelli 1987; Calbris 1990; McNeill 1992; Payrató 1993; Kita 2009). These gestures are quotable in that they have a 'citation' form (Kendon 1984; 1990; 1992). Moreover, emblems have a direct oral translation, usually consisting of a word or two or, in some cases, a phrase. Crucially, this translation is well known by all culture members (Efron 1972; Ekman and Friesen 1969; Poyatos 1994; Payrató 2003). Given that all members of a community explicitly share the meaning of emblems and that these are always used intentionally, these symbolic gestures are considered the most easily understood nonverbal behaviors. They are also expected to be the most frequently attended to nonverbal behaviors for the same reasons. The speaker is always aware of emblems in that it is an intentional and deliberate effort to communicate. Therefore, these are considered proper communicative behaviors. Some authors compared emblems directly with words and claimed that these elements are learned much in the same way.[79]

As far as their relationship with speech is considered, emblems can repeat, substitute, or contradict some part of the concomitant verbal expression. They are also considered used by the speaker to derogate the import of what is said verbally. Ekman and Friesen (1969:64) claimed that emblems are present mostly when the verbal exchange is prevented by noise, external circumstances or organic impairment (deafness).

Thus, emblems are considered in the literature as a unified class of elements that consistently differs from the co-speech gesture class in that the elements of the former but

[79] Ekman (2004), Ekman & Friesen (1969) and Poggi (1983a) consider emblems such as word-like units; Poggi (1983a) in particular talks about 'lexical gestures' which function as a component of a communicative act whose performative character can differ from one instance to the next. These gestures encode only a reference to a single meaning and can be glossed with a single word.

not of the latter can be realized singly and can have an independent meaning which is not tied to the meaning of the sentence they are realized with (Kendon 1983; Payrató 2003).

However, interestingly, at least some members of this category do not behave homogeneously. First of all, some emblems show a high degree of iconicity. Consider, for instance, the gesture used to invite someone to cut short by repeatedly moving the index and middle finger toward each other to indicate scissors symbolically.[80][81]

Another accepted claim is that emblems are quotable (i.e., citation forms). Nevertheless, this is not so obvious in that we do not have a detailed and systematic description of the precise handshape for emblems realization. For instance, it seems clear that emblems are realized through the interaction of formation parameters, but there is no agreement on which these parameters precisely are and how they interact (Payrató 1993; 2003; Poggi 1983b). Moreover, on the same line, emblems are easily translated using one or two words. Nonetheless, in some cases, the same emblem appears in different pragmatic contexts and in association with sentences with different meanings and interpretations (Belío-Apaolaza 2019). The presence of the same emblem provides a very interesting example, i.e. artichoke gesture, in cases of counter-expectational surprise questions and surprise-disapproval questions which typically deploy different lexical items (Giorgi and Dal Farra 2018; 2019; Giorgi, Dal Farra and Hinterhölzl to appear).[82] Consider in addition that these experimental studies showed that Italian speakers consistently use the artichoke gesture also in a particular experimental condition: the simulation of a phone call. In this case, most of the participants produced the gesture even in the absence of a visible addressee. This suggests that emblems are not uniquely intentional and communicative. Moreover, these gestures typically accompany high 'specialized' constructions such as the special questions mentioned above (surprise questions) in emotional contexts. In these cases, the gesture seems to be connected with the evaluative import of the sentence, i.e. the expression of the emotion at issue. [83] These gestures appear in concomitance with speech, and if the gesture is omitted, nothing changes in the interpretation of the sentence except for an 'impoverishment' of the affective value expressed.

Thus, the alleged emblem at issue is not used to repeat, substitute, or contradict some part of the concomitant verbal expression. It does accompany the speech in that its omission does not change the message's import at all. At the same time, the production of the same gesture in isolation does not necessarily mean always the same thing. For instance, in the online database developed and described by Agostini et al. (2019), the

[80] On this gesture see Ekman (2004), Gullberg (2006), Molnar-Szakacs, Wu, Robles & Iacoboni (2007) and Poyatos (2017).
[81] After all, as Agostini et al. (2018) noted, the 'Kendon's continuum model' (McNeill 1992) emphasizes the transitory nature of distinctions between gestures in this sense.
[82] I will discuss further these cases in section 4.4
[83] Very similar observations have been already done by Kendon (1992), Poggi (1983a) and Cestero (2016; 2017).

artichoke gesture is glossed as "What do you want".[84] This meaning cannot be directly associated with the use of artichoke in the case of surprise questions. The database presented in Agostini et al. (2019) is the result of a study that included a dataset of more than 200 video clips of an actress performing pantomimes (gestures that mimic object-directed/object-use actions; e.g., playing the guitar), emblems (conventional gestures; e.g., thumbs up), and meaningless gestures. 50 Italian and 50 American raters/participants involved in the experiment judged the meaningfulness of the gestures and provided names and descriptions for them. These rating and norming measures are reported separately for the Italian and American raters, offering the first normed set of meaningful and meaningless gestures for further experimental studies.[85]

Let me add some other considerations: at least the emblems of the 'emotional kind' are not in relation with the prevention of the verbal exchange either in case of noise, or external circumstances, or agreement, or organic impairment (deafness) (as suggested by Ekman and Friesen (1969)).

Finally, recall that emblems are usually considered as having mainly a culture-specific meaning. However, since Ekman and Friesen's work (1969), it is clear that there exist emblems that are identical in their form but that have different meanings in different regions of the word. For instance, consider the so-called 'ring' gesture. At the same time, it is possible to find emblems that have the same form and the same meaning cross-culturally and cross-linguistically, such as in the case of the so-called 'nose thumb' gesture (see Morris 1979). Most of the emblems known seem to be culture-specific. However, there are also 'pancultural emblems' (as Ekman and Friesen define them), clearly understandable by members of different cultures. This is commonly the case of emblems that refer to cognitive events (see McClave, Kim, Tamer & Mileff 2007; Morris 1979).

2.2.4.4. Beyond the emblematic flavor: the artichoke gesture

Focusing on the Italian emblem defined by Poggi (1983a) as 'the hand pursue' – i.e. the gesture I have called above 'artichoke gesture' - we can say that this is one of those emblems usually employed as a command, as a request for something specific, as a

[84] https://figshare.com/articles/media/Emblems/7039607?file=12940097 (10/02/2022).
[85] The stimuli are available for download via the Figshare database (https://figshare.com/s/f6d27f6c213e38070842) (10/02/2022).

comment on another person, and as a self-revelatory display, mainly (Poggi 1983a, 1983b, 1987; Poggi and Zomparelli 1987).

"The hand pursue" gesture.
(From https://figshare.com/articles/media/Emblems/7039607?file=12940097 (10/02/2022).

In Poggi's terminology, it is considered 'holophrastic'. It functions as the equivalent of a complete communication act whose performative character is always the same (Payrato 2003; Kendon 1995; Matsumoto and Hwang 2013; Ekman and Friesen 1969).[86] This gesture mainly functions as a request for something or an exclamation and encodes both propositional content and performative. The holophrastic gesture is not related to a precise lexical meaning, nor does it realize a specific propositional content. This gesture is rather used to signal the illocutionary force of the sentence and is also expressively used to a command, as a request for something specific, as a comment on another person, and as a self-revelatory display, namely in the evaluative domain. In this sense, it seems to be speaker-oriented and used in case of questions and exclamation (Payrató 1993; 2003; Kendon 1981; Cestero 2016; 2017; Matsumoto and Hwang 2013).

Interestingly, Poggi (1983b) suggests that holophrastic gestures have a vocal equivalent in interjections that have fixed content - which is not a precise string of lexemes, crucially - and performative meaning and cannot have, as a word can, a variety of syntactic functions. Poggi also noted that interjections typically occur in 'crystallized' contexts. This crystallization is evident in the stereotypical nature of the intonation and stressed pattern of the sentences they co-occur with. According to Poggi (1983b), this holds for holophrastic

[86] Another example of this kind of gestures can be the index positioned against one's closed and slightly protrudes lips, which encodes the propositional content 'I wish you to be silent' and a request that one wish to be granted.

emblems as well. They do not vary according to context as lexical words or co-verbal gestures do. It seems that both morphologically and functionally, there are parallels between interjections and gestures: both can be primary or derived from lexical elements; they can be informative, interrogative, requestive and optative.

Furthermore, Poggi claims that these gestures can express information about the speaker herself. Specifically, it seems that these gestures can appear in true questions and in what she calls pseudo-questions (she used the Italian term "pseudo-domande"). In both cases, the gesture is characterized by an up-down movement, which turns out to be slower, larger and articulated with the whole arm in the case of pseudo-question.[87] Poggi also noted that the facial expression is crucial in assigning a peculiar interpretation to this gesture - if it is ironic, the mouth is posed with a light smile, often skeptical or ironic, the head is inclined slightly to one side. For this reason, she hypothesized that emblems might demand a more elaborate *morphological* analysis. The artichoke gesture associated with pseudo-questions can be ironic. However, it often implies criticism. Accordingly to Poggi, in these cases, such a question shows a crystallized pattern, so that it must be specially marked. The following is an example of 'critical pseudo-question' commonly associated with the artichoke gesture reported by Kendon (1992:103) and cited by Poggi (1983). Consider the given context: *a mother is surprised to see the child she had just fed looking for something else to eat.* The mother utters the following sentence in this scenario: 'Didn't I just give you lunch?'.

This question has something to do with the special questions - surprise questions – investigated in the present work.[88]

2.2.4.5. Gestures projection and co-suppositions

As far as the interaction between the linguistic string and the co-speech gestures is concerned, this work capitalizes on Schlenker's (2018) study on gestures projection and co-suppositions.

In this perspective, what counts is how the gesture interacts with the logical structure of the sentence, namely co-speech gestures are to be analyzed within a presuppositional framework, but with a twist (Schlenker 2018:297). In standard theories,

[87] The artichoke gesture associated with true questions is articulated by a smaller up and down movement and only with forearm. In this case the gesture is extended towards the addressee, the eyebrow are 'slopped' and the mouth is pursued, which serves as an interrogative expression.
[88] See footnote 89. This topic will be treated in detail in the following sections.

a presupposition trigger pp' (e.g. it stopped raining) with presupposition p (e.g. it rained) and at-issue p' (it doesn't now rain) comes with a requirement that p should be entailed by the local context of pp'. By contrast, an expression p co-occurring with a co-speech gesture G with content g comes with the requirement that the local context of p should guarantee that p entails g. Namely, the co-speech gesture triggers an assertion-dependent presupposition, something Schlenkler called a 'co-supposition'.

For instance, if the speaker utters the sentence *John helped his son* accompanying the word 'help' with the co gesture 'UP' (), it means that the gesture triggers the inference that John helped his son by lifting him. Now, if the speaker utters the sentence *John didn't help his son* accompanying the word 'help' with the co gesture 'UP', this time the gesture triggers the inference that if John had helped his son, he would have done so by lifting him. Finally, consider the case in which the speaker utters *Did John help his son?* accompanying the word 'help' with the same co-speech gesture, i.e. 'UP'. In this case, it has been left open whether John helped his son, but it is implied that if he did, it was by lifting him.

These examples show that the context seems to guarantee that the co-speech merely illustrates the expression it modifies, and thus that relative to that context the expression entails the content of the co-speech gesture. In unembedded cases, one can posit that the relevant inference must follow from the context of the conversation. In embedded cases a more sophisticated notion is needed, that of a local context. Consider the following example: the speaker utters the sentence *If little Johnny takes part in the competition, will his mother help him?* accompanying the word 'help' with the co-speech gesture 'UP' (). The inference which is derived in this case is narrowed: besides the fact that it only applies to Johnny and his mother, it is relative to the hypothesis that Jhonny will take part in a competition; and we thus infer that this competition involves some kind of upward movement. Technically speaking, the entailment needs to hold with respect to the so-called *local context* obtained by 'updating' the global context – i.e. the helping situation generally understood – with the antecedent of the conditional – i.e. help that involves lifting in some way.[89] The local context of an expression recapitulates the semantic context already contributed by expressions that precede it, combined with the context of the conversation.

In Schlenker's view, co-speech gestures make meaning contributions that are given by presupposition triggers. I propose just another example here: Consider the sentence *John knew that he had competent students*. The presupposition is the following one: *John*

[89] See also Heim (1983) and Schlenker (2009).

had competent students. In this case the property *λx. x knew that x had competent students* triggers a presupposition *λx. x had competent students*. A hallmark of presuppositions is that they 'project' out of the scope of negation. Indeed, consider that the sentence *John didn't know that he had competent students* imply the following presupposition: *John had competent students.* Finally, we know that presuppositions yield universal positive inferences when they are triggered in the scope of *none*-type quantifiers. The sentence *None of my colleagues knew that he had competent students* implies the following presupposition: *each of my colleagues had competent students*. (Schlenker 2018:299). Briefly, according to Schlenker, presuppositions have a characteristic projection behavior that sets them apart from other inferences and are often taken to have a particular epistemic status: they must follow from what the speaker and addressee take for granted. Co-speech gestures are considered to trigger presuppositions, in this sense.[90]

These considerations concern with patterns of gesture projection, defined as the way in which the gestural enrichments of elementary expressions are inherited by complex sentences. How a particular gesture comes to be interpreted is not considered in this perspective. Consider now an unembedded environment. Given the example already considered above, in the case of the sentence *John UP_(*  *)helped his son* we can see that the gesture (UP) contributes the inference that the helping event involved some lifting. The example can be easily modified so as to involve a minimally different co-speech gesture. For instance, UP can be replaced with a forward motion. In this way, the associated inference would be modified as follows: *John helped his son by pushing him*. In order to strengthen the parallel with presupposition, Schlenker proposes the analysis of co-speech-gestures under a *non*-type quantifier, using as at-issue controls some sentences in which the co-speech gesture is replaced by the modifier *like this*, accompanied with the appropriate gesture.[91] One example could be the following sentence: *None of these 10 guys*

[90] For experimental evidence see Thieu et al. (2017).

[91] Notice that in these cases, *this* is a deictic expression whose denotation must be provided by the context, the gesture serves to make a certain manner of action salient in the context, and *like this* is an at-issue modifier. Let me propose some examples of at-issue entailment and of presupposition (Schlenker 2018:299):

i. At-issue entailment:
   a. John ensured that he had competent students
      ⇒ John had competent student
   b. John didn't ensure that he had competent students
      ⇏ John had competent students
   c. None of my colleagues ensured that he had competent students
      ⇏ some/all of my colleagues had competent students

ii. Presupposition
   a. John knew that he had competent students
      ⇒ John had competent student


UP_( ) helped his son. The relative presupposition entailed is *for each of these 10 guys, if he had helped his son, this would have involved some lifiting*. The other reative example including *like this* could be *None of these 10 guys helped his son like UP_(*  *) this*. In these cases the presupposition entailed is the following one: *for each of these 10 guys, if he helped his son, it was not by lifting him*. In these example, a universal positive inference of the following form is obtained: for each of the relevant individuals x, if x had satisfied the VP, this would have involved an action that satisfied the content of the gesture. This universal positive inference is reminiscent of the behavior of presuppositions under *none*-type quantifiers already treated above but with a twist. This is evident in the sentence *None of my colleages knew that he had competent students*, for instance, which is related to the following presupposition *each of my colleagues had competent students* (see also footnote 91). However, in the latter example involving the gesture, the presupposition is conditionalized on the at-issue component of the modified expression. In particular, in this case, the sentence does not yield the inference that some or all the relevant guys lifted their sons. But they do seem to yield the inference that, in each relevant case, if a guy x had helped his son, x's action would have involved lifting, i.e. the presupposition involves a conditional of the form: if x had satisfied VP, where VP is the modified Verb Phrase. On the contrary, the control example including *like this* – namely, an at-issue modifier – display an unsurprising behaviour: given the meaning of *none*, we understand that *none* of the relevant guys helped his son by lifting him. Hence if a guy helped his son, his action did not involve lifting. In other words, this is the opposite from the inferences triggered by the target sentences.

To strengthen the parallel with the presuppositions, Schlenker (2018) analyses also propositional, quantificational and attitudinal examples. Summarizing, Schlenker's main idea is that wa have to take co-speech gesture to come with a requirement that its content should follow from the contextual meaning of the constituent it co-occurs with. In order to account for the interaction of gestural enrichments with the compositional semantics of the sentences they interact with, we have to take the relevant notion of 'contextual meaning' to be: meaning relative to the local context of the expression. In this perspective a co-speech gesture triggers a presupposition that its content is entailed by that of the

b. John didn't know that he had competent students
   ⇒ John had competent students
c. None of my colleagues know that he had competent students
   ⇒ each of my colleagues had competent students

expression it modifies.[92] The co-supposition triggerd by co-speech gestures can be defined as follows: Let G be a co-speech gesture co-occurring with an expression d', and let g be the content of G. Then G triggers a presupposition d'⇒ g, where ⇒ is generalized entailment. In other words, co-speech gesture triggers a presupposition of a particular sort, namely one that is conditionalized on the at-issue content of the expression it modifies. Co-suppositions are presuppositions of a particular sort, and thus that we can rely on the theory of presupposition to make predictions about co-suppositions. [93]

As it will become clear in section 3.6.2., the gesture accompanying surprise questions in surprise contexts can be counted among the co-speech analyzed by Schenkler (2008).

2.2.4.6. Gestures in sign languages

As we have already noted in the previous sections, human communication contains both categorial and imagistic forms (Kendon 2014), i.e. the speech categorial forms and the imagistic forms in gestures (see also Goldin-Meadow and Brentari 1999). If it can be said for human communication, then we expect that the same holds for oral languages as much as for sign languages, which are full-fledged languages. Thus, it means that the categorial forms of speech in sign language, i.e. signs, have to be accompanied by imagistic components, that is, gestures. Indeed, the interest in the study of gestures accompanying signs is not new. Some authors have already studied the role of face and body gestures co-occurring with signs, identifying in these gestures the same functions as co-speech gestures in oral languages (Emmorey 1999; Sandler 2009).[94]

It has also been proposed that proper hand co-speech gestures can accompany signs in relatively recent times. Duncan (2005) claims that signers can use their hands to gesture as speakers do. These gestures are iconic and interleaved the signs. Signers can modify the hand shape to realise a sign to reflect spatial-imagistic properties of the object/event they

[92] See also Schlenker (2008; 2009).
[93] I treated here only the unembedded cases in that they are the most relevant with respect to the present work. However, Schlenker in his work shows that embedded clauses are particularly helpful to distinguish the presuppositional component from at issue component of a construction. As well as, he provided valid arguments against a supplemental treatment of 'co-suppositions'.
[94] For LIS, see Fontana (2009).

want to describe. It turns out that the signers can idiosyncratically modify their categorial linguistic morphemes to depict an event and/or an object.[95] Duncan (2005) ran a description task in which the participants (native signers) had to describe a scene from a cartoon involving a cat doing things such as ascending a gutter. The signers modified the classifier handshape for animals (3-fingered handshape) to describe the scene accurately, depicting how the cat squeezed during the ascent. All the signers used the same classifier but manipulated it in different ways. It would suggest that signers can intervene on the parameters of sign formation such as handshape and location in gesture-like manners, i.e. idiosyncratically.

As far as the relationship between learning and sign-gesture mismatch is concerned, Goldin-Meadow and Brentari (2012) show that Deaf children gesture as often as hearing children on the same task (the task they run in this experiment concerned the explanation of the answer to a math problem); Deaf produce gesture-sign mismatches and mismatch predict learning in Deaf children: 65% of the Deaf children who produced 3 or more mismatches before instruction succeeded on the math task after instruction, compared to 22% who produced 0, 1, or 2 mismatches. The authors found comparable numbers for the hearing children (62% vs. 25%).

As Goldin-Meadow and Brentari (2017) suggest, the results of this study imply that signers can produce gestures along with their signs that convey different information: mismatches can occur within a single modality (the manual modality) as well.[96]

These findings provide evidence that gestures and signs form an integrated system, just as gesture and speech do in that gestures co-occur with signs and are semantically co-expressive with those signs.

[95] In this perspective, consider also the debate on the so-called agreement verbs, i.e. those verbs that agree with their arguments associating them to different locations in the signing space (Lillo-Martin, 2002; Rathmann & Mathur, 2002). According to Liddel (2000), these verbs can be considered 'composite' in the sense that their categorial component expresses what grammatical role the referent is playing, whereas their imagistic component (indication at a location in the physical space) indicates who the reference is, through pointing. This perspective is coherent with Kendon (2004) who points out that speakers use gestures also to establish spatial locations that stand for persons or objects being talked about.

[96] Consider that these data leave open the possibility that the imagistic information in a mismatch needs to be conveyed in the privileged manual modality (Goldin-Meadow & Beilock, 2010).

2.2.2.7. Crossing the bridge: silent gestures and spontaneous signs

Silent gestures are those gestures that speakers produce in the absence of speech.[97] Experimental studies found that these gestures dramatically differ from co-speech nonverbal behavior. The former typically form word-like units, displaying a consistent linear order. These elements carry the full burden of communication in that they took the resemblance of a whole performative act. Besides the experimental environment, naturalistic circumstances exist where silent gestures emerge as signs, i.e., in situations in which speech is not permitted, but communication is required (Kendon 1988).

An example could be the so-called 'secondary sign language' of the Christian monastic orders imposed by the law of silence.[98] The secondary sign languages often borrow the linear order of silent gestures from the spoken language of the individual who uses them. However, in experimental conditions, when the silent gestures are invented on the spot by participants, the linear order of silent gestures does not adhere to one of the participants' mothers tongues.[99] These silent gestures differ from co-sign gestures, as they are qualitatively different from co-speech gestures. On the other hand, they appear to share many properties with emblems. However, the surprise-disapproval gesture has not the same properties as these gestures in that they can be omitted without changing the message conveyed by the utterance they accompany. The only result, in this case, will be an impoverishment of the emotional content of the utterance.

2.2.2.8. The surprise-disapproval artichoke gesture

Effectively, the surprise-disapproval gesture shows peculiar properties. As already noted in section 2.2.4.3., emblems are considered to be easily translated employing precise and unambiguous corresponding phrases, i.e. strings of one or two words.

[97] On the role of gesture in the learning process see among the others Goldin-Meadow and McNeill (1995) and Goldin-Meadow, McNeill and Singleton (1996).
[98] On the monastic sign language see Barakat (1975); for a review of the so-called 'secondary sign languages' see Pfau (2013).
[99] See the experimental studies already mentioned above and also Goldin-Meadow, So, Ozyurek and Mylander (2008).

Nonetheless, the surprise-disapproval artichoke gesture is not obviously associated with a string of lexemes. For instance, speakers realize this gesture as associated with either counter-expectational surprise questions or surprise-disapproval questions. The interpretation of these sentences has nothing to do with the gloss given to the artichoke gesture emblem in Italian by Agostini et al. (2019), namely "what do you want".[100] This gesture appears only in concomitance with speech. If the gesture is omitted, nothing changes in the interpretation of the sentence except for an 'impoverishment' of the affective value expressed.

Finally, recall that emblems are usually considered as having mainly a culture-specific meaning. The surprise-disapproval artichoke gesture seems to be present in Italian and Spanish. This case might not be an isolated one, in that the so-called 'nose thumb' gesture seems to be spread in more than one culture (see Morris et al. 1979. See also McClave, Kim, Tamer & Mileff 2007; Morris 1979) as well.[101]

2.2.4.9. Conclusions

In gesture studies, the artichoke gesture is commonly defined as an emblem, i.e., a gesture assimilable to the so-called 'silent gestures' defined as 'spontaneous signs' (Goldin-Meadow and Brentari 2017).

However, this brief survey showed that the artichoke gesture observed in surprise (emotional) contexts, seems not an emblem. I also showed the differences between emblems and co-speech gestures. These considerations constitute the basis for the further analysis I will propose in the following chapters of the present work.

Several studies on gestures have shown that there exists a clear correlation between the distribution of the emphatic pitches in the prosodic component and the stroke of the hand gesture (see among the others Kendon 1980, McNeill 1992, and Abner et al. 2015). From an empirical point of view, these findings have been confirmed by recent works on surprise questions (Giorgi and Dal Farra (2018; 2019), Furlan (2019)

[100] See Agostini et al. (2018) and the database their online database accessible at database https://doi.org/10.17637/rh.c.4219988.

[101] It could be argued that Spanish and Italian are languages culturally 'close'. Given that the artichoke gesture is considered typically Italian (see among many others Kendon 1992), the cultural closeness would imply that this gesture is borrowed from Italian in the case of Spanish. In order to verify this hypothesis, the aim of the present work is to investigate the presence of this gesture in surprise-disapproval questions in languages culturally very "far" from the ones investigated before. My aim is to check whether there is a general, perhaps universal, pattern underlying these phenomena. In particular, I investigate Vietnamese, Japanese and Korean – besides a language where prosody and gestures are realized in a different modality as Italian Sign Language is (see also Giorgi and Petrocchi forthcoming).

and Giorgi, Dal Farra and Hinterhölzl (forthcoming). Gestures are not less linguistic than speech and signs, and they can be integrated into the syntactic structure as well.[102]

In a completely different perspective, these same conclusions have been drawn by descriptive studies on quotable gestures in Italian.[103] In her work on the 'hand in pursue gesture' – i.e. what I have called artichoke gesture - Isabella Poggi (1983) noted that this gesture has to be defined as 'holophrastic' in that it functions as the equivalent of a complete communication act whose performative character is always the same. The holophrastic gesture is not related to a precise lexical meaning and does not realize a specific propositional content. In Poggi's informal analysis, this gesture is used to signal the illocutionary force of the sentence. It is also expressively used as a comment on another person and as a self-revelatory display, namely in the evaluative domain.

These observations are coherent with the more formal analysis of (at least some of) the syntactic structures with which this gesture is aligned: in the case of surprise questions, according to Giorgi (2018), the input to the sensorimotor component for prosody and gesture realization is unique in that they are both triggered by the same syntactic property, i.e. the presence of a left-peripheral *Evaluative* head – a prosody/gesture-oriented head in the sense of Giorgi (2014).[104]

One of the aims of the present work is to explore the model proposed above for LIS as well.[105]

Generally speaking, it is not surprising that gestures and signs show similarities: signers and gesturers are subject to the same bodily resources and constraints and share some cultural conventions.[106] In addition, we know that some gestures are used as input

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[102] For a syntactic analysis of this sort see Giorgi (2016; 2018).

[103] See also the analysis of Poggi's works proposed by Kendon (1992).

[104] Consider that Poggi (1983) proposes an example of sentence with which the artichoke gesture could co-occur. This example is reported by Kendon (1992:193). I give these example in (i). I formalize the context proposed by Poggi as follows: *a mother is surprised to see the child she had just fed looking for something else to eat and utters*:

(i) Didn't I just give you lunch?

This is not an information-seeking question in that the mother is aware of the fact that she has just fed her child, actually. She is not asking in order to receive an answer. She is just showing her surprise. This question seem to be one of the same kind of surprise questions I investigate in this work. Consider one of the stimuli I included in my experiment from Giorgi (2016): Scenario: *Mary calls me on the phone and tells me that she has a new red dress to wear at tonight's party. When I meet her at the party, I see that she has a blue gown. I'm surprised and utter (ii):*

(ii) Ma non era rosso?
'But wasn't it red?' (from Giorgi, 2016b, ex. 1)

Consider that the adversative particle 'ma' is usually omitted by the speakers (Giorgi 2016; 2018; Giorgi and Dal Farra 2019).

[105] See also footnote 87.

[106] As it is well known, native Deaf signers and native bimodal/bilingual signers (CODA, Children of Deaf Adults) identify with Deaf Culture primarily. However, consider that Deaf signers who are well integrated in the hearing

for the first generation of signers developing a new sign language (Coppola and Senghas 2010). Nevertheless, there are very few studies addressing the issue of how gestures differ when used within a sign language versus a spoken language. In this perspective, the production of native LIS/Italian bilinguals can shed light on how to make a critical divide between gestures and signs.[107] Consider that few studies to date have compared signs and gestures to determine precisely how they differ. Several authors noted that comparable data on (at least some kind of) gestures in hearing speakers are needed as well (Cormier et al. 2013), along with the fact that gestures and signs seem to share properties that blur the distinction between imagistic and categorial components (Johnston 2013).

Finally, special questions with emotional interpretation have the peculiarity to be (almost) fixed multimodal structures. The gestures involved appear to be mandatory, even if, as opposed to prosody, they do not have a disambiguating role in these cases. In most cases, these gestures start before the beginning of the sentence and last until the sentence is completely uttered, and even longer than this. In the case of special questions, Italian, German and Spanish show striking similarities. Are the regularities found in bodily signals related to the closeness of the cultures these languages belong to? To address this issue, my research also focuses on the interaction of the prosodic, gestural and syntactic components in three culturally and geographically distant languages: Vietnamese, Korean and Japanese, along with a language realized in a visual-gestural modality i.e. LIS.

community and CODA signers – i.e. hearing native signers – are usually part of the hearing society as well (e.g. Lane 2005; Hoffmeister 2007). Please notice that, in the present work, I use the term "Deaf" (i.e. the term with a capital "D") to identify deaf signing people who belong to the deaf culture and community (Ladd 1993). On the contrary, I use the term "deaf" (i.e. the term with a small "d") to identify deaf people that do not use sign language and do not belong to the deaf culture and community.

[107] Bimodal bilinguals are members of the hearing and Deaf community at the same time. *A latere*, consider the fact that as far as the relation between bilingualism and gesture is concerned, we know that when bilinguals switch language, they switch gesture parameters as well. Muller (1998), Nicoladis et al. (2007; 2009), Nicoladis (2007) and So et al. (2009) show that in the case of language switching, bilinguals do not show evidence of transfer of gestures neither if we observe the frequency nor if we observe the salience of the gestures they use. If it could be as well the case of bimodal bilingualism remains an open issue.

3. THE EXPERIMENTS

This chapter presents the experimental design I developed for the present original research on the realization of surprise questions - counter-expectational surprise questions and surprise-disapproval questions - in Korean, Vietnamese, Japanese and LIS. Let me briefly summarize what has been already discussed in the previous chapter.

Special questions are characterized by a special emotional interpretation that is obligatorily associated with a peculiar gestural and prosodic pattern. Consider the following examples from Giorgi and Dal Farra (2019). Context: *Mary calls me on the phone and tells me that she has a new red dress to wear at tonight's party. When I meet her at the party, I see that she has a blue gown. I am surprised and utter* "Ma non era rosso? (But wasn't it red?)" (from Giorgi, Dal Farra 2018, ex. 4). Context: *I see Gianni with his best trousers kneeling in the dirt in the garden. I think that he will ruin his trousers. I disapprove of his activity and utter: "*Ma cosa fai? (But what are you doing?!)*"* (from Giorgi, Dal Farra 2018, ex. 6). Research conducted on Italian (Giorgi and Dal Farra 2019; Dal Farra and Giorgi 2018), German (Giorgi, Dal Farra and Hinterhölzl to appear) and Spanish (Furlan, MA Thesis 2019) show that the gestural, syntactic and prosodic patterns characterizing these structures display striking similarities cross-linguistically. Moreover, these components are aligned in that the stroke of the gesture is simultaneously realized with the leftmost prosodic pitch of the sentence, usually found on the verbal form. The works mentioned above detected the presence of the same manual and nonmanual gestural pattern in all the different languages studied.

To investigate if these similarities are due to the cultural closeness of the languages considered, I ran some experiments (repetition and elicitation tasks) studying the realization of these special questions in three culturally and geographically distant languages, and in a sign language, the prosody of which is realized in the visual gestural-modality (nonmanual components).

The striking similarities observed in the Western languages studied until now are present also in the Eastern languages I investigated and in LIS. Furthermore, I detected a remarkable formal and functional regularity in the nonmanual and manual gestural patterns. Therefore, I hypothesize that the nonmanual components involved in the linguistic expression of surprise and disapproval are universal, and that may be considered as part of Universal Grammar: the nonmanual linguistic/bodily parameters seem to be regularized (synchronic alignment between syntax, prosody, and gestures) and universal

(cross-cultural and cross-modal features). Furthermore, the manual gestural components seem to be less cultural-related than traditionally assumed.

3.1. Introduction

To collect detailed data about the realization of surprise questions in Vietnamese, Korean, Japanese and LIS, I addressed the issue from an experimental point of view, devoting particular attention to their prosodic and gestural components. As already said, these sentences, to be felicitous, need to be accompanied by the appropriate intonation and co-speech gestures.

In particular, for all the languages investigated, I adapted the experimental design devised by Giorgi and Dal Farra (2019). Note that surprise questions have never been studied before in the languages considered here.

The chapter is organized as follows: first, I will present the experimental design I devised for the present experiments (section 3.2.) and the methods and materials employed (3.3.). Then, I will present my expectations and my working hypotheses (3.4.). These are (at least in part) based on the findings reported in the current experimental literature on surprise questions in western languages. Finally, I will show the results obtained (3.5.). I defer the discussion of my results to the following chapter.

3.2. The experimental design

3.2.1. Counter-expectational and surprise-disapproval questions

To collect evidence about the realization of special questions in Vietnamese, Korean, Japanese and LIS, I designed two experiments partially based on the one devised by Giorgi and Dal Farra (2019). My goal was to evaluate the cultural differences in prosody and gestures. Concerning LIS, I devoted particular attention to the prosodic components associated with these structures and to the presence of gestures, which are occasionally realized together with signs.[108]

First, I elicited these structures using an elicitation task. Then, I used the sentences thus obtained to build a repetition task to submit to other consultants. [109]

Given that no previous studies on surprise questions in the languages investigated did exist, the elicitation task aimed to discover which kind of sentences the participants would produce as a natural reaction to the given connotated contexts proposed and if there were some (syntactic) regularities in the types of structures uttered according to the emotional/pragmatic contexts administered. The repetition task aimed to test the peculiar constructions found in the elicitation task on a bigger range of native speakers.

I constructed four trials, one for Vietnamese, one for Japanese, one for Korean and one for LIS. I discuss the trials devised for the non-Western languages investigated in the following section, and I leave the discussion of the tasks in LIS for section 3.2.1.2.

[108] See Godwin-Meadow & Brentari (2017).

[109] Due also to the fact that these kind of sentences were never investigated before in the languages in question, I checked my sentences with native speakers, all of them expert linguists.

3.2.1.1 The elicitation and repetition tasks in non-Western languages

In the elicitation task, I read four specific contexts to introduce a counter-expectational value and four specific contexts to introduce a surprise-disapproval value. After each of them, the participants were asked to utter an appropriate sentence as a reaction to that context. Other than "say it in the most natural way", no instruction was provided.

During the experiment, no reference was made to prosodic or gestural aspects.

The participants were videotaped, and the video material was analyzed with ELAN, and the audio files have been extracted from the videos, analyzed and annotated with Praat and ToBI system.

I obtained four sentences spontaneously produced as a reaction to surprise contexts and four sentences spontaneously produced as a reaction to surprise-disapproval contexts.

The special questions thus detected have been studied and analyzed in collaboration with native speaker expert linguists and recognized as rhetorical questions. Moreover, the (vast majority of the) sentences showed a significant regularity in form and function. Thus, they have been chosen and used to devise a repetition task, which has been proposed to new informants.

Concerning the first informal analysis of the surprise questions spontaneously produced in the elicitation task, note that all the expert native speaker linguists consulted recognize a peculiar prosodic contour associated with the chosen structures. Crucially, all the sentences produced differed by canonical questions from a prosodic and interpretive point of view.

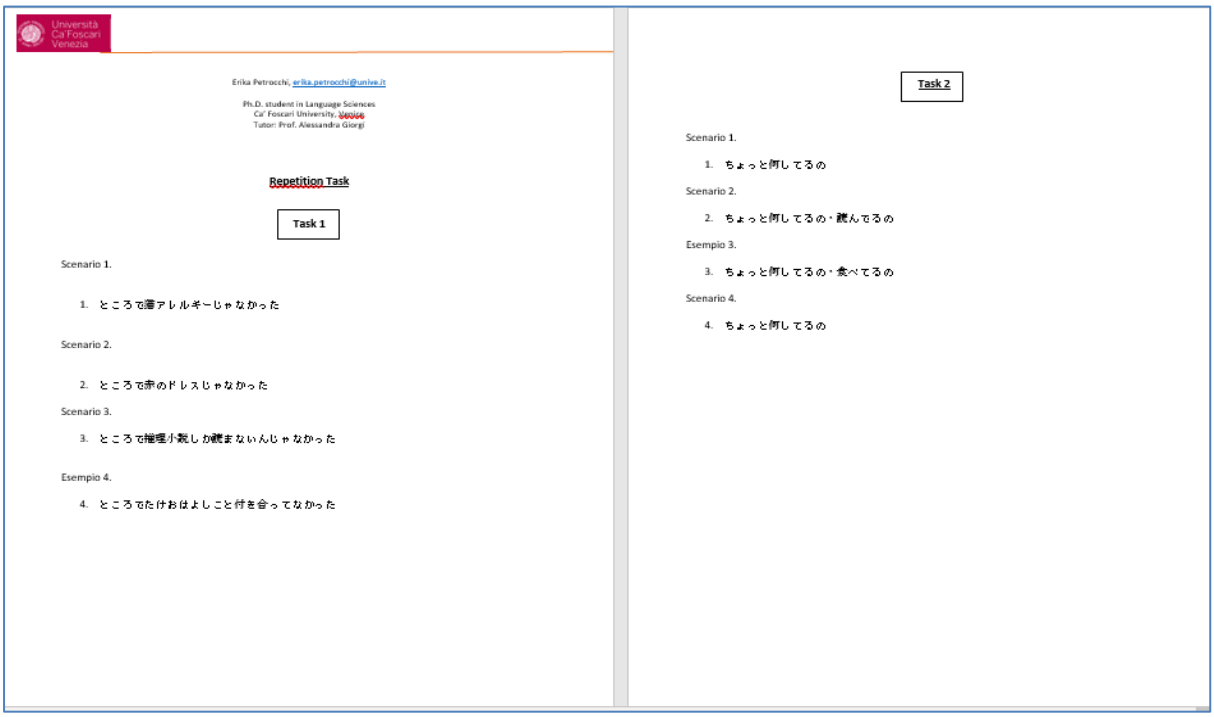
In this experiment 1 Korean native speaker, 2 Japanese native speakers and 1 Vietnamese native speaker participated. The age range was between 20 and 45 years old.

All the participants voluntarily participated in the experiment and signed a Privacy Policy and Consent Form.

In the case of the repetition task, the consultants have been presented with four contexts to introduce a counter-expectational value and four contexts to introduce a surprise-disapproval value. The contexts were read aloud. The contexts were the same used in the first experiment.

In order to standardize the administration of the audio scenarios in Korean, Japanese and Vietnamese, in this experiment, the contexts have been read aloud by a native expert linguist and recorded. Then, all the participants were presented with the (same) recorded contexts. After hearing each context, they were presented with the sentence they

had to repeat. The sentences were presented in a written form, and no punctuation was indicated. No reference to gestures has been made in the instructions. I show in Figure 3 an example of a repetition task in Japanese.



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Repetition Task

Task 1

Scenario 1.

1. ところで歯アレルギーじゃなかった

Scenario 2.

2. ところで赤のドレスじゃなかった

Scenario 3.

3. ところで推理小説しか読まないんじゃなかった

Esempio 4.

4. ところでたけおはよしこと付き合ってなかった

Task 2

Scenario 1.

1. ちょっと何してるの

Scenario 2.

2. ちょっと何してるの・読んでるの

Esempio 3.

3. ちょっと何してるの・食べてるの

Scenario 4.

4. ちょっと何してるの

Figure 2 Example of a repetition task (Japanese). In the picture, "TASK 1" refers to the repetition task on counter-expectational surprise questions, and "TASK 2" refers to the repetition task on surprise-disapproval surprise questions.

The test has been devised as a *PowerPoint Presentation as well*.[110] The presentation consisted of 41 slides. The first slide was a "Welcome" slide which contained a welcome sentence and the author's contact (Figure 4). The last slide signalled the end of the experiment and recalled the author's e-mail address (Figure 5). For the rest, the trial was organized as follows: the first (orange-coloured) slide signalled the beginning of the test. The second slide presented the audio file of the context recorded in the original language.

[110] Unfortunately, because of the pandemic situation due to the Corovinarus, part of the repetition task experiments has been conducted via *Zoom* and *Skype* online platforms. Indeed, from February 2020 to (about) January 2022, it was impossible to meet people in person or to use any laboratory for the same purpose (i.e. face-to-face interviews). In addition, most of the participants who agreed to participate in the experiments before the pandemic were repatriated to Japan, Vietnam, and Korea, for safety reasons, at the time of the interviews. Thus, I had to modify the experimental design further to adapt it to the online media.

After hearing each context, the participants were shown a third slide containing the sentence they had to repeat. Then, the participant had to wait for the fourth slide, a blank slide, signalling the moment they could repeat the sentence. This procedure was aimed to avoid the "reading effect", namely, to avoid the fact that the participant read the sentence instead of repeating it (Figure 6).

Figure 3 The "welcome" slide.

Figure 4"The end" slide.

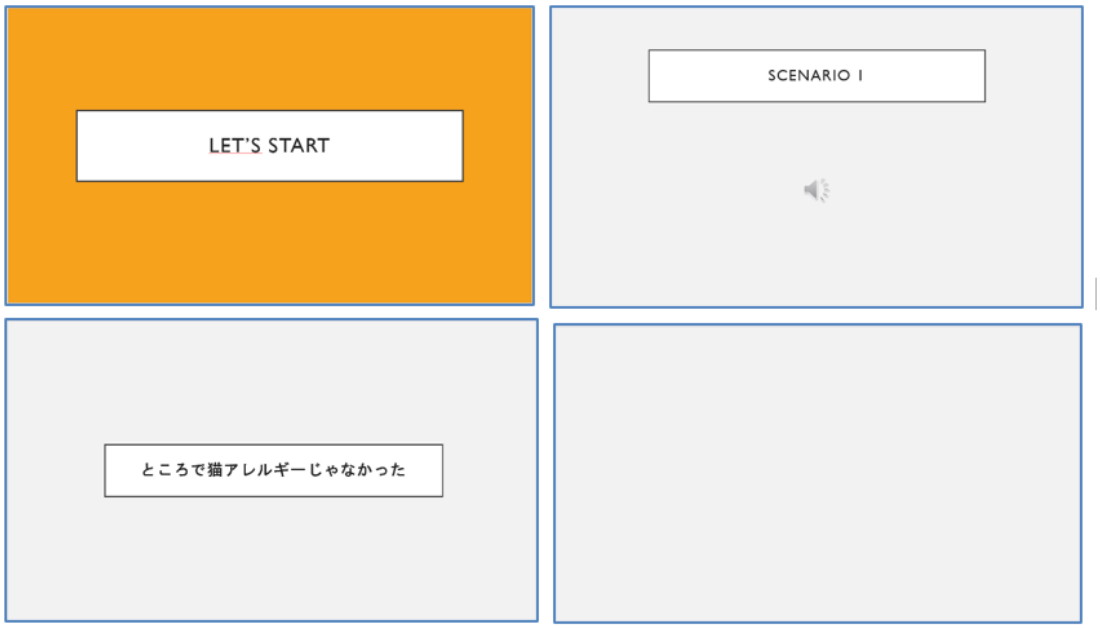


Figure 5 Example of a remote trial. Repetition Task (Japanese).

Thanks to the *PowerPoint Presentation*, it has been possible for the author to control the entire administration of the tests remotely. *Via Skype* and *Zoom*, in sharing the screen and her own computer audio, the experimenter could control the administration of every slide, changing them (each time) on her own. *Skype* or *Zoom* was chosen based on the needs of the participants. Not all the participants could use *Zoom*, especially at the beginning of the online experimentation period. Some participants could use only *Skype*.

The recordings were collected using the dedicated tools made available by *Skype* and *Zoom* platforms and another dedicated software for the screencasting (Wondershare Uniconverter 12.5.3).[111]

The participants were all native speakers, 10 for Korean – 5 females and 5 males -, 10 for Japanese – 4 females and 6 males -, and 5 for Vietnamese - 1 male and 4 females respectively. The age range for all the languages is between 20 and 58.

All the participants voluntarily participated in the experiment and signed a relative Privacy Policy and Consent Form.

All the participants involved in the already discussed experiments have been presented with an anamnestic questionnaire (Figure 7). The goal of this questionnaire was to collect some data about the age of the participants, the region of origin, any cases of

[111] https://www.wondershare.it/ (16/02/2022).

bilingualism or contact with dialectic variants, school and education level in order to control any effect of these possibly influencing factors/variables.

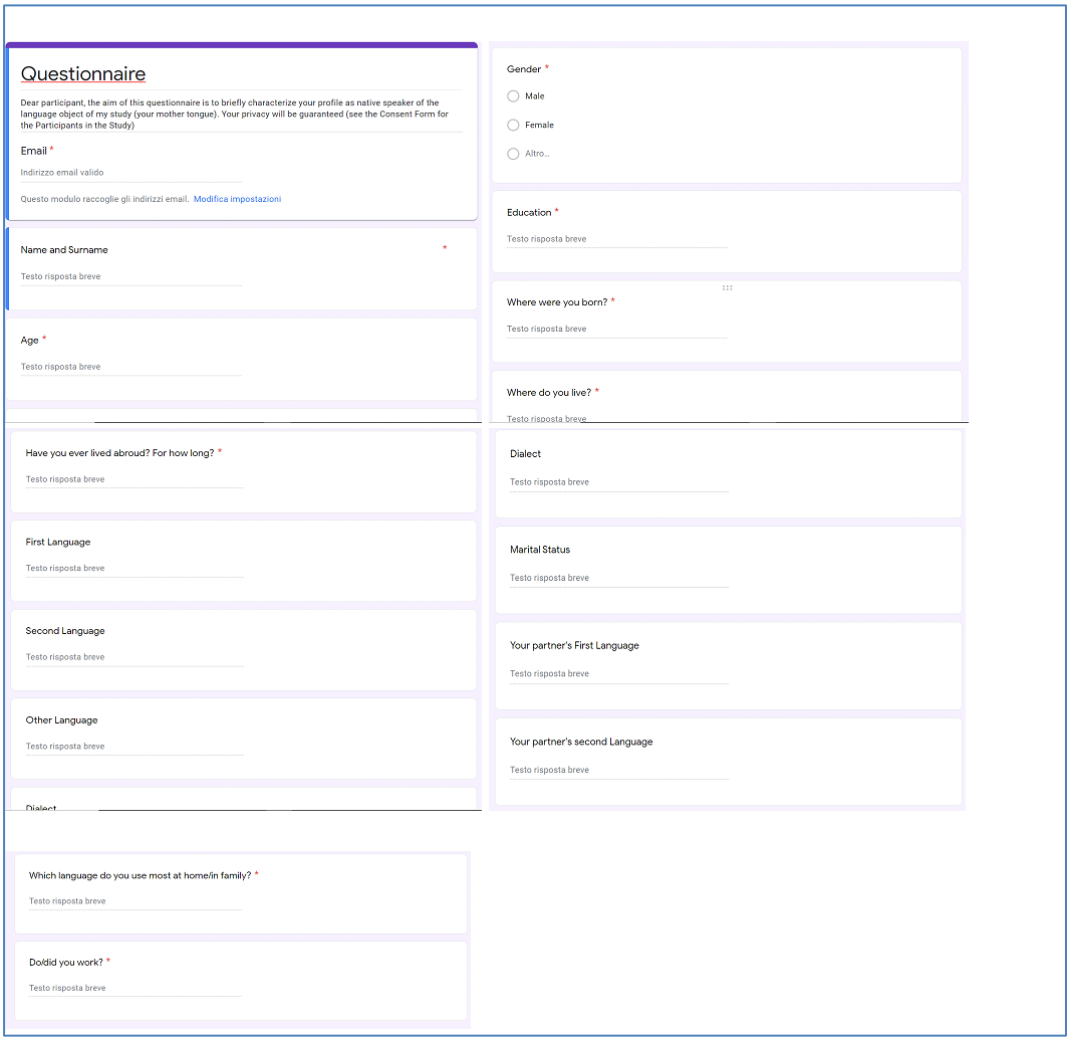


Figure 6 The anamnestic questionnaire.

The anamnestic questionnaire as well has been administered remotely.

3.2.1.2. The elicitation and repetition tasks in LIS

For the investigation of LIS, I adapted the methodology illustrated above to the peculiarities of this language.

As far as the elicitation task is concerned, the participants are two native Italian/LIS bilingual speakers (average age 52). Concerning the repetition task, the participants are two native Italian/LIS bilingual speakers, 7 monolingual Deaf signers and 1 monolingual late signer. The bilingual signers belong to the so-called CODA (Child of Deaf Adults), which means hearing children of Deaf parents.[112] The monolingual Deaf participants are profoundly deaf from birth and use LIS as their first language. They all have Deaf parents. Most of them also have Deaf grandparents, Deaf siblings and Deaf children and are active members of the Deaf Community. In particular, they are all members of the National Club of Deaf People (ENS, "Ente Nazionale Sordi") and live in Florence. The late signer is profoundly deaf from birth, but she was born in a hearing family. Thus, she did not acquire LIS as her mother language.

Moreover, she did not meet the Deaf Community until adolescence. She decided to join the Deaf Community and started learning LIS at 15. She is an adult, qualified LIS teacher and works at the ENS National Club. Her brother is Deaf as well.

The age range is between 19 and 56 years old.

All the participants voluntarily participated in the experiment and signed a Privacy Policy and Consent Form.

With both counter-expectational and surprise-disapproval questions, I elicited spontaneous production by reading four contexts that were meant to introduce specific counter-expectational and four that were meant to introduce surprise-disapproval values. After each context, the signer was asked to sign an appropriate sentence as a reaction to that context. The only instruction was: "*Sign it in the most natural way*". The contexts were provided in Italian because participants were CODA signers. This experiment was taken as a pilot work aiming at building and testing appropriate material to study the production of Deaf monolingual and bilingual signers. One of the goals of this work was to investigate the influence of Italian on LIS in the experimental condition.

The sentences spontaneously produced by the CODA signers have been discussed with CODA and monolingual native speaker expert linguists. The majority of the sentences uttered by the participants showed a significant regularity in form and function; thus, they were and used to device a repetition task, which has been proposed to new informants.

The surprise questions spontaneously produced in the elicitation task showed a peculiar prosodic contour associated with the chosen structures. All the sentences uttered differed from the canonical questions from a prosodic and interpretive point of view.

[112] My CODA consultants are expert linguists who teach at University and active members of the Deaf community.

Interestingly, in the elicitation task, signers spontaneously tended to re-create the scenarios read aloud by the experimenter. Indeed, the participants tended to sign the scenarios after hearing them in Italian. After signing the scenario, the participants produced the surprise question and enriched the sentences themselves, inserting details and personal opinions about the hypothetical situation evoked by the scenarios. For example, consider the following scenario: *You know that your friend John is allergic to cats, one day you see him with a big cat in his arms. You are surprised and sign*. In this case, the CODA signer spontaneously "staged" a dialogue with her hypothetical friend Gianni commenting on his incredible and dangerous behavior saying something on the following line: "you with a cat? Incredible. Weren't you allergic to cats? Do you know it can give you health problems" (Figure 8).

(YOU) KNOW

CAN

PROBLEM(S)

TO GIVE

TO YOU

CATS?!

THAT?!

...

Figure 7 Example of spontaneous production, CODA signer, Elicitation Task (LIS). In the case of the elicitation task, after having re-create/signed the scenario read aloud by the interviewer in Italian, the participant produced the surprise question and enriched the production of the sentence itself, inserting details and personal opinions about the hypothetical situation evoked by the scenario.

The CODA productions and the relative analysis conducted with native signers expert linguists have been the basis for constructing a new elicitation test suitable for monolingual native signers.

This new test included video scenarios signed by a LIS/Italian interpreter. The scenarios have been adapted, translated in LIS and video recorded.

Some contexts turned out to be unsuitable for LIS translation in that they evoked a an unclear situation for a monolingual signer. Let me discuss one example here. Consider the following context: *You know that John is going to marry Luisa soon, but one day, while you are walking around with a friend, you see him with another woman. You are surprised and say to express this your friend.* This context was expected to evoke a counter-expectational surprise value (something on the following line: "but wasn't he getting married to Luisa?"). Among the others, this context was one of the most culturally connotated. For a Deaf person, it was not so surprising that a man who has a girlfriend could also walk around with another woman.

On the contrary, however, the same behavior became surprising if the man at issue was officially married. Thus, we changed the context: *You know that John is married to Luisa, but one day, while you are walking around with a friend, you see him with another woman. You are surprised and sign to your friend.*

The signers/participants were asked to watch the video scenarios in the LIS elicitation task. After each video scenario, the signer had to watch another video presenting two or three signs – depending on the scenario at issue. Finally, the participants were asked to sign a spontaneous reaction to the video scenario using the two or three signs proposed. The only instruction was "sign it in the most natural way". The two/three signs have been introduced to reduce the great variability in signing observed in the elicitation task administered to CODA signers. As already said, the CODA signers tended to produce entire discourses rather than sentences as a reaction to the scenarios proposed. My goal was to restrict this tendency - where possible - suggesting the signs I expected to be present in the surprise questions only.

Figure 8 Example of video scenario in the Elicitation Task for monolingual signers (LIS). The subtitles has been added for explanatory purposes only and they were not present in the original test administered.

Figure 8 represents an example of a video scenario signed by the Italian/LIS interpreter. The video scenario is one mentioned above: *You know that John is married to Luisa, but one day, while you are walking around with a friend, you see him with another woman. You are surprised and sign to your friend.* In Figure 8, I added the Italian (and English) subtitles in association with each sign in order to help the reader to understand properly the context. No subtitles have been added in the real test administered.

The linguistic register chosen for LIS video contexts has been the simplest possible. Moreover, the interpreter did not suggest any nonmanual (prosodic) component other than the lexical nonmanual components, namely those nonmanual marking disambiguating lexemes - if necessary.

In this case, as well, the tests has been administered as a *PowerPoint Presentation* as well.[113] The presentation consisted of 41 slides. The first slide was a "Welcome" slide which contained a welcome sentence and the author's contact. The last slide signalled the end of the experiment and recalled the author's e-mail address. For the rest, the trial was organized as follow: the first (orange-coloured) slide signalled the beginning of the trial, the second slide presented the video context signed by the interpreter LIS/Italian. After watching the context, the participants were shown with a third slide containing the signs they were asked to use in the production of the target utterance. Finally, the participants had to wait for the fourth slide, a blank slide, that signalled the moment they could start signing (Figure 10). In the slide containing the two or three signs the participants had to employ in the semi-spontaneous elicitation task, the experimenter did not include any prosodic (nonmanual) cues. An example of trial in LIS is give in Figure 9.

[113] As already said above, because of the pandemic situation due to the Corovinarus, part of the experiment has been conducted via *Zoom* and *Skype* online platforms.

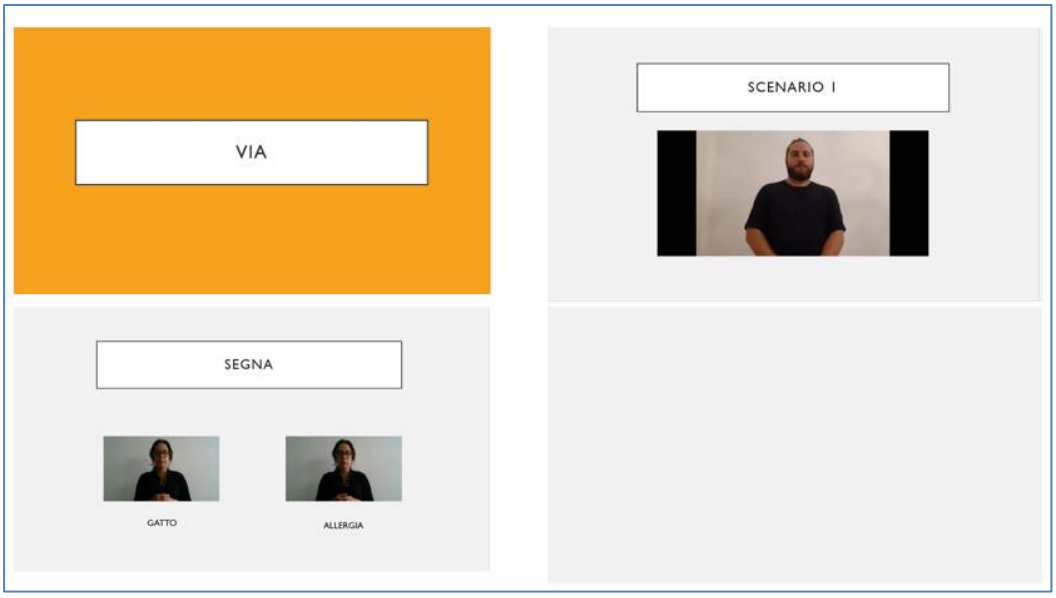
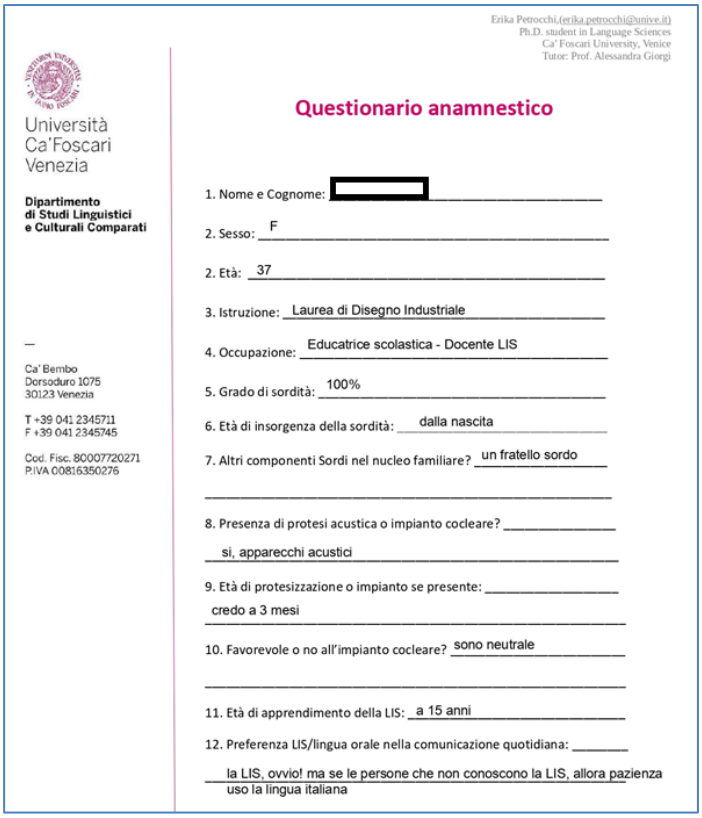


Figure 9 Example of trial. Repetition Task (LIS).

The context proposed in the case of the trial shown in Figure 10 was the following one: *You know that your friend John is allergic to cats, one day you see him with a big cat in his arms. You are surprised and sign.* The sign proposed were "GATTO" (i.e., "CAT") and "ALLERGIA" (i.e., "ALLERGY").

All the Deaf participants involved in the experiments have been presented with an anamnestic questionnaire (Figure 11). The goal of this questionnaire was to collect some data about the age of the participants, the region of origin, any cases of bilingualism or contact with dialectic variants, school and education level to control any effect of these possibly influencing factors/variables. In addition, some crucial information required has been: the age the participant has been diagnosed with deafness, level of deafness, use or not of cochlear implant or hearing aids, the age starting to use hearing aids, and the eventual presence of other deaf/Deaf family members.



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Questionario anamnestico

1. Nome e Cognome: [redacted]
2. Sesso: F
2. Età: 37
3. Istruzione: Laurea di Disegno Industriale
4. Occupazione: Educatrice scolastica - Docente LIS
5. Grado di sordità: 100%
6. Età di insorgenza della sordità: dalla nascita
7. Altri componenti Sordi nel nucleo familiare? un fratello sordo
8. Presenza di protesi acustica o impianto cocleare? si, apparecchi acustici
9. Età di protesizzazione o impianto se presente: credo a 3 mesi
10. Favorevole o no all'impianto cocleare? sono neutrale
11. Età di apprendimento della LIS: a 15 anni
12. Preferenza LIS/lingua orale nella comunicazione quotidiana: la LIS, ovvio! ma se le persone che non conoscono la LIS, allora pazienza uso la lingua italiana

Figure 10 Questionnaire for Deaf participants.

3.3. Data Annotation

The data have been carefully annotated.

The video recordings have been divided into small segments. Any of these segments correspond to a single sentence uttered by the participant. Only the surprise questions have been annotated in detail.

In the case of oral languages, any sentence became an audio file and a correspondent video file.

The nomenclature of any file mirrors the kind of sentence repeated. I.e., any participant has been named using the capital letter representing the first letter composing the name of the language she speaks plus an arbitrary number from 1 to 10. For instance, *V1* and *V5* identify two Vietnamese participants, whereas *J1* identify a Japanese participant.

Moreover, number 1 has been associated with Task 1, namely the repetition task conducted on counter-expectational surprise questions. In contrast, number 2 has been associated with Task 2, namely the repetition task conducted on surprise-disapproval questions (see Figure 1).

Finally, any sentence repeated was codified using a further number, from 1 to 4. Thus, the code J1-1.1 means that we are referring to the sentence uttered by J1 (Japanese speaker) in the case of Task 1. The sentence at issue is the number 1. The sentences associated with the number and tasks were always the same in all the languages investigated. For example, in any language, sentence 1.1 was equivalent to the target counter-expectational question: "But weren't you allergic to cats?".

This annotation system allowed clear comparisons among the different languages studied (see section 3.2.3).

3.4. Data Analysis

The data collected have been analyzed as follows: the video recordings have been annotated with ELAN, and the audio recordings have been analyzed with Praat and then annotated with ToBI system (see for 2.2.1. section for further details).

The video has been inserted in ELAN and annotated without audio. Then, the same video has been annotated and checked a second time. Finally, I watched all the videos a second time with audio. I aimed to avoid prosodic cues in the annotation of the gestures, the stroke of the gestures and their eventual alignment with the linguistic string in the first session of annotation data. For the annotation of LIS data, this has not been necessary.

In the ELAN analysis, I used a "controlled vocabulary" to avoid data annotation mistakes. I set up a controlled and limited number of annotation categories inserted in a drop-down menu in ELAN (Figure 12). The Head subcategories were: Forward (forward head movement), Side (the head is moved to the side), Nod and Shake. The Hand subcategories were: Artichoke (the artichoke gesture), PUOH (the Palm-Up Open Hand gesture), Hands in prayer. If any of these gestures were present, I annotate the unexpected gesture as "OTHER". The Brows subcategories were: Furrowed (furrowed eyebrows) and Raised (raised eyebrows). The Eyes has been annotated when "widened" or "squinted". The subcategories of Mouth was: "lips downwards". Finally, the Shoulders subcategory was "lifted".

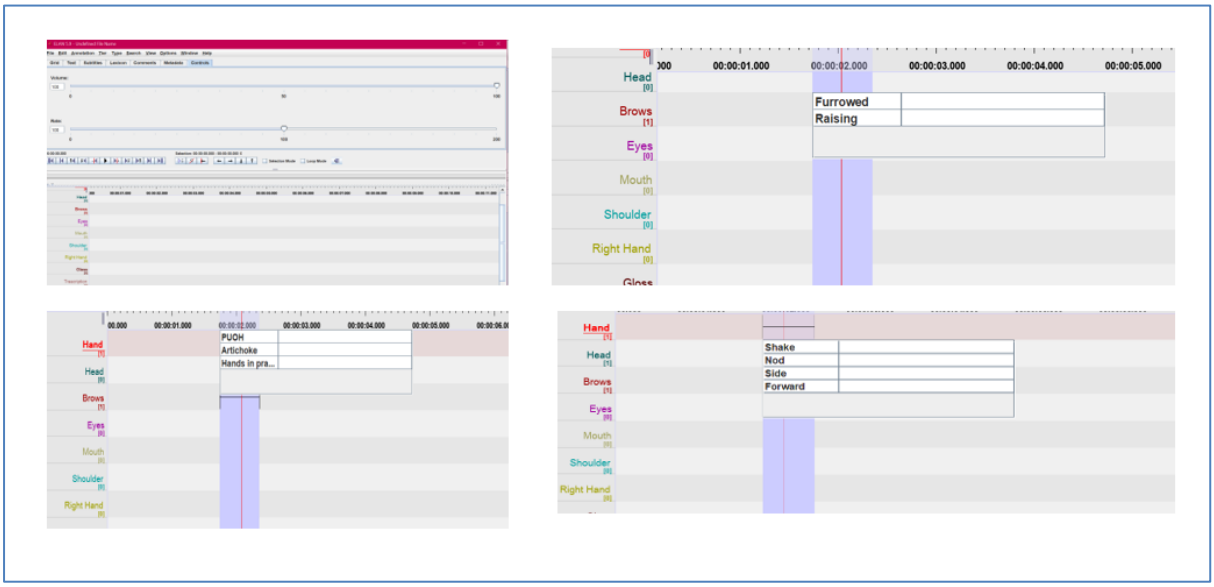


Figure 11 Some examples of "controlled vocabulary" I used in the ELAN analysis.

The ELAN tiers included have been chosen based on the parameters I wanted to study, namely the head movement, the hand gestures, the brows movements, the eyes and mouth configuration and the eventual presence of lifted shoulders. Moreover, I included one tier for the transliteration (morpheme to morpheme) of Japanese, Korean and Vietnamese into the Italian alphabet ("Transcription"), one tier for the word-by-word glosses ("Glosses") and one tier for the intelligible English translation of the sentence uttered by the speaker.

The categories I chose were related to the gestures I expected to find in my participants' productions, coherently with my working hypotheses (see section 3.5.3.).

In the Praat analysis, I checked the position of the relevant emphatic pitch (F0-feature) and the boundary tone's trend (high versus low terminus) (see for details section 2.2.1.). In addition, I always checked the relation between the F0 value associated with the emphatic pitch and the F0 range associated with the baseline represented by the participant's specific voice.

Finally, with ToBI system I annotated the kind of pitch accent and boundary tone involved (see section 2.2.1.).

The audio analyses have been conducted in the case of oral languages only.

After analyzing the video recordings and the audio recordings separately, I put the results of the different analyses together in the same word file (Figure 12). First, I did it for

each participant and then I put all the analyses conducted on the different speakers of the same language in one unique file to compare them more easily.

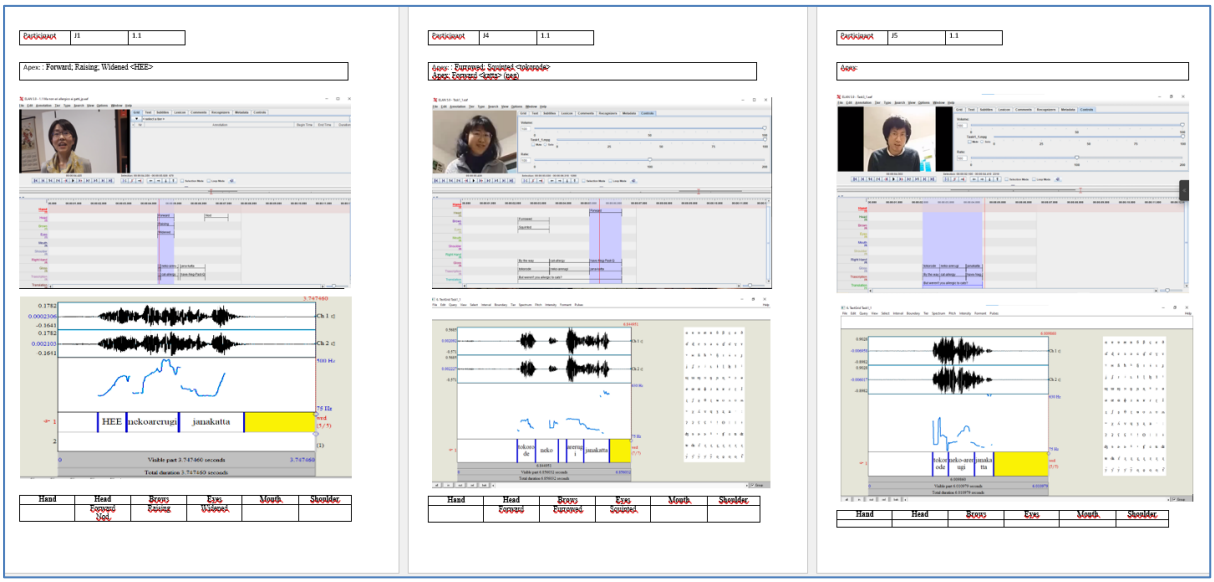
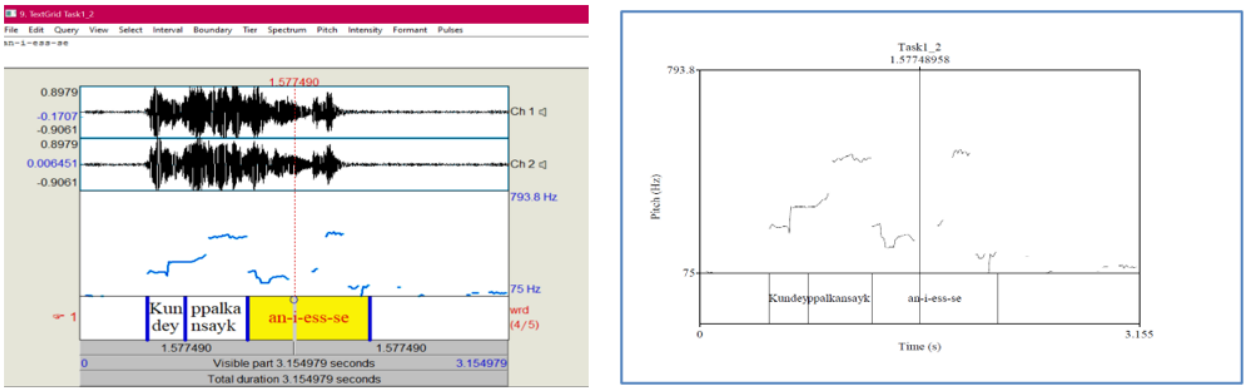


Figure 12 An example of data analysis for the Japanese language.

Any page shows the name I gave to each participant, the code associated with the task, and the related sentence. Then the page contains the ELAN analysis and the Praat analysis. Two tables are also inserted in the analysis: " Apex " is the first. In this table, I indicated the stroke of the gestures detected in association with the linguistic string related. For instance, the string “Apex: forward <HEE>” means that the stroke of the nonmanual gesture “Forward Head Movement” is observed in concomitance with the Japanese left-peripheral interjection “HEE”.

The second table summarizes all the gestures employed by the participant according to the following major categories: Head, Hand, Brows, Eyes, Mouth, Shoulders.

This dissertation will also present the Praat pitch chart when necessary. This means that the Praat analyses in Figure 12 can also be presented in a more intelligible form, as shown in Figure 13.



(a) (b)

Figure 13 Figure (a) represents a Praat analysis. Figure (b) represents the intelligible Pitch chart related to the analysis in (a). For example, this is sentence 1.2 uttered by K4 (Korean participant). The correspondent surprise question in English would be "But wasn't it red"?

3.5. Expectations

3.5.1. Counter-expectational surprise questions

Given what has been previously observed on surprise questions in the literature, I predict that the same prosodic contour would accompany each sentence type in each language I investigate. This prosodic contour would differ from the one typically associated with the correspondent canonical (polar) questions.

I assumed that the speaker chooses a specific tune to convey a particular relationship among an utterance, currently perceived beliefs of a hearer or hearers, and anticipated contributions of subsequent utterances (Pierrehumbert and Hirschberg 1990; see also section 2.2.1.). This relation results from the compositional interaction among the pitch, phrase, and boundary tones in the prosodical component.

The speakers use tone to specify a particular relationship between the "propositional content" - realized in the intonational phrase over which the tune is employed - and the mutual beliefs of participants in the current discourse. The mutual beliefs of discourse are intended as those beliefs that conversational participants come to believe to be shared among them as a direct result of the conversational interaction.

In the case of counter-expectational surprise questions, the perceived beliefs of the interlocutors are the expectations made up by the pragmatic context the interlocutors share. What the speaker wants to do uttering the surprise questions is (i) to bring into play these expectations themselves and (ii) confront them with the interlocutor's behavior which is precisely "betraying" those same expectations.

For instance, consider counter-expectational surprise questions in Italian. According to the results presented by Giorgi and Dal Farra (2019), in Italian, counter-expectational surprise questions are associated with a peculiar prosodic contour. The distribution of pitches identifies the special value of these sentences. In particular, the most common is a pitch on the verbal form, which is realized as H*+L. The boundary tone is usually not high, as in information-seeking questions, but low. Thus, in Italian counter-expectational surprise questions, the relevant emphatic pitch observable usually interests the non-indexical verbal form. This means that the pitch accent makes prominent the non-indexical reference to what was expected.

Consider the following context: *Your friend Mary calls you on the phone and tells you that she has a wonderful new red dress to wear at tonight's party. When you meet her at the party, you see that she has a blue gown, you are surprised and utter, "But wasn't it [the dress] red?".* You and Mary shared the following expectation: the dress that Mary should have

worn for the party should have been red. However, when you meet each other at the party, you realize that Mary's dress is not red.

(116) Ma non era rosso?
H*+L L%
"But wasn't it red?"

(116) can be paraphrased as (117):

(117) (Maria and I know that) the dress is not red as it should have been

Moreover, the pitch accent in question is of the following type: H*+L.

In the previous literature (see section 2.2.1.), it has been observed that this bitonal accent is usually used to evoke a particular relationship between the accented items and the speakers' mutual beliefs. Generally speaking, the speaker uses H+L accents to indicate that support for the open expressions instantiations with the accented items should be inferable by the hearer from her representation of the mutual beliefs (the Common Ground). It indicates something on the following line: retrieve what is mutually believed concerning the most prominent item. Moreover, specifically, when using H*+L accent, the speaker appears to be making a predication in the same sense as when using H* - H* conveys that the item made salient is to be added to the hearer's mutual belief space -, but H*+L conveys specifically that the hearer should locate an inference path supporting the predication. In this case, the desired instantiation of an open expression is among the speakers' mutual beliefs. In other words, the speaker uses H*+L tone exactly to bring into play the shared knowledge because it contrasts with the interlocutor's actual behavior.

The boundary tone employed is L%. The boundary tone has a scope on the entire intonational phrase, i.e. the sentence. Generally speaking, an L% boundary conveys that the current intonational phrase is not "forward-looking", namely, it is not to be interpreted with respect to some succeeding phrase. Indeed, the sentence at issue is a rhetorical question; thus, no succeeding phrase is expected in the sense that no answer is expected. In counter-expectational surprise questions, the speaker is not asking for some information. Rather, she expresses her surprise, verbalizing the clash between her expectations and the current interlocutor's behavior.

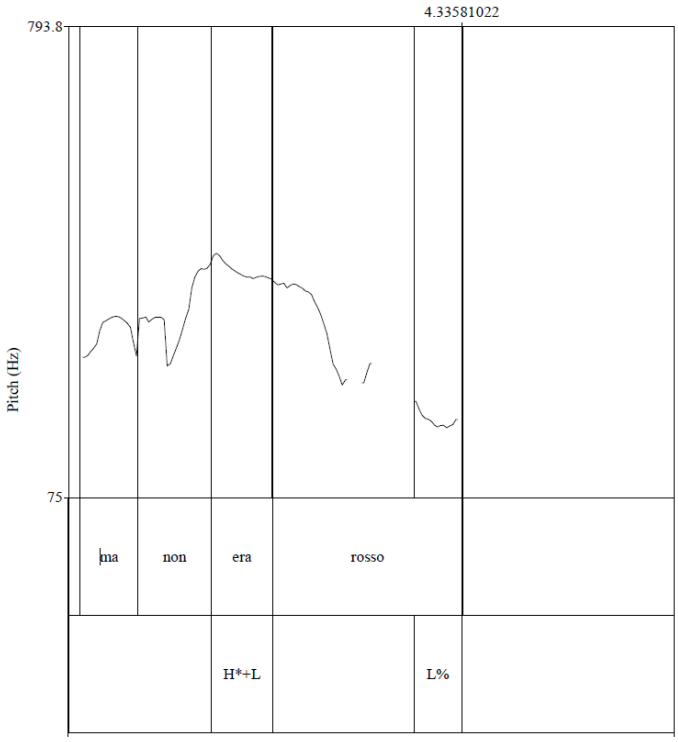


Figure 14 The Praat representation of the following counter-expectational surprise question "But wasn't it red?". Italian female speaker (Florence).

Consider Figure 14, a Praat representation of the same type of question conducted by Giorgi and dal Farra (2019:345).

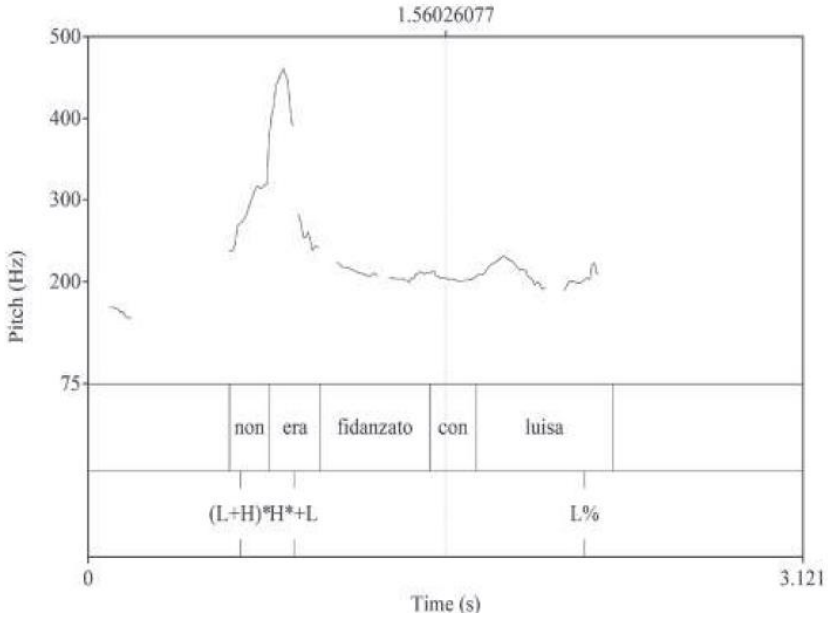


Figure 15 Praat representation from Giorgi and Dal Farra (2019:345, Figure 1) of the following counter-expectational surprise question: "wasn't he engaged with Luisa?". Italian female speaker (Ferrara).

The Praat representations above suggest that the speaker is not formulating an information-seeking (polar) question. Indeed, according to some authors, genuine polar questions would have an L* pitch accent and a H% boundary tone:[114]

(118) Era rosso?
L* H-H%
"Wasn't it red?"

The L* accent marks items that the speaker intends to be salient but not to form part of what the speaker herself is predicating in the utterance. In other words, the items marked by this accent is brought into play as known and shared information. Still, they are not to be instantiated in the open expression to be added to the hearer's mutual beliefs - in the case of polar questions, an answer of yes/no type. A H% boundary tone signals that a succeeding phrase is attended – i.e. the reply to the question asked. However, as noted in section 2.2.1.2., recent studies on some varieties of Italian found that the typical prosodic contour associated with polar questions is L+H* L-L%.

I did not include in my research a systematic repetition task on string identical yes/no questions along with the repetition task on the surprise questions I investigated.

[114] See section 2.2.1. for further details.

The main reason is that string-identical neutral polar questions perfectly specular to surprise questions are impossible. Indeed, surprise questions are syntactically and lexically marked in that some elements have to be present such as negation and the non-indexical (e.g., imperfect) verbal form. Let me make one concrete example: I am currently collecting data on neutral and surprise polar questions in Italian (Florence area). My work is just beginning; however, I try here to examine my first data to set some working hypotheses on the prosodic realization of neutral and surprise polar questions in Italian.

I administered the elicitation task of the same type already described above (section 3.2.) to 2 Italian male speakers (Florence), average age 52 years old. The task included some neutral polar questions along with proper counter-expectational surprise questions. The participants voluntarily participated in the experiment and signed a relative Privacy Policy and Consent Form. They also filled out the anamnestic questionnaire presented in section 3.2.1.1. (Figure 7). One of the sentences elicited has been the following one: "Was it red?". I administered the following context: *your friend Gianni told you that he saw a wonderful caravan car yesterday at the exhibition. You want to know if that caravan car was red-coloured; thus, you ask him: "was it red?"*.

In these cases, speakers tended to enrich the interpretation of the sentence by adding an introductory adversative particle "ma", as in example (119).

(119) Ma era rosso?
H*+L L-L%
"But was it red?"

As far as I can see, when the interpretation of the polar questions is biased in some sense (i.e., the question is interpreted as rhetorical), an L% boundary contour is observable. In (119), we can see a biased interpretation of the neutral question "was it red?". In this case, the speaker spontaneously added the adversative particle "ma" ("but"). The interpretation, in this case, was the same as the one associated with a surprise, rhetorical question. In my opinion, it has been the context and the non-indexical verb that favored this biased interpretation.

On the contrary, when the polar neutral questions are interpreted as such, the boundary tone detected is H%. Consider Figure 14: another sentence included in the repetition task presented above is the following one: "Was he Matteo?". Again, this is the relative context: *you are at the window and see your son talking with a boy in the street. You cannot recognize that boy, but you want to know if your son is speaking with Matteo because you know that they fought yesterday. Thus, when your son enters the house, you ask him, "Was he Matteo?"*

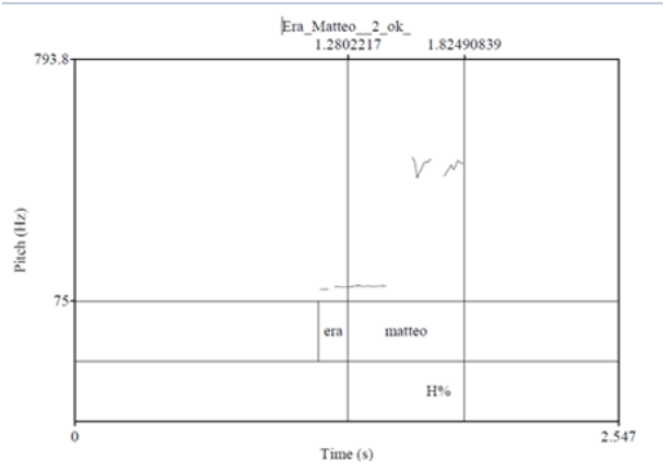


Figure 16 Praat representation of the following neutral polar question: "Was he Matteo?". Italian male speaker (I2) (Florence).

As it is clear, this is just a preliminary observation. Further rigorous and systematic research is needed. However, from a prosodic point of view, the biased polar question I observed were mainly associated H*+L L% contour (Figure 14). This contour is the same contour detected by Giorgi and Dal Farra (2019) in their study on counter-expectational surprise questions and the same one found on the – generically defined as - rhetorical questions in previous studies on Italian.[115] Therefore, one possibility is that the H*+L L-L% polar questions found in the previous literature were biased - surprise – polar questions. However, for a deeper understanding of these phenomena, the pragmatic contexts administered in the studies already conducted have to be checked more thoroughly in these cases. Therefore, these observations only contribute to elaborating a working hypothesis.

Finally, consider counter-expectational surprise questions in Spanish.

Furlan (2019) reported a bitonal pitch accent (H+L*) and a low boundary tone. In her data, however, some biased questions seem to be present. In this case, the surprise questions seem to be interpreted as neutral polar questions - H* pitch accent along with a H% boundary tone (Estebas-Vilaplana and Prieto 2010).

Generally speaking, the main idea is that genuine questions are associated with H%, whereas rhetorical questions are associated with L% boundary tone.

Thus, concluding, I expect all the languages investigated in this work to show surprise questions with a peculiar prosodic contour. This contour would involve a bitonal pitch accent and an L% boundary tone.

As far as tonal languages are concerned – e.g. Vietnamese – I expect the surprise questions to show a high F0 excursion. I expect the sentence to start at a high F0 level, to fall throughout the utterance and to terminate at a low level.

[115] See for an overview Dehé et al. (forthcoming) and section 2.2.1.2.

Concerning Japanese, I expect the sentences to start at a low pitch level and to show a high F0.

Finally, in LIS I expect to find at least some tones such as squinted eyes that signal to the hearer that she has to retrieve some piece of mutual knowledge and widened eyes in association with widened eyes and open mouth which have been observed in surprise questions in Israeli Sign Language (Dachkovsky 2009).

As for the gestural component, I expected participants to produce gestures in the majority of the cases. The gesture expected is PUOH (Palm-Up Open Hand gesture, Kendon 2004). It would be performed with one or both hands (Figure).[116]

The gesture can be divided into phases (Kendon 1980).[117] These phases are preparation, stroke, and retraction. The stroke is the configuration the gesture takes when it expresses the meaning associated with it. It can be identified with the strongest movement within the gesture. The preparation phase usually precedes the stroke, i.e. the moment when hands are moved from a previous position, usually the resting one, to a visually more prominent position (the stroke configuration). The retraction phase is when the hands return to their resting position after the stroke takes place. Finally, a fourth phase worth mentioning: is the hold phase, i.e. the moment the hands remain static in the gestural phase after the stroke.

[116] Palm-up as a co-speech gesture is usually associated with practical everyday actions such as giving, offering and receiving objects. However, as Giorgi and dal Farra (2019:346) noted, in the case of counter-expectational surprise questions, the association is not that simple. Indeed, the speaker is not offering something; she is rather asking for something, precisely she is asking for an explanation, which could justify the "betrayed" speaker's expectations.
[117] See also Kita et al. (1998).

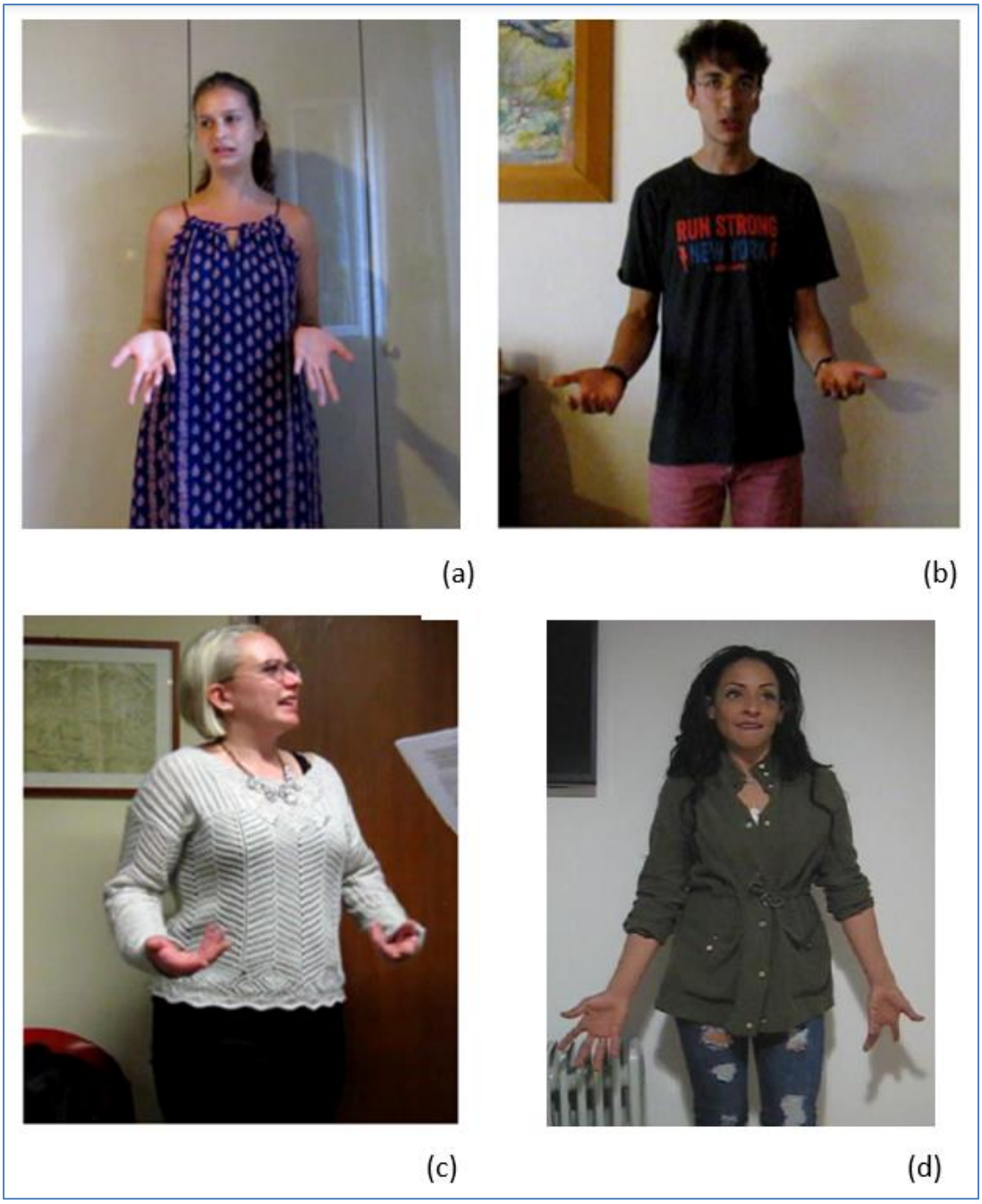


Figure 17 The realization of PUOH gesture in counter-expectational surprise questions in Italian (a)-(b), German (c) and Spanish (d). Picture (a) and (b) are from Giorgi and Dal Farra (2019:346, Figure 2 and Figure 3, respectively). Figure (c) is from Giorgi, Dal Farra and Hinterhölzl forthcoming). Figure (d) is from Furlan (2019:62, Figure 28).

Other non-manual gestures accompanying counter-expectational surprise questions concern the use of the head and the brows. The head can either be employed in

a shake, usually realized over negation or lasting a bit longer. The head can also nod or move forward. Brows can be raised.

Figure 18 PUOH gesture and raised eyebrows. The realization of a counter-expectational surprise question from Giorgi and Dal Farra (2019:348, Figure 4).

In counter-expectational questions, Giorgi and Dal Farra noticed that the preparation phase of the PUOH gesture tends to precede the entire sentence production: speakers start to move their hands from the resting position before the utterance of the sentence begins. PUOH often last longer than the sentence itself: speakers hold the gesture until the very end of the sentence, whereas the retraction phase starts only when this is already finished.

Interestingly, in Giorgi and Dal Farra's data, occasionally, the speakers tend to enrich the interpretation of the sentence, which in some cases is not only connected to surprise but also to disapproval. In these cases, the hand gesture can be different and follow the surprise-disapproval gestural pattern (see section 3.5.1.2.). Furthermore, in these cases, the brows are furrowed rather than raised. Finally, a third possibility has been observed in these enriched interpretations cases: realization of PUOH along with furrowed eyebrows (Figure 19).

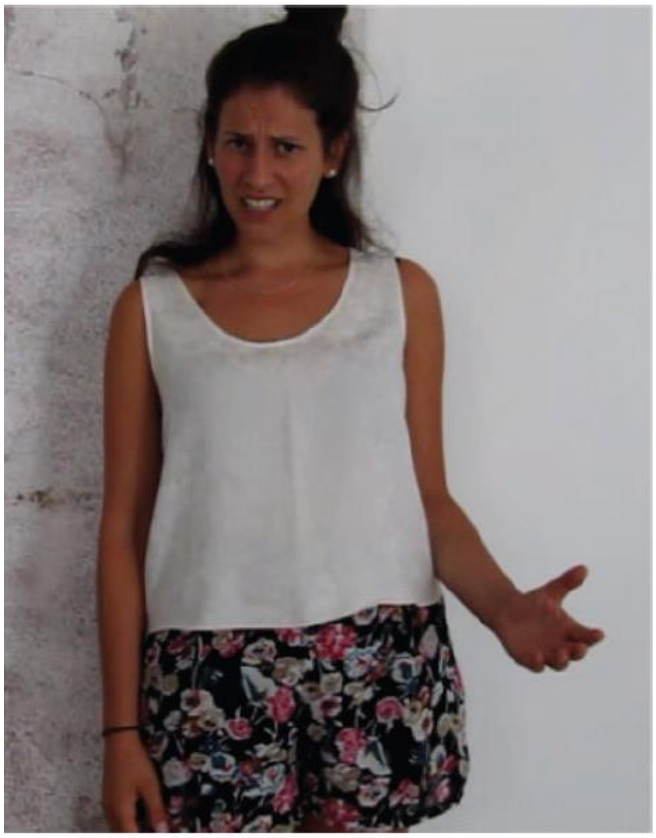


Figure 19 PUOH gesture and furrowed eyebrows over a counter-expectational surprise question from Giorgi and Dal Farra (2019:349, Figure 5).

Since they were mainly interested in the production of gestures, Giorgi and Dal Farra introduced four different conditions to check whether the gestural pattern could be affected by different modalities: (i) condition A: both hands were free; (ii) condition B: simulation of phone communication. Participants were asked to repeat the same sentences pretending to speak with an interlocutor over the phone. Only one hand was free in this condition, and no visible addressee was contemplated; (iii) condition C: holding a bag. The speakers had to produce the target sentences holding a heavy bag. In this condition, both hands were not free; (iv) condition D: surprise overtly expressed. In this condition, the participants had to realize declarative sentences - related to the target sentences, i.e. counter-expectational surprise questions - composed by a main-subordinate configuration introduced by "I'm surprised that you…"

In Condition A, in Giorgi and Dal Farra's results, in 72% of the utterances, speakers realize the hand gesture as palm-up, with both hands or one hand only. In the latter case,

the speakers can use both the dominant and the non-dominant hand. In 13% of the cases, the hand gesture is different, whereas, in 15%, hands remained still.

In condition B, the results obtained are almost the same as above, even though the palm-up gesture is used less frequently, i.e. in 41% of the cases. In this condition, only one hand was free. Both the dominant and the non-dominant hand has been used. Even if a visible addressee was not included, speakers gestured the same way as condition A. In condition B, non-manual gestures are used less frequently. Moreover, in this condition, the authors found also the movement of the shoulders. The shoulders are lifted, i.e. moved in a higher position during the utterance of the whole sentence.

In condition C, where both the hands were "trapped" and couldn't be used, in several cases, hands and arms were moved in an attempt to produce the PUOH gesture, even if, obviously, it could not be completed. In this condition, speakers move their shoulders, lifting them during the production of the sentence. In addition, head shake and brow furrowing are used more frequently than in condition A. This means that speakers tend to convey the same meaning through different gestures when the hand gesture is blocked somehow.

Finally, PUOH is less used in condition D than in condition A, but still high produced – in 51% of the cases. The hand gesture is realized in different parts of the sentence, mostly on the matrix clause. The same non-manual gestures are used, mostly on the matrix clause. Unlike the other conditions, no hand gestures other than PUOH have been found. According to the authors, it was an expected result in that, in this case, the interpretation of the sentence is overtly specified, given the presence of the overt surprise predicate.

Interestingly, Giorgi and Dal Farra found a consistent alignment between prosody and gesture. Such an alignment is evident in the distribution of the emphatic pitches already described for the prosodic component and for the stroke of the hand gesture and /or the head nod, which is usually realized in correspondence with the pitch on the nuclear syllable of the verbal form. It has already been studied and shown that speech and gesture are synchronized since the stroke of the gesture falls together with the accompanying utterance's main accent. The stroke generally occurs just before or at the same time as (but no later than) the nuclear accent.[118]

The same sentences were tested with 8 German native speakers (Giorgi, Dal Farra and Hinterhölzl forthcoming) and the same generalizations hold. There is a similar emphatic pitch on the verb and/or negation in this case. The palm-up is used as well, even though less frequently and with the arms nearer to the body. Even in the German test, pitches and gestures are aligned (see Figure 15c).

Some data on counter-expectational questions are available also for Catalan and Dutch. Crespo Sendra et al. (2013) and Borràs-Comes et al. (2011) reported that these sentences are realized in correspondence with very specific patterns of facial gesture,

[118] Kendon (1980); McNeill 1992; Abner et al. (2015).

namely furrowed eyebrows, squinted eyes and a downward movement of the head, followed by an upward movement. These authors did not consider hand gestures.

A study has also been conducted on counter-expectational questions in Spanish (Furlan 2019). In this case, similar results have been reported. In Spanish, the distribution of pitches signals a peculiar intonation pattern for these sentences. The most common emphatic pitch is realized on the verbal form and/or on negation. As far as the gestural component is concerned, Furlan found that her Spanish speakers' most frequent hand gesture was PUOH (in 64% of the cases). Moreover, it has been realized with both hands or one hand only (See figure 17d and Figure 18).

Figure 20 Spanish speaker realizing a counter-expectational surprise question. (from Furlan 2019:61, Figure 27).

Thus, in Spanish, an alignment between the stroke of the PUOH gesture and the relevant emphatic pitch realized on the verb or negation has been revealed. In these cases, the gesture has been maintained until the end of the sentence and beyond (in 22 sentences of the total of 28 target sentences produced).

In Spanish, the speakers use PUOH in 64% of the cases, other gestures in 16% of the cases and no gestures in 20% of the cases (Furlan 2019:63).

Interestingly, Furlan also found cases of enriched interpretations described above. In these cases, she observed the realization of the artichoke gesture in correspondence with counter-expectational surprise questions. The artichoke gesture is realized as iterated (Figure 11). In these instances, the brows are not raised - as in the majority of the cases of counter-expectational questions (32% of the cases) -, but furrowed. Generally speaking, the furrowed eyebrows have been observed by Furlan in the 24% of the cases, and this feature can be found in association with the PUOH hand gesture as well (Figure 24).

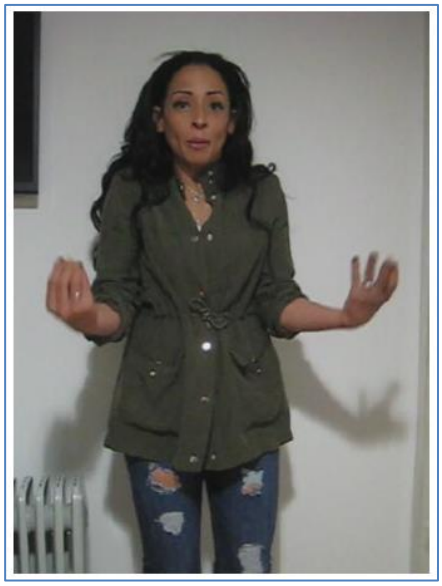


Figure 21 Spanish speaker realizing a counter-expectational surprise question. (from Furlan 2019:65, Figure 30)

Figure 22 Spanish speaker realizing a counter-expectational surprise question. (from Furlan 2019:68, Figure 33)

In Spanish have also been found head movements, in particular, shake (34% of the cases) and nod (16% of the cases).

The results presented above have been found in what Furlan calls condition A, namely with both hands free. Furlan also introduced a second condition (condition B). In this condition, the participants had to realize declarative sentences - related to the target sentences, i.e. counter-expectational surprise questions - composed by a main-subordinate configuration which were introduced by "Me sorprende que…" ("I'm surprised that you…"). In this condition, the PUOH gesture is less present, even if it is realized in 33% of the cases. It has been realized on the matrix clause, mainly. The non-manual gestures in these cases seem to be less intense than in the case of counter-expectational surprise questions. The most present feature is raised eyebrows (70% of the cases). In this condition, cases of artichoke gesture and furrowed eyebrows have been found, as well (Figure 21 and Figure 22, respectively). Furrowed eyebrows have been found in 12% of the cases.

Figure 23 Spanish speaker realizing the following sentence in condition B: "I'm surprised that you are eating a sandwich". (from Furlan 2019:76, Figure 40)

Figure 24 Spanish speaker realizing the following sentence in condition B: "I'm surprised that you are eating a sandwich". (from Furlan 2019:74, Figure 37)

In conclusion, summarizing the data presented above on Italian, German, and Spanish, show that counter-expectational surprise questions are mainly associated with the PUOH hand gesture, raised eyebrows and head movement (shake and/or nod).[119]

A crucial result in the repetition task is that, even though participants were instructed to repeat the same words they read, this was not always the case.[120] Indeed, the speakers tended to make some minor changes in the realization of the sentences; namely: (i) the omission of the adversative particle at the beginning of the sentence; (ii) the speakers occasionally tended to enrich the interpretation of the sentences adding a disapproval value to surprise and realizing the questions along with the artichoke gesture (iterated movement) and furrowed eyebrows (see section 3.5.2.2.).

Consider now the results obtained in the elicitation task conducted by Giorgi and Dal Farra (2019) on counter-expectational surprise questions in Italian. The authors found that the participants spontaneously produced the same sentences proposed in the repetition task. I.e., in the vast majority of spontaneous uttering, the sentences began with the adversative particle "ma" (14 cases on 21). Moreover, some of the elicited sentences were structurally identical to those used in the repetition experiment, namely adversative particle + negation + imperfect verbal form.

Finally, in these cases, the gestural pattern and the intonational contour appear the same as those already described above.[121]

3.5.2. Surprise-disapproval questions

Currently, as fai as I can see on the realization of content surprise-disapproval questions, we have data available only for the Italian language.

Giorgi and Dal Farra (2019) run an experiment using the same methodology presented in section 3.2. (repetition task). However, only the modality with both hands free was used in this case.

The authors tested 8 participants (4 males and 4 females). They all participated voluntarily. The age range was between 16 and 58 years old. 6 contexts have been

[119] Moreover, the same seems to hold in the case of counter-expectational questions in Catalan and Dutch (Crespo Sendra et al. 2013 and Borràs-Comes et al. 2011).

[120] Notice that all the studies mentioned above have employed the repetition task devised by Giorgi and Dal Farra (2019).

[121] Notice that the syntactic structure detected for Italian counter-expectational questions is analogue to the structure found in the case of Spanish counter-expectational surprise questions (Furlan 2019): adversative particle "pero" + negation + imperfect verbal form (*pretérito imperfecto*). For details, see section 2.1. In particular sections 2.1.2., 2.1.3. and 2.1.4.

presented to the participants, and 6 consequent surprise-disapproval questions, namely, every participant had to utter 6 sentences.

As expected from the authors, these sentences are realized with a specific prosodic contour and gestural component. Moreover, the intonational contour of these sentences is different from the contour typically associated with the canonical wh-questions in Italian. The boundary tone is low rather than high.

Typically, there is a pitch on the verb and/or the wh- constituent. The pitch accent is a bitonal one (H*+L), and the boundary tone is L% (Figure 25).

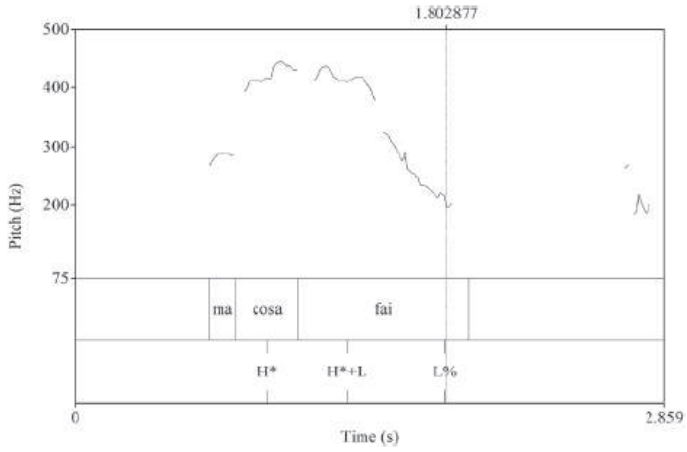


Figure 25 Praat representation of a female speaker uttering, "But what are you doing?" (From Giorgi and Dal Farra 2019:358, Figure 6).

The gestural component is also representative of the pragmatic meaning of these sentences. Giorgi and Dal Farra found that hand gestures are specially used, but, as opposed to counter-expectational questions, speakers realize one among three different gestures. In the first case, the speakers realize the PUOH gesture where the hands do not stand still but are rapidly and repeatedly moved up and down or from one side to the other (Figure 26).

Figure 26 Palm-up gesture with iterated movement.

Another hand gesture is the so-called artichoke gesture, which can be realized either with one hand or both. This gesture is also accompanied by an iterated up and down movement (Figure 27).

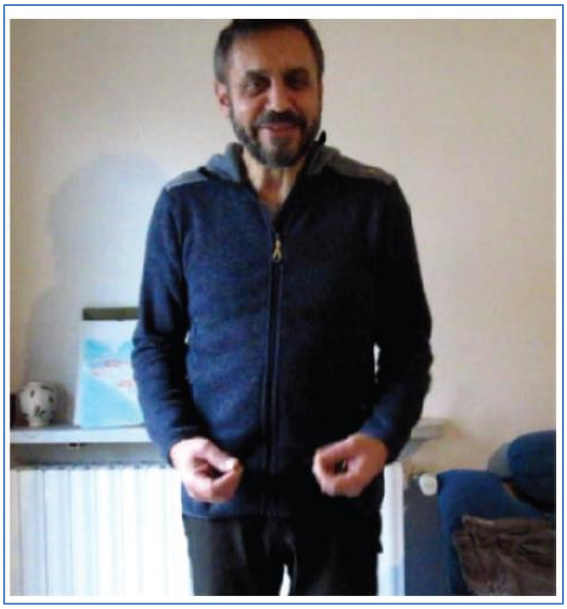


Figure 27 Iterated artichoke gesture.

Finally, a third gesture can be used, namely the so-called hands-in-prayer gesture. In this gesture, the palms are one against the other and repeatedly moved up and down (Figure 28).

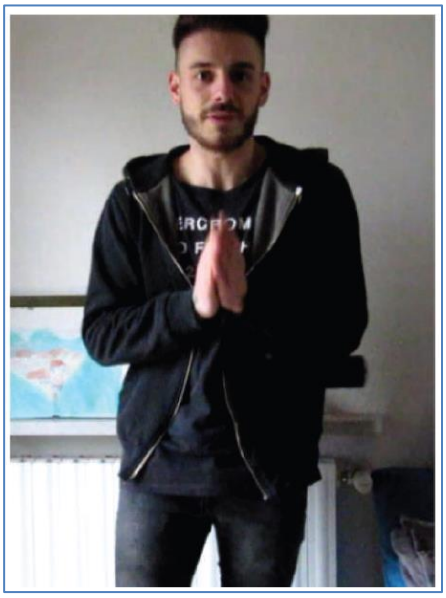


Figure 28 Iterated hands-in-prayer gesture.

Usually, the gesture is realized in correspondence either with the wh-constituent or the verb. In some cases, it can precede the utterance of the sentence, and its movement can last for the entire sentence.

Non-manual gestures are mainly connected with brows, which are mainly furrowed, and movement of the head, which can be moved forward or to the side. According to Giorgi and Dal Farra (2019), the presence of furrowed eyebrows signals the presence of the disapproval component even in counter-expectational surprise questions (see section 3.5.1.).

The hand gestures are always realized as iterated. The authors took the stroke of the gesture as the first moment in which the hands form their final shape, i.e. the moment preceding the beginning of the iteration.

In the case of surprise-disapproval, prosody and gestures are aligned, and a consistent correlation between the stroke and the pitch is found.

Crucially, in this experiment, no other gestures than the three described above have been used. According to the authors, this could mean that the participants always assign the same pragmatic significance to these sentences, namely the surprise-disapproval one. Indeed, in these cases, no enriched interpretations have been found.

In this case as well, even if the speakers were asked to repeat the sentence they read, they made some minor changes; namely: (i) the omission of the adversative particle; (ii) some speaker inserted a swear word in the wh-phrase, either following the adversative particle or at the beginning of the sentence, if the adversative particle is omitted. Consider example (120):

(120) (Ma) che cazzo fai?!
(But) what fuck do-2ps-PRES
"(But) what the fuck are you doing?!"

(From Giorgi and Dal Farra 2019; example 27)

The use of the swear word is connected to the disapproval meaning of these questions, and, crucially, it cannot be realized with normal questions.

Concerning the languages I investigate, in the case of surprise-disapproval questions, my prediction is that these sentences would be realized with a specific prosodic contour and gestural component, as in the case of counter-expectational questions.

In the previous literature, the gestural component has been identified as representative of the pragmatic meaning of these sentences. Thus, I expect manual and non-manual gestures to be present in my participants. In conclusion, I expect these

sentences to be realized with specific prosodic contours and gestural components, which turn out to be aligned. The pitch accent expected is of the bitonal type and the boundary tone expected is the L%. As far as Vietnamese is concerned, I expect the surprise-disapproval questions to show a high F0 and to terminate at a low level. Finally, in the case of Japanese language, I expect the sentences to be longer in duration, to show a large F0 excursion and to start at a low pitch level.

3.5.3. Conclusions

The main result of the experiments presented in section 3.5.1. and 3.5.2. is that the surprise value of these sentences in Italian, Spanish and German is realized with specific prosodic contours and gestural components, which turn out to be aligned. Moreover, the results are consistent among the participants and seem quite robust. The same holds for the surprise-disapproval value of these sentences in Italian.

Such sentences convey a special pragmatic value that deeply influences their realization: counter-expectational questions express surprise on the speaker's part, along with her need for an explanation. Surprise-disapproval questions convey an additional meaning of disapproval. Both sentence types are emotionally marked and are accompanied by a prosodic contour and a gestural component that are much more evident than in normal questions/sentences. This is required to convey such an additional emotional meaning. Moreover, the prosodic and gestural components make the sentences grammatical.

Crucially, it has been observed an alignment between prosody and gestures. According to Giorgi and Dal Farra, this highlights the importance of the gestural component. They hypothesize that the input to the sensorimotor component from prosody and gesture realization is unique, namely the left-peripheral *Evaluative* (prosody/gesture oriented) head.[122][123] They propose that this head has scope on the entire sentence and that, precisely for this reason, its sensorimotor realization as gesture lasts for the whole duration of the sentence, even if the pitch is necessarily associated only to a portion (see 121 and 122).

[122] Indeed, according to Chomsky (2011) the sensorimotor system has to be considered as sound, sign and other sensory modalities. Thus, in principle then, gestures are included as well.
[123] On the notion of prosody-oriented head, see also Giorgi (2014).

(121) [DIS [CP …] [maDIS [EVAL Ø [WH Ø [non mangiavi solo frutta]]]]]
But weren't you eating only fruit

(122) [DIS [CP …] [maDIS [EVAL Ø [WH cosa [fai]]]]]
But what are you doing

Giorgi and Dal Farra noted that, in many cases, the gesture begins after the adversative particle. Considering that Giorgi and Dal Farra also noted that the speakers often omitted the adversative particle "ma" spontaneously, I can hypothesize that when the gesture begins with the sentence itself, it results from "ma" omission, namely in conjunction with the Evaluative head. Unfortunately, the authors did not specify this aspect in their work in that they presented the general results altogether.

The authors, however, specified that "ma" omission is expected since the role of the adversative particle, in this case, is totally retrievable from the context, in particular by the realization of the emotional content through prosody and gesture. Indeed, crucially, the omission of "ma" is not permitted in non-emotional cases where the adversative meaning would not be retrievable from the context, given that no special sensorimotor realization accompanies the sentence (this issue has been discussed in detail in section 2.1.).

Interestingly, in the experiments presented in the previous sections, the people gesture even if it is not needed. Participants gesture when on the phone, thus when no audience can pay attention to their gesture (no visible addressee is contemplated); the participants also gesture when the overt emotional predicate is present, i.e., when there is no ambiguity as to the interpretation of the sentence (surprise value). In these cases as well, gestures always follow the same pattern. Coherently, in these cases, no other gesture than PUOH is present. It could be related to the fact that the overt surprise predicate gives the interpretation – surprise value. This conclusion would also lead us to hypothesize that PUOH is pragmatically related to surprise meaning, unambiguously. Thus, one of the main conclusions we could draw is that gesture, as triggered by syntax, is a necessary component of grammar, given the very basic consideration, that language is multi-medial. Naturally, since oral languages capitalize on the oral component, prosody is more strictly codified than gestures. However, while exhibiting a higher degree of variation, gestures are still quite codified and uniform across speakers.

3.6. The results

In this section, I present the results of my experiments on surprise questions in Japanese, Korean, Vietnamese and Italian Sign Language (LIS).[124] In section 3.6.1., I put forward the results of the elicitation task.[125] I elicited the structures in order to check if, in these languages, there were constructions analogue to the surprise questions already studied in Italian, German and Spanish (see sections 3.5.2. and 3.5.3.). In section 3.6.2., I show the results of the repetition task - and of the semi-repetition task in the case of LIS – devised to verify the structures obtained in the elicitation task and to study their prosodical and gestural realizations with a larger number of participants.

3.6.1. Elicitation Task

The elicitation task aimed to determine which kind of sentences the participants would spontaneously produce as a natural reaction to the given emotional/pragmatic contexts proposed. The sentences obtained turned out to be significantly uniform in form and meaning. They displayed a peculiar syntactic and lexical form, along with a specific prosodic and gestural pattern (section 3.6.2.). These answers served as a bias for the creation of the stimuli for a subsequent repetition task.

The repetition task aimed to verify the results obtained with the elicitation task on a larger scale, i.e., on a larger number of speakers. Moreover, it has been employed to investigate the (gestural and prosodical) realization of the sentences.

My first goal was to check the (syntactic) regularities displayed in these types of structures uttered in the emotional/pragmatic contexts submitted to the subjects. Moreover, I wanted to investigate whether the utterances produced by my Eastern and signing participants were analogous to the surprise questions already studied in Western languages. I aimed to examine if there were correspondences in their prosodic and gestural realization in Eastern and Western, oral and signed languages. As already argued in the previous chapter, research on Italian, German and Spanish show that the gestural, syntactic and prosodic patterns display striking similarities cross-linguistically.

[124] For the description of the experimental design, see section 3.2.

[125] As already said in section 3.2., as far as I can see, no studies exist on counter-expectational and surprise-disapproval questions in the Eastern languages herein considered and in LIS.

Furthermore, these components are aligned in that the stroke of the gesture is simultaneously realized with the left-most prosodic pitch of the sentence, usually on the verbal form. The works on Western languages detected the same manual and non-manual gestural pattern in all the different languages studied. My research aims to investigate if these similarities are due to the cultural closeness of the languages already considered. For this reason, I studied the realization of the same special questions in three culturally and geographically distant languages and a sign language, the prosody of which is realized in the visual gestural-modality (i.e., through non-manual components).

Generally speaking, in Western languages, the counter-expectational surprise questions spontaneously elicited have the following structure: adversative particle + negation + imperfect verbal form. The adversative particle can be – and usually is - omitted.

In these cases, the prosodical contour and the gestural pattern appear the same as those already described in section 3.5.1. Moreover, the interpretation of these sentences is the same in all the Western languages already investigated: the speaker uses these special questions to convey her feelings of surprise and/or disapproval. Consequently, these constructions are associated with a peculiar, emotional interpretation: they are not interpreted as simple information requests. For example, consider (123), (124) and (125) uttered in the following scenarios: (i) *I know that you are allergic to cats, one day I see you with a big cat in your arms. I'm surprised and say (123) and (124)*, (ii) *I know that my friend Gianni is allergic to cats, one day, I see him with a big cat in his arms. I'm surprised and say to the friend next to me (125)*.

(123) (Ma) non eri allergico ai gatti?
But not is-imp-2s allergic to cats?
'But weren't you allergic to cats?'

(From Giorgi and Dal Farra 2019, ex. 2)

(124) ¿(Pero) no era alérgico a los gatos?
But not is-imp-2s allergic to cats?
'But weren't you allergic to cats?'

(From Furlan 2019, ex. 6)

(125) (Aber) ist er nicht gegen Katzen allergisch?
(But) is-imp-3s he not to cats allergic?
'But wasn't he allergic to cats?'

(From Giorgi, Dal Farra and Hinterhölzl, ex. 2)

As far as the same scenario given above is concerned, Japanese and Korean speakers spontaneously uttered (126), (127) and (128):

(126) Tokorode aka-no-doresu jana-katta?
By the way red-color- dress CopNeg-Past-Q
"But was not it red?"

(127) Hee aka-no-doresu jana-katta?
Hee red-color- dress CopNeg-Past-Q
"Hee (interjection) was not it red?"

(128) Kundey (ne) koyangi alleyluki issci anh-ass-se?
By the way (you) cat allergy have Neg-Past-Q
"But weren't you allergic to cats?"

In her work on the question particle *ka* in Old Japanese, Shinzato (2002) shows that the meaning of this polysemic particle can be accounted for by considering the role of the speaker's attitude. This is to be considered as deeply intertwined with human cognitive processes. Indeed, Shinzato's observations on *ka* particle in Old Japanese can be seen as coherent with respect to Akatsuka's (1985) theoretical work on epistemic scale and Maynard's (1995) studies on rhetorical questions in Modern Japanese.

Akatsuka's epistemic scale exhibits different status of "knowing" by the speaker on the conceptual continuum of domains of realis and irrealis. Independently from Akatsuka, Maynard (1995) investigates non-information-seeking interrogatives in Modern Japanese using the concept of "information status".

According to Shinzato, there are remarkable similarities between Maynard's "information status" and Akatsuka's epistemic scale on the one hand, and between Maynard's typology of Modern Japanese rhetorical interrogatives - *ka*-questions, ka-less questions and prosodically marked questions - and Old Japanese *ka*-interrogatives on the other hand (Shinzato 2002:568).

Old Japanese had two interrogative particles, *ka* and *ya*.[126] According to Shinzato, the question particle *ka* had four functions in the Old Japanese period: constructing self-addressed questions, expressing exclamations, expressing wishes and creating rhetorical questions. According to Shinzato, exclamations indicate the speaker's strong feelings evoked by an unexpected encounter with a situation or sudden realization of a situation.[127] In (129), I propose an example of an "exclamative" sentence by Shinzato (2002). This sentence expresses the speaker's surprise at encountering an unexpected turn of events:

(129) Yo no naka ha tsune kaku nomi ka musubi-te-shi shiratama no wo no tayuraku omohe-ba
World Top always this (way) only Q tie-Perf-Past pearls of knots Subj broke think-when
"Is life always unfailingly like this? (This is how I see it) when I think about the knots we tied having been broken."

(Shinzato 2002, ex. 9)

The exclamative sentence is properly a "surprised" rhetorical question. Faced with an unexpected encounter with the situation in front of her eyes, the speaker may question if the perceived situation is what is really the case. Casting a doubt in such a way elevates the tone of voice to produce exclamatory effects (Shinzato 2002:558-9).

According to Akatsuka (1985:625) surprise can be described as "I didn't know this until now!". This speaker's attitude - intended as the speaker's subjective evaluation of the ontological reality of a given situation" (Akatsuka 1985:634-6) – stands in the realm of the irrealis and what the speaker knows at the current stage, with respect to the past knowledge status, represents newly learned information. In other words, according to Akatsuka, newly learned information belongs to the domain of irrealis, even though the speaker has a strong endorsement for the truth value of it. This is because surprise

[126] In Old Japanese (eighth century), the particle *ka* formed questions addressed to the speaker herself, while *ya* questions were directed to the addressee (Ôno 1993; Quinn 1997). It is also common knowledge that these functions have changed over time, and *ya* came to be replaced by *ka* in Modern Japanese (Shinzato 2002). Nowadays *ka* is regularly omitted in informal conversations. Consider also that all the studies on Old Japanese can be based on written corpus only – i.e. poems *et similia* – namely on situations where the communicative context-dependency cannot be present by definition, and the rhetorical questions observable are self-addressed questions, solely.

[127] See also Shinzato (1991).

information is not yet fully assimilated into the pool of the speaker's knowledge. People need time to internalize acquired information, and until it is fully internalized, it is not regarded as knowledge in the realis domain.

Interestingly, in Akatsuka's theory, information and knowledge are two different things. Using her framework, she shows how other grammatical phenomena such as conditionals, complementizer choice in Japanese, and evidential in Balkan languages could be systematically explained. Let me propose here one example only.

(130) Kono ko ga otoko dat-tara ii noni naa!
This child Subj male be-if good though EXCL
"If this child is a boy, I'll be so happy!/ If this child were a boy, I'd be so happy!"

As Shinzato noted, Akatsuka points out that the Japanese conditional sentence in (130) can express indicative and subjunctive moods.

The indicative mood reflects the situation in which the speaker does not know the sex of the expected child. In contrast, the second translation (i.e. the subjunctive mood) depicts the situation in which the speaker somehow knows the sex of the baby. According to Akatsuka, the indicative mood expresses the speaker's attitude of uncertainty – i.e. something on the following line: "I do not know if this is the case". Instead, what underlies the subjunctive mood is the speaker's negative conviction, namely something as follows: "I know that this is not the case".

In this sense, the subjunctive mood in Japanese could disambiguate between uncertainty and surprise. Indeed, the subjunctive can refer to – among other things - a communicative situation in which a clash is verbalized between the speaker's expectations and the real situation she is immersed in. In this situation, what the speaker is learning right now and the information she previously accommodated in her epistemic model is not the same thing. And, precisely, in Akatsuka's epistemic scale, the status of newly learned information is "surprise" (Akatsuka 1985:625).

Crucially, in Japanese, as in all those languages where the verbal forms are not morphologically modified through affixes, the temporal interpretation of the verb is based on textual and contextual elements. In the case of counter-expectational surprise questions, namely in an irrealis environment, the past verbal form observable in (123), (124) and (125) can be interpreted as the subjunctive.

My argument relies on Yoon's (2013) analysis of what she called "evaluative negation". In that paper, Yoon addresses the issue of the subjunctive interpretation of the verb in Japanese and Korean. One of the standard assumptions in the literature is that the subjunctive is the mood of irrealis contexts. For instance, according to the assertion/non-assertion approaches, the subjunctive mood is selected to encode a non-assertion or a weak assertion due to various reasons (Bolinger 1968; 1972; Klein 1980; 1991). The main

idea is that the non-assertion property of the subjunctive mood conveys the epistemic subject's attitude as a strategy to avoid committing to the truth of that proposition, which is, basically, what nonveridicality denotes (e.g. Giannakidou 1995). According to Borrego et al. (1986) the subjunctive mood in Spanish is a means for the speaker to express a subjective comment toward the propositional content rather than making a truthful statement.[128] Thus, the subjunctive mood is intertwined with the notion of nonveridicality. In other words, the subjunctive denotes the epistemic speaker's attitude in terms of uncertainty, undesirability - and similar - towards the proposition's content. The subjunctive mood is chosen by the speaker to not commit to the truth of the proposition she is uttering, and the reason may be that the content of the proposition is unlikely to be realized (Yoon 2013:143). In these cases, in Japanese and Korean, according to Yoon, we can speak of notional mood (Giorgi and Pianesi 1997; Portner 1999) rather than grammatical mood.

In Giorgi and Pianesi's terms, the notional mood can be defined as the complex of semantic factors concerning the classification and the ordering of the contexts in which the truth conditions of clauses are addressed. In this scenario, the notion of the speaker's commitment can be seen as the properties of the semantic environment in which the truth of the sentence is to be evaluated. This view is coherent with Giannakidou (2009) claim that the subjunctive is like polarity items, triggered by nonveridicality. The notion of notional mood is important because it suggests a unified account for mood selection in complement and matrix clauses, depending upon the kind of context in which the embedded proposition is evaluated. More crucially, the concept of notional mood can widen the domain of application of mood distinction even to languages without verbal-mood systems, such as Korean and Japanese. This constitutes an important tool in languages which there is no other way, such as mood morphology on the verb.

According to Yoon (2013), the subjunctive mood is introduced in various contexts by an epistemic subject's attitude toward the content of the proposition – i.e. avoiding committing to the truth of the proposition - probably because the event denoted by the proposition itself is considered to be unlikely. It fits in surprise questions contexts in that the proposition expresses a feeling triggered by the fact that what is being uttered is to be thought on the basis of the speaker's expectations (acquired knowledge/knowledge) that is something that has been questioned by the interlocutor's behavior (newly acquired knowledge/information) who is betraying precisely those expectations. In these cases, in Japanese and Korean, the subjunctive mood is triggered – rather than grammatically selected – by the context. Yoon (2013) calls it "evaluative subjunctive".

Furthermore, according to Yoon, there is a close connection between the evaluative subjunctive and the evaluative (expletive non-void) negation *-anh-* in Korean and *-nai-* in Japanese. More precisely, the evaluative negation is the marker of the evaluative

[128] See also Travis (2003).

subjunctive. As far as Japanese (131) and Korean (132) are concerned, Yoon shows that evaluative negation is not necessarily related to the negative properties of the licensing predicates.

(131) a. John-un Mary-ka oci-anh-ul-ci/kka kekcengha-kois-ta
John-Top Mary-Nom come-Neg-Fut-NFcomp fear-asp-Decl
"John fears that Mary might come"

b. John-nun Mary-ka oci-anh-ul-ci/kka kitayha-koiss-ta
John-Top Mary-Nom come-Neg-Fut-NFcomp hope-Asp-Decl
"John hopes that Mary might come"

(132) a. John-wa Mary-ga ko-nai-ka(to) sinpaisi-te iru
John-Top Mary-Nom come-Neg-Nfcomp fear-Asp
"John fears that Mary might come"

b. John-wa Mary-ga ko-nai-ka(-to) kitaisi-te iru
John-Top Mary-Nom come-Neg-Fut-NFcomp hope-Asp
"John hopes that Mary might come"

(From Yoon 2013, ex. 2 and 3)

The function of evaluative negation in (131) and (132) seems to be expressing the unlikelihood of the actualization of the propositional content in the subordinate clause within the epistemic subject's model. In other words, the evaluative negation is chosen by the speaker to indicate the medium or low likelihood of a future event; for example, "John fears/hopes that Mary might come even though it is unlikely to happen".

The low-likelihood property induced by evaluative negation corresponds to one of the hallmark properties of the subjunctive. An epistemic subject employs a subjunctive-like marker (evaluative negation) to not commit to the truth of what she says because she is not sure about it. Yoon also demonstrated that evaluative negation never occurs in high likelihood contexts. The fact that evaluative negation here marks the low likelihood property indicates the tight link between evaluative negation and the subjunctive mood's properties already observed cross-linguistically (Mithun 1999; Givón 1994; Palmer 2003; Wehmeier 2005).

The unlikelihood property of evaluative negation is further supported by complementizer choice. What the Japanese and Korean evaluative negation licensing contexts have in common is that both take a non-factive complementizer *ci/kka* in Korean and *ka* in Japanese. As Yoon notes, it is certainly not a coincidence that the non-factive complementizers *ci/kka* and *ka* are in a form identical to that of a question particle. The employment of a non-factive complementizer strongly indicates the epistemic subject's indeterminacy concerning the realization of the content of the embedded proposition.

Continuing in her analysis, the author shows that indicative – i.e. non-past forms in Japanese and Korean languages – do not license evaluative negation. The only exception is the category of fictions verbs such as *dream* or *imagine*. However, their indicative property does not seem to be robust because these fiction verbs have a hypothetical nature. For this reason, Yoon (2013) assumes that in Korean and Japanese, these fiction verbs are categorized into the subjunctive rather than the indicative. This is coherent with Giorgi and Pianesi's proposal that lexical selection for subjunctive complement clauses reveals cross-linguistic variation along the scale of modal bases.

Summarizing, according to Yoon, evaluative negation in Korean and Japanese indicates a subjunctive mood status in the sense that its distribution and semantic effects strongly resemble that of the subjunctive mood.[129] Interestingly, Yoon precises that evaluative negation triggers unlikelihood, not uncertainty (Yoon 2013:157). This is in line with what I have observed in the previous sections: from an interpretive point of view, surprise questions are not associated with uncertainty. Surprise and uncertainty are not the same things. Sentences expressing uncertainty show a different prosodic contour as well. Indeed, in Japanese and Korean, evaluative negation disambiguates the meaning of the sentences as unlikelihood rather than as uncertain.

Interestingly, according to Giorgi (2018; 2016) and Giorgi and Pianesi (1997), the subjunctive mood can be considered a non-indexical verbal form such as the imperfect of the indicative mood and "the passato remoto" tense in Italian (Giorgi 2014 and Giorgi 2015) (see also section 2.1.4.). The imperfect of the indicative is the verbal form regularly employed in Italian surprise polar questions. Thus, given the interpretive, syntactical and morphological features of past verbal forms in Japanese and Korean, I can say that, at least from this point of view, the structures in (4), (5) and (6) are analogous to the structures revealed in the case of the studies already conducted on surprise questions in western languages.

A further check on the basis of the traditional grammar seems to testify that I am on the right track. In Japanese counter-expectational questions, the verbal form regularly observed is じゃなかった (Ja nakatta), namely the informal equivalent of the past indicative negative (colloquial form) of the copula です(desu). Traditional studies in Japanese grammar suggest that janakatta (じゃなかった) is used when saying that something or

[129] For all technical details, we refer to Yoon (2013).

things is not/are not something else. The native linguist experts translated it as the indicative imperfect form of the copula "was" in English. Technically speaking, according to Mastrangelo et al. (2016:49), it is a "past" form. The verbal form Korean speaker employed in counter-expectational surprise questions is the past tense of the auxiliary "to have" (었어). This is the past tense but not the perfect form, and it is translated with the imperfect form in English.

According to traditional grammarians, in Korean as well, we can find past and non-past forms only. No morphology markers modify the temporal or aspectual features of the verb (Bruno et al. 2009). The one used in counter-expectational questions is the past one.

Therefore, following the reasoning outlined in this section, the expression of "surprise" signals "I don't know this until now!" rather than "I know this", and thus it belongs to the irrealis domain like a question. Evaluative negation would denote ranges over only the negative attitudes, i.e. potentiality with negative anticipation that is characterized as unlikelihood. In the case of the counter-expectational questions proposed above for Japanese and Korean, this means that the fact that the interlocutor is allergic to cats is very unlikely – he is holding a cat - even if the interlocutor himself has said it about himself in the past. Thus, the same semantic and logical structure can be proposed for Korean and Japanese surprise questions (that are discourses rather subordinate clauses in my analysis, see section 2.1.4.).

Cognitively, surprise is characterized as a reaction of the unprepared mind to an unexpected encounter with a new state or the speaker's realization of a new situation that diverges from the mental constructs he has had (Bolinger 1984). Interestingly, the semantic analysis proposed by Yoon (2013) I extended to surprise questions in Japanese and Korean, is coherent with Shinzato's analysis of ka-interrogatives in Old Japanese and Mayinard's investigation on rhetorical questions in Modern Japanese mentioned above. Both Shinzato's "exclamative" and counter-expectational questions express the speaker's attitude "I don't know this until now!", namely surprise. One of the uses possible for the *ka* particle is in conveying surprise, namely newly learned information (exclamatives domain in Shinzato's terms). In Shinzato's analysis, all of the different functions of *ka* can be united under the speaker's attitude in the irrealis domain, and precisely they represent the different modes of "knowing", which gives the epistemic scale a scalar landscape.

In Maynard's (1995) study on Modern Japanese rhetorical questions, many similarities can be identified between what she defines "self-acceptance rhetorical interrogatives" and the *ka*-sentences defined by Shinzato as exclamations.

In the self-acceptance rhetorical interrogatives, the speaker is not aware of, let me say, "p". Then, p shows some degree of unfamiliarity (i.e. it corresponds to new information), unexpectedness, extraordinariness. *p* is in the process of being acknowledged, and it is expected to turn into the speaker's known information. The ka-sentences equivalent to these are the constructions defined as "Exclamations" by Shinzato

(2002). These are sentences expressing the speaker's strong feelings evoked by an unexpected encounter with a situation or sudden realization of a situation (129).[130]

The parallelism exhibited among Maynard's typology of Modern Japanese rhetorical interrogatives, Akatsuka's epistemic scale, Shinzato's analysis and Yoon's inquiry are remarkable, though the four studies used different data and methodologies.

From an interpretive point of view, counter-expectational surprise questions are part of this domain in turn. As extensively argued in section 2.1., surprise questions are not seeking-information questions nor they are produced in an attempt to receive any kind of answer. Consider the pragmatic context proposed at the beginning of this section: *I know that you are allergic to cats, one day I see you with a big cat in your arms. I'm surprised and say "But weren't you allergic to cats?"*. In this pragmatic scenario, it is clear that I know you are allergic to cats. This has to be considered acquired knowledge (part of the realis domain, in Akatsuka's terms). This implies that I am not asking you something like confirmation about your allergy condition. What is the newly acquired information here is the fact that your behavior – i.e. holding a cat – betrays my expectations, namely my already acquired knowledge. In this sense, as I argued in section 3.5.1., the surprise question verbalizes the clash between the speaker's expectation and the current interlocutor's behavior, namely the surprise. In these cases, the speaker is uttering a proposition on the basis of her expectations, but she cannot be sure of what she is saying in that it became unlikely because of her interlocutor's contradictory behavior .

Let now focus on Korean counter-expectational surprise questions.

What augmented by Yoon (2013) above hold for Korean as well. In Korean counter-expectational surprise questions the verbal form is to be interpreted as subjunctive mood marked by the evaluative negation *-anh-*.

Interestingly, in Korean as well, diverse types of studies and inquiries - conducted independently one from the other - reveal to be coherent with Yoon's proposal as well.

As pointed out by Oh (2000) and Lee (1991), temporal/aspectual meaning of the utterances that contain *-ass-* relies heavily on various contextual factors. -ass- has multiple uses and it is heavily context-dependent in Modern Korean.[131] -ass- is traditionally considered a past tense, however often, it signals what Oh (2000:1182) defines as "current relevance" of a prior situation instead of the past. In addition, the past meaning encoded by *-ass-* is relative rather than absolute in the sense that, in some cases, *-ass-* anchors the time of a situation to a previous time with respect not to the time of speaking but to the reference time – i.e. to some other time which functions as an orientation point.

In the literature, *-ass-* has been defined either as a tense marker (e.g. Lee 1987; Lee 1981b; Chong 1990) or an aspect marker (e.g. Suh 1987; Park and Huan 1993). According

[130] Many languages have grammaticalized ways to distinctively represent this speaker's attitude (see among the others DeLancey 1997).

[131] Notice that -ass- is used in this work as the representative form of various phonological manifestations of the same suffix, including -ess-, -iss-, -ss-, -yss- and others.

to Choi (1987), the diverse meanings associated with *-ass-* are the result of the interaction between other linguistic factors in the context and its basic meaning – i.e. completion irrespective of the phase of the event. According to other authors, we would have to hypothesize the existence of two different morphemes *-ass-*, one being a tense marker and the other being an aspect marker (Lee 1988; Shin 1988). Finally, according to works conducted by Lee (1991; 1993) in the framework of the discourse-pragmatic approach to the study of tense, aspect and modality in Korean, *-ass-* cannot be seen either as a tense marker or as an aspect marker. It must be characterized as an "anterior", i.e. as neutral with respect to tense/aspect (Lee 1993a:329).[132] "Anterior" is to be intended here the sense of Oh (2000), i.e. signaling that the situation which occurred prior to reference time is relevant to the situation at reference time (see also Bybee et al. 1994). Thus, the basic meaning of *-ass-* is related to the "current relevance of prior situations. According to Oh's (2000) experimental research, three uses of *-ass-* do exist anterior, perfective and simple past. Oh (2000) analyzed five sets of authentic conversational discourse data audio-recorded and transcribed by the researcher herself. Although anterior tells us that a situation occurred prior to some reference, it is concerned not so much with locating the situation at a specific point in the past as presenting it as relevant to the current moment (Bybee et al. 1994).

In my view, in the case of counter-expectational surprise questions, the specific use of "anterior" could be identified as the one defined as "continuing" (Oh 2000:1190). In continuing use, a prior situation continues into reference time. This use is not very common compared with the other uses of "anterior" (only 1.2% of cases in Oh's data). Interestingly, in these cases, although the reference time is often the same as the time of speaking, it can shift to whatever time is specified in a given context. Let me repurpose and adapt one interesting example from Oh (2000:1192, ex. 4):

(133) A. Kundey hay-cwu-kkey-la-nun mal-ul kulehkhey ettehkhey ha-ass-eyo
By the way do-give-INT-QUOT-ATTR word-OM like that how do-ass-POL
"By the way, how come you said to him "okay, I will" like that?"

B. nemwu pwulssangha-nikka
Too much be pitiful-because
"Because I took pity on him"

C. ani elma na al -ass-nuntey?
NEG how long know -ass-CIRCUM
"Then, how long had you known him?"

According to Oh, prior to this conversation, A has been telling to B and C how she came to marry her husband 7 years ago, even though she had never expected to marry him.

[132] Lee (1991) argued that the consideration of the speaker's communicative goals and concerns plays a crucial role in characterizing the semantic and grammatical nature of the affix -ass-.

So the lines in (133) are to be interpreted in the situation of A knowing her current husband that started in the past persists into the reference time. Consider also that, since the speakers talk about the past event throughout the conversation, the reference time is implicitly understood to be the past, instead of the utterance time. Pragmatic implicature also plays a part in specifying reference time in the sense that it would be odd in this context to assume that B is asking how long A has known her husband up until the present moment. As Oh noted, anyone with a normal inferencing ability would interpret that B is interested in the length of time A had known her husband before she decided to marry him. Therefore, as it is clear from this example, the interpretation, in this case, is totally dependent on the context. Indeed, if the same utterances were produced in a different context, for example, to a woman who has just decided to marry a man, the reference time would have been the same as the utterance time instead of referring to some time. Therefore, the use of *-ass-* as anterior shows that the current relevance meaning comes not from the suffix itself but from various types of information available from the context, including the inherent lexical aspect of the verb, temporal adverbials, and the speaker's communicative interests and orientations in the given context.

Whatever proposal is preferred, the use of *-ass-* as "anterior continuing" or subjunctive evaluation, semantically speaking, what does not change is the fact that *-ass-* has a lot to do with the use of the non-indexical imperfect verbal form in Italian (see section 2.1.). Let me add the last observation. Even if we do not use the notion of "anterior continuing", we can argue that *-ass-* is the so-called past form. As it is well known, Korean is considered to have two tenses, past and non-past, and what helps to interpret the precise temporal location of the event is the use of adverbials and similar elements. Consider the already mentioned "historical" present in Italian (134).

(134) Ieri vado al mare e chi ti incontro? Il mio capo-ufficio!
Yesterday I go-pres to the beach and who CL2ps meet? The my office-manager!
"Yesterday I went to the beach and who did I meet? My office-manager!

In Petrocchi (2016, MA Thesis), a work on the parenthetical constructions of Free Indirect Discourse in Italian Sign Language (LIS), I explored the hypothesis that this would be a way of constructing tenses in sign language as well.[133]

Based on Zucchi (2009) and Bertone (2011), I identified the existence of an absolute temporal value that I compared to the non-indexical use of Italian "passato remoto" and the equivalent form "historical present". In LIS – such as in Japanese and Korean - only two ways of constructing tenses are recognized. In the case of signed language, these ways are (i) using temporal adverbs along with the citation form of the

[133] On Free Indirect Discourse parenthentical constructions see Giorgi (2016)

verb and (ii) using non-manual components spread on the citation verbal form.[134] In these cases, the speech time coincides with the reference time and "moves" forward or backwards with reference to the utterance time depending on the temporal adverbs or the non-manual components employed. Consider the following examples:

(135) CRISTOFORO COLOMBO GIORNO COMPLEANNO ETA' 10 IX3p MANGIARE FATTO
Christopher Columbus day birthday age 10 he eat done
"Cristoforo colombo nel giorno del suo decimo compleanno, quando ebbe mangiatoPASSREMOTO,
"Cristopher Columbus on his tenth birthday, when he had eaten,

(IX3p) USCIRE POTERE
(he) go out can
Uscì"
Went out"

(From Bertone 2011:208, ex. 6)

(136) GIANNI CASA COMPRARE
Gianni house buy/bought/will buy a house
"Gianni buy/bought/will buy a house"

(137) a. TEMPO-FA GIANNI CASA COMPRARE
Some time ago Gianni house bought
"Some time ago, Gianni bought a house"

Shoulders backwards
b. GIANNI CASA COMPRARE[135]
Gianni house bought
"Gianni bought a house"

Shoulders backwards
c. *TEMPO-FA GIANNI CASA COMPRARE
Some time ago Gianni house bought
"S*ome time ago, Gianni bought a house"

In the case of parenthetical of Free Indirect Discourse, I hypothesized the possibility to translate the absolute verbal form observed as the equivalent of "passato prossimo"

[134] On other sign languages see Nespor and Sandler (1999); Sandler (1999).
[135] Small capitals (glosses) are used to represent signs, whereas the lines over the glosses indicate the presence of non-manual markers. The extension of the line over the manual glosses indicates the distribution of the non-manual features.

and/or historical present in the Italian language. A very similar proposal has been made for Vietnamese as well - see the notion of "imaginary present" (Ngoová 2016) - as in this language, the absolute verbal form cannot express the anteriority of the speech time with respect to the utterance time. Rather, it imposes a constraint in this sense: the reference time has to precede the speech time, which has to coincide with the utterance time. The temporal adverbs or the contextual clues can shift the speech time in the past and in the future. On the contrary, the present tense requires that utterance time and reference time coincide. In this respect, Vietnamese and LIS verbs behave in the same manner resembling what has been observed for Japanese and Korean as well. The verbal form can be interpreted as an evaluative subjunctive (138).

(138) IERI ANNA$_j$ $_j$DIRE$_{1p}$ OGGI IX$_j$ VENIRE DEVE
Yesterday Anna she-says today she come must-MODAL
"Yesterday Anna said she would come today"

As far as the counter-expectational surprise questions spontaneously signed by my participants are concerned, consider the relevant scenario: *You know that your friend Gianni is on a diet and decided to eat only fruit. One day you see him eating a big hamburger. You are surprised and sign.*

(139) counter-expectational intonation
IX$_{2p}$ (MANGIARE) SOLO FRUTTA
'Weren't you eating only fruit?'

(140) Counter-expectational intonation
IX-loc PE IX$_{2p}$ MANGIARE PANINO
'Are you eating that sandwich?'

The sentences in (139) and (140) are polar surprise questions in LIS. In both cases, the signer knows that Gianni is actually eating a sandwich and the sentences are accompanied by the expression of surprise that overlaps the whole sentence.

Interestingly, (139) and (140) are analogous to the counter-expectational questions I found in the elicitation task proposed to Vietnamese native speakers. Consider now the counter-expectational surprise questions spontaneously uttered by Vietnamese speakers as a reaction to the following scenario: *Your friend Mary calls you on the phone*

and tells you that she has a wonderful new red dress to wear at tonight's party. When you meet her at the party, you see that she has a blue gown, you are surprised and say:

(141) (Sao) không phải cái váy đỏ à?
(Why) is-not (classifier) dress red Q?
"(Why) the dress is not red?"

The construction in (141) is highly colloquial. It is commonly used among people with certain intimacy such as close friends, or among those who have relatively the same social status or the same (or lower) age.

My Vietnamese speakers spontaneously also uttered (142) in the following context: "*You know that your brother reads only spy story. One day you see him reading "War and Peace". You are surprise and utter"*:

(142) Em đọc "Chiến tranh và hòa bình" á?
"You read "War and peace" (*question word*)?"

As already mentioned above, Vietnamese has no affixation on the verb, it uses time particles and time adverbials to express verbal temporal features (Ngoová 2016). For Vietnamese as well it has been proposed the binary categorization "past" vs "non-past" verbal forms (Leech 2004) already proposed for Japanese and Korean. According to Nguyễn (1997:198), Vietnamese verbs are timeless in themselves and only linguistic and situational context provides a clue to relative time. In (141) and (142), the verbs do not have any special marking for past time. They are translated slightly differently by the Vietnamese linguist expert who glossed the spontaneous utterances that emerged from the elicitation task. The difference in translation is due to the lexical meanings of the verb involved, i.e. copula vs. " to read", and the relative state/action denoted by the predicates themselves. In counter-expectational surprise questions observed in Vietnamese, no temporal adverbs have been found. The reference time is fixed by the given scenario who is clearly collocated in the past represented by the acquired knowledge shared by the speaker and the interlocutor (my friend and I know that he is allergic to cats/she has to wear a red dress) This can be interpreted as the evaluative subjunctive already treated above.

In addition, jumping ahead, I enlighten that in LIS and Vietnamese counter-expectational questions the introductory adversative-like particle and the negation are present as well.

Let now consider (123), (124) and (125) again.

In (123) appears the introductory element "Tokorode". However, native speakers and native speaker linguist experts suggested that this particle is to be considered too formal in the contexts proposed for the uttering of surprise questions. It should be "omitted". In its place, usually what we find is the most natural non-lexical token "Hee".

Traditional studies on Japanese grammar suggest that this token is associated with the expression of surprise. More formally, in conversation analysis, this element has been proved to be functional to register the achievement of "epistemic coherence". Namely, it signals that the newly acquired information is seen to be coherent in relation to information available from other sources of cognition, such as one's pre-existing knowledge (Tanaka 2012). In this sense, the use of "Hee" is expected in a surprise questions environment such as the one described above.

"Hee" can be paraphrased as "wow", "golly" or "jeez", according to Tanaka (2012). Considering this and what has been observed by Giorgi and Dal Farra (2019) on the spontaneous production of swear words in the uttering of their participants, my hypothesis is that "Hee" lexicalizes the *Eval* head in Giorgi (2018) and Giorgi and Dal Farra (2019) syntactic model of surprise questions.[136] I did not find any case of co-occurrence of "tokorode" and "Hee". Probably, it is due to the fact that these tokens belong to different registers (formal vs colloquial). Moreover, omission of the introductory particle is expected in the production of surprise questions as well.

"Tokorode", in my analysis, is a discourse head – such as the "ma" detected by Giorgi and Dal Farra (2019) – in that its function is to join the special question to the pragmatic context [CP1/The speaker expectations). This joining seems to be related to the adversative value found in the other Western languages investigated. Indeed, according to traditional grammars (Mastrangelo et al. 2016), "tokorode" is an "emphatic particle" used to draw the attention of the interlocutor and to introduce a topic that is different/in contrast with the previous topic. It is used to connect sentences only. The traditional grammars translate "Tokorode" as "by the way" in the sense of "however", the Italian correspondent particle would be "ebbene"(Mastrangelo et al. 2016:87). Semantically speaking, this particle fit in the spectrum of the adversative/denial-of-expectation meaning, the most general one. By means of *Tokorode*, indeed, the speaker refers to the acquired knowledge (her expectations (in Giorgi and Dal Farra's term, the common ground (in Pragmatics terms, the speaker/hearer's mutual beliefs in Pierrehumbert and Hirschberg terms) and unavoidably implicates a state of affairs other than the one that might be expected based on the first conjunct (and its context). The presence of other elements in the sentence supports this hypothesis: non-void negation, evaluative interjection expressing surprise, the evaluative subjunctive verbal form. In other words,

[136] Indeed, these kinds of tokens are regularly produced in surprise-disapproval questions ("Chotto" in Japanese and "ya" in Korean), where the lexicalization of swear words has been observed more clearly by Giorgi and Dal Farra (2019).

the apparent semantic tepidity of "Tokorode" seems to be warmed up by the unlikelihood semantic nuance attributed to the sentence by the "evaluative negation" in Yoon's (2013) terms, as explained above.

In Korean, the semantic of "Kundey" seems to be less tepid: it is used to change the direction of something that has been said while relating it to the preceding statement or to say opposed to the preceding statement. In the latter semantic nuance, the dictionary translates it as "But; However", as well. "Kundey" is used in order to join the surprise questions with the pragmatic scenario (or, in other words, to join the retrieved acquired knowledge to the newly learned information, in Akatsuks's term) and, in addition, it can encode an adversative semantic, as well. The clash between the acquired knowledge – i.e., you are allergic to cats - and the newly learned information – i.e. you are behaving like a person who is not allergic to cats – is what causes surprise. The fact that the speaker is acquiring the new information and the time she needs to accommodate it maintain the surprise question in the irrealis domain (Akatsuka 1985; Shinzato 2002). In fact, consider the following example I adapted from Kim et al. (2021).

(143) Kundey nyuyok-un ancenha-lkka? Nyuyok-to ka-ya toy-nuntey
But New.York-TOP safe-do.you think New.York-also go-have.to-Circum
"But, do you think New York would be safe? (I) have to also visit New York"

This is a study focused on the function of "ya" particle (I will treat this topic in a while). This study presents diverse examples (excerpt) from phone and face-to-face conversational interactions.

This study shows that "Kuntey", or as my expert linguist collaborator glossed "Kundey", is to be considered a resource for understanding the action underway. According to different research on *Kundey* and similar introductory particles in Korean (Kim and Suh 1996; Park 1997; Kim 2013; 2015b), regardless of language typology, turn beginnings are a strategically significant place for the organization of the previous and current turns or actions. *Kundey* – such as *ya* – is used in initial position, more precisely, at the beginning of the conversational exchange/topic and is syntactically independent from the verb. All the other particles in Korean playing the same role are affixes, verb-dependent.

Consider example (143) again. The sentence is from a face-to-face talk among three friends visiting the United States as international students. They are in doubt about the safety of New York City. The speaker uttering (143) is opening the conversation. As the reader can see, the researchers translated "Kuntey" as "But". To be more precise, Kim and colleagues (2021) always translate "Kuntey" as "but" in their examples.

"Kundey" has the same function as "but" in English and "ma" in Italian in surprise questions. In fact, this is not used as a mere adversative particle (proper conjunction). Rather it is used as a discourse particle, not just positioned left-most in the sentence, but positioned literally at the beginning of the conversation itself, as the start of the conversation itself.

In conversational analysis, this particle such as *Kundey* and *Ya* are defined as "discourse particles" playing a central role in initiating a new topic in an abrupt manner, reopening a closed topic. From a functional perspective, this is indeed what the speakers uttering surprise questions usually do: they verbally react to the interlocutor's behavior, starting a conversation abruptly. The aim of the conversation is the expression of the speaker's feelings and emotions (surprise).

What about Vietnamese surprise questions? *Sao* is commonly translated as "why"; however, it shows bleaching semantics in these and other cases. Such as "ya" in Korean, *sao* can be positioned in sentence-final position marking the question as a rhetorical question expressing surprise (144b):

(144) a. Bạn đang ở Việt Nam
a. You are in Vietnam

b. Bạn đang ở Việt Nam sao?
b. Are you in Vietnam now? (Incredible!)[137]

Moreover, consider that *sao* is used by Vietnamese speakers as an introductory element both in counter-expectational (polar) questions and surprise-disapproval (content) questions.

This form has been described as "deictic" by Thompson (1963). In the same paper, Thompson provides a translation for "sao", namely: "however".

As far as LIS is concerned, we found the "but" particle as well (Branchini and Mantovan 2020) (Figure 30). This holds for the bilingual and monolingual signers. The relevant context considered here is the same used throughout the section for all the other languages, and the translation of the sentence uttered by signers and reported in Figure 31 is the following one: "But sorry weren't you allergic to cats?"

[137] Personal communication with doctor Trahn.

Figure 29 CODA signer uttering "BUT"

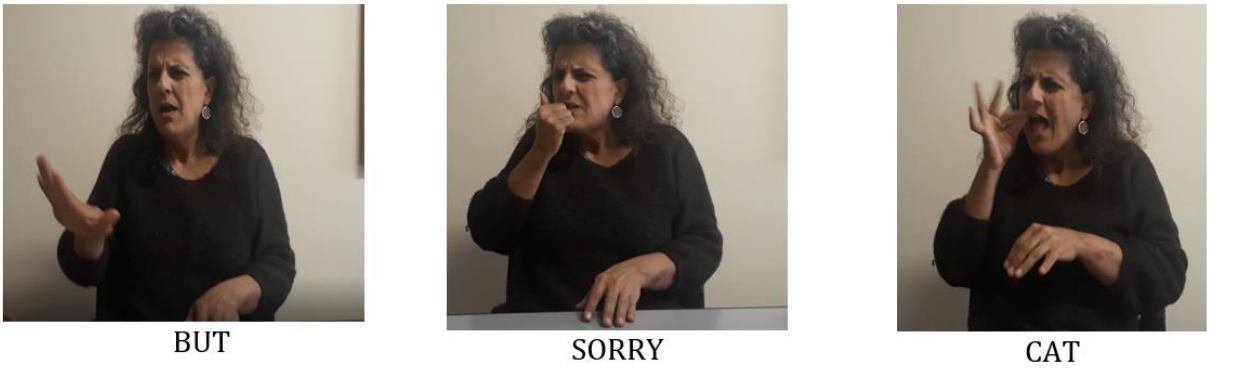


Figure 30 CODA signer utterying "But, sorry, weren't you allergic to cats?"

In LIS, sentences can be conjoined through manual and non-manual markers. In the case of surprise questions, the adversative coordination marker "but" is used.

BUT

Figure 31 "But" coordination. (From Branchini and Mantovan 2020:330)

Thus, I can say that counter-expectational questions in LIS are introduced by "BUT". Where this lacks, it has been omitted, plausibly.[138]

A non-manual component involved in counter-expectational questions in LIS is the one associated with negation, i.e. shake.

In Vietnamese as well negation is observable in counter-expectational surprise questions – i.e. *không phải*. At the current stage of the research, I did not find specialized literature focused on "không phải", however, interestingly, the traditional grammars note that this negation is used in polar questions only (the neutral negation word is *không*), usually in a sentence-final position.

According to Giảng (2018), Vietnamese has a number of particles able to be placed at the end of the sentence, and that express the purpose of the utterance. Together with this, the final particles express the attitude and feelings of the speaker about the matter at hand. Moreover, what sets these particles apart from other lexical and functional words in a sentence is that they do not contribute to the propositional content of an utterance. These particles are heavily employed in colloquial speech and are considered to be an important component of a competent Vietnamese speaker's lexicon (Le 2015). These particles express the purpose of the utterance and the attitude and feelings of the speaker about the topic. They indicate whether a certain utterance is negative, interrogative (wh question or yes/no question), explanative or imperative.

Let me focus on the particle "á", ubiquitous in the case of counter-expectational questions I elicited in Vietnamese language. Consider (143) and (144) above.

In glossing the sentences spontaneously uttered by Vietnamese speakers in my elicitation task, the Vietnamese expert who collaborated with me noted that "the question word "á" in Vietnamese has an indication of disbelief or surprise". According to Giảng (2018) and Van Hue (2001), the final particle "á" in Vietnamese is placed at the end of a

[138] This means that the non-manual components involved in these sentences refer to prosodic instances only.

question to ask for more information about something that the speaker is observing (based on certain evidence) or to express the speaker's surprise about something. Consider the following example by Giảng (2018:458):

(145) Cô Mai đi làm à?
Ms Mai go to work à?
Ms Mai, you are going to work?

(From Giảng 2018, example 2)

According to Giảng, the scenario for (145) is the following: every morning, seeing Mai goes to work, the neighbour always asks the sentence in (145). In this case, the neighbour does not care whether Mrs Mai answers, as this is meant as a greeting. Therefore, the answer to the question is obvious, and no information is asked. See example (146) from Giảng (2018:459) uttered in the following context: *normally a daughter goes to school at this time, but today she is at home.* Thus, the father says (146).

(146) Con không đi học à?
You no go study à?
Oh, you are not going to school?

In Giảng's terms, in this case, the father's surprise as to the truthfulness of the proposition is because the daughter should be at school at this time.

Interestingly, Giảng noted also that "á" could transform a wh-question into a yes/no question and provides the following examples:

(147) Em đang học gì?
You (be-)ing study what ?
What are you studying?

(148) Em đang học gì à?
You (be-)ing study what à?
Are you studying (something)?

I did not find "á" in the elicitation tasks on content surprise-disapproval questions in Vietnamese. Moreover, in counter-expectational surprise questions "không phải" and "á" would compete for the same sentence-final position, and this would be the reason why "không phải" is not sentence-final in these cases.

Thus, considering what is argued in this section, I suggest that the syntactic model proposed by Giorgi and Dal Farra (2019) for counter-expectational questions in Western

languages can also account for surprise questions in the Eastern languages I investigated and in the case of LIS.[139]

The same holds for surprise-disapproval questions in the languages here investigated.

One of the pragmatic scenarios proposed has been the following one: *You see your brother wearing his best trousers kneeling in the dirt in the garden. You think that he will ruin his trousers. You are annoyed and utter.* The Japanese speakers spontaneously uttered sentences of the type presented in (149):

(149) a. Chotto nani shiteruno?!
b. HEY (you) what do Prog-Q
c. Hey what are you doing?

Such as "Hee" in counter-expectational surprise questions lexicalizes *Eval* Head in relation to the expression of surprise, Chotto (ちょっと) has the same function in relation with the expression of surprise with a negative orientation in surprise-disapproval questions. Chotto is translated as "Hey" and such a "Hee" it is considered to be one of the more useful and commonly used words in the Japanese language (Tamako 2012). "Chotto" in this usage has a connotation of blame, reproachfulness, and even irritation (Mastrangelo et al. 2016).

No negation has been found in the spontaneous productions of my participants. The sentences produced are always wh-questions, and the verb is now translated as a progressive verbal form, as shown by the English translations in (150).

(150) YA (ne) mwe hako iss-se?
HEY (you) what do Prog-Q
Hey what are you doing?

[139] It is worth noting here that the present work focused on the prosodic and gestural realization of surprise questions in Eastern and signed languages, mainly. Thus, no further syntactic tests have been conducted other than the ones presented in this chapter. Further syntactic checks are needed in order to define an ultimate syntactic model, however, the syntactic hypothesis put forward here turned out to be coherent with the one already elaborated for western languages (Giorgi 2016; 2018). Finally, we must also consider that, as far as I can see, no literature on surprise questions in Japanese, Korean, Vietnamese and LIS does exist at the present stage, so these are the very first analysis on the topic.

(150) is an example of a sentence spontaneously uttered by Korean speakers given the following scenario aimed to elicit surprise-disapproval value: *You see your brother wearing his best trousers kneeling in the dirt in the garden. You think that he will ruin his trousers. You are annoyed and utter.*

As argued above, in these cases as well the evaluative subjuntive is interpreted depending on pragmatic and conversational elements.

Let me focus on "ya" particle. "Ya" is a pseudo address term that is usually translated in English as "hey" (Kim et al. 2021). It has been defined as "vocative interjection" and is used to summon an addressee at the same age or younger and with a close relationship to the speaker (Chang 1996). "Ya" naturally also occur when there is no need for calling or summoning an addressee (Kin et al. 2021). According to Kim (2018), "ya" functions beyond the action of summoning in interaction, initiating or extending turns at talk situations where the speaker may be at odds or in competition with other speakers in terms of topic, activity, or stance. Kim's idea is that "ya" plays an important role in the organization of turn-taking and stance-taking and suggests that it is emerging as a discourse particle given its discrete functions across different positions in the turn-conversational unit.

This particle has been studied in particular within the conversation analysis domain. One of the functions of "ya" is to provide the recipient with a resource for understanding the action underway (Schegloff 1987; 1996). "Ya" and "Kuntey" has already been investigated for their use in interaction. Each of these forms serves essential and discrete stance-marking and stance functions. These forms with respect to the others already studied such as *-ko, -ta, -nikka* etc, are different in that they are left-most positioned, not syntactically tied to the predicate and thus selected at the discourse and interactional level.[140] In particular, the studies conducted in this domain address the association of left and right peripheries with, respectively, subjectivity and intersubjectivity functions (Beeching and Detges 2014; see for Korean language Kim et al. 2021).

Beyond the study of the turn-conversational positions possible for the "ya" particle, which lies outside the main focus of this work, I will consider here only "ya" in the initial position. After all, according to Kim and colleagues' data, Korean speakers systematically deploy "ya" at the beginning of the Turn Conversational Unit (TCU). "Ya" is deployed as an interactional resource to index abrupt transitions to the topic, action, or activity in progress or shifts instance. Korean speakers involved in the surprise questions repetition task included in this investigation had to start the conversation, so to say, in that no other conversational unit was present. They only heard the audio-recorded scenarios before uttering. From a prosodic point of view, this is a high pitch "ya".

[140] For studies on "Kundey" see among the others, Park (1997); Kim (2013; 2015b). For studies on *-ko, -ta, -tamye, -nikka* and *-ketun* see among the others, Kim (2010; 2011; 2015a) and Kim and Sohn (2015).

This use of *ya* has been observed in phone conversation and face-to-face interactions data collected by Kim et al. (2021). In face-to-face interactions, interlocutors have access to non-verbal as well as verbal resources. It encoded summoning, disapproval. Notably, *Ya* in final position is used to express surprise *cincca-ya* "really"?

Turn-initial positions are occupied by elements that mark the relationship between the current turn-in-progress and that which precedes it. These turn-initial elements also project the ensuing turn and action. This trait of turn-initial elements is consistently observed across typologically different languages (Heritage and Sorjonen 2018). *Ya* regularly occurs at the beginning of a TCU, and in this position, it indexes disjunctive transitions or departures from the prior turn or talk or from the trajectory of the interaction. *Ya* consistently marks a departure from prior or ongoing turns or talk of others or of the speakers themselves. Such functions of *ya* are further observed in TCU-final position. Among turn-initial elements, the usage of address terms (Clayman 2012; 2013) shows similarities with turn-initial *ya*, as they are mobilized for launching disaligning actions, such as topic shifts or non-conforming responses.

According to the data reported in this section and with what was pointed out by Kim et al. (2021), *ya* shows all the key features of a discourse particle such as semantic bleaching, optionality in discourse, multifunctionality and high frequency in discourse (for example, Heine et al. 2021). *Ya* serves functions beyond that of a pseudo address term: it appears when there is no ambiguity in regard to the addressee and when the recipient is already engaged in the talk-in-interaction. Speakers deploy *ya* to implement a wide range of actions utilizing its original summoning property. *Ya* can also serve to alert the recipient to the disjunctive or disaffiliative stance the speaker is about to take or to retroactively add such a stance to the utterance just completed.

Observations have been made across different languages that the function of discourse markers or particles are prominently subjective when they occur at the left periphery (linking to previous discourse, topicalizing) and intersubjective at the right periphery (response-inviting).[141] *Ya* in initial position displays more subjective properties.

Briefly, I add that in LIS and Vietnamese the same introductory discourse particle already presented above are found, i.e. "but" and "sao", respectively.

Concluding, in these cases as well, the syntactic model proposed by Giorgi and Dal Farra (2019) for surprise-disapproval questions in Western languages can also account for surprise-disapproval questions in Eastern languages and LIS. Notably, as I will show in the following section, surprise questions in eastern and sign language are marked at a prosodic and gestural level as well.

[141] Among the others, Traugott (2014), Rhee (2016; 2020).

3.6.2. Repetition Task

3.6.2.1. Counter-expectational surprise questions

In administering the repetition task, I was mainly interested in studying the prosody and the gestural pattern associated with the surprise questions under investigation. I proposed one condition only, namely, all my participants had both hands free during the experimental session.

The elicitation task (section 3.6.1.) revealed that in all the languages under investigation the sentences spontaneously produced by the native speakers are syntactically analogue to the surprise questions already studied in Western languages. The repetition task also operated as a way to check the acceptability of these sentences - testing them on a larger scale of participants - and their interpretive and pragmatic features. All the speakers confirmed that the counter-expectational questions proposed in the repetition task were totally adequate and natural as a reaction to the pragmatic scenarios administered. For all the speakers these sentences were rhetorical questions employed in order to express emotions/feelings such as surprise and disapproval/anger. Some speakers suggested that swear words as well would fit perfectly in these cases.

Crucially, as shown in section 3.6.1., the syntax of counter-expectational questions in Japanese, Korean, Vietnamese and LIS is peculiar and differs from the one associated with the correspondent canonical interrogatives. Thus, I expected these sentences to show also a peculiar prosodic contour along with a special gestural pattern. I briefly recall here that this work is elaborated in the theoretical framework of *Minimalism* (Chomsky 1995; 2000; 2001; 2008; 2011). In this model, the syntactic representation of a sentence interfaces with the sensorimotor component, which yields its phonological and prosodic form, and with the conceptual system, which gives rise to its interpretation. In this perspective, there is no direct link between the interpretation of a sentence and its phonological and prosodic realization. The relation between the two is necessarily mediated by syntax. This means that if a peculiar prosodic and gestural realization is detected, a relative special syntactic representation is to be hypothesized.

As far as the gestural component is concerned, in the repetition task, I expected speakers to produce gestures even in the case of those languages (and cultures) considered to be not prone to gesticulation.

Almost all the participants that took part in the experiments and all the native speakers who collaborated with me, after the experimental session, stated that they were

convinced that gesticulation was not present in their language/culture. This is a widespread bias second only to the belief that sign language is one and universal for all the Deaf communities existing in the world. All the times that I presented my work, my experiments and part of the results obtained, someone in the public commented that he/she was previously convinced that only Italian people use gestures while speaking in such a relevant manner.

Concerning the prosodic component, I expected the sentences under investigation to be accompanied by a characteristic prosodic contour. In particular, I expected the special value of these sentences to be identified by the distribution of the pitches.

My main goal was the evaluation of the cultural differences in prosody and, especially, gestures. With respect to LIS, I devoted particular attention to the prosodic components associated with these structures and to the presence of *gestures*, which are occasionally realized together with *signs.*[142]

Consider the following Japanese example. Scenario: *You know that your brother reads only detective stories. One day you see him reading "War and Peace". You are surprised and utter:*

(151) Hee suiri-shosetsu-shika yomanai-nja-nakatta?
Hee detective-stories-only read-Neg-Past-Q
'But weren't you reading just detective stories?'

In Japanese, these constructions are introduced by the discourse particle *tokorode* usually. This can be omitted, though. The other element almost always present is *hee*, which conveys surprise (Mori 2006). Counter-expectational surprise questions in Japanese are also characterized by the presence of negation and the past marker (*nja-nakatta*). According to traditional grammar, this combination of negation and the past marker is typical in the case of rhetorical questions.[143]

The non-manual components are shown in Figures (33) and (34). Here we observe the presence of the following non-manual components: widened eyes, forward head movement or nod and raised eyebrows.

[142] See Godwin-Meadow & Brentari (2017).
[143] For further details see section 3.6.1.

Figure 32 Japanese's speaker. Task 1.3 (J1)

Figure 33 Japanese's speaker. Task 1.3 (J1)

Figure (35) shows a Japanese speaker uttering (152):

(152) Tokorode akano-doresu-nja-na-katta?
By the way red-color-dress Neg-Cop-Past-Q
"But was not it red?"

Figure 34 Japanese's speaker. Task 1.2 (J5)

Figure (36) shows a speaker uttering (152). Here it is possible to see the head movement "nod". The yellow dotted line signals the baseline represented by the chin of the speaker. The head of the speaker clearly moves up and down, moving away from and approaching the baseline in different moments.

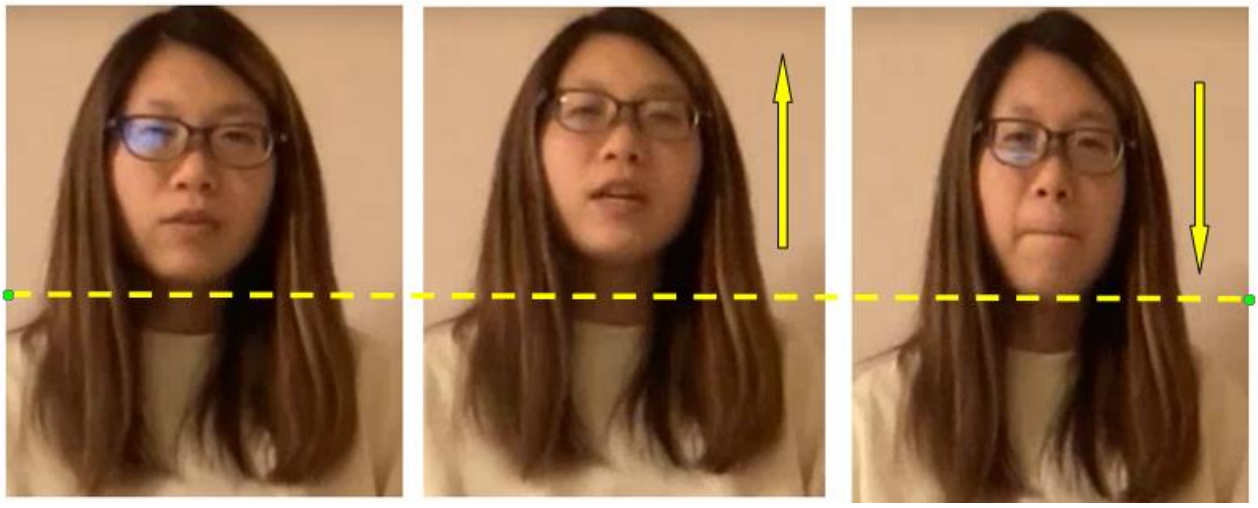


Figure 35 Japanese's speaker. Task 1.2 (J8)

Interestingly, I noted that when speakers voluntarily "trap" their hands putting one hand in the other, for instance, an additional non-manual gesture appears, namely "lifted shoulders". Moreover, in these cases, often, the speaker moves the trapped hands in an attempt to produce a hand gesture. In Figure (37) it is possible to see some pictures of a Japanese speaker uttering (152). She voluntarily trapped her hands, however, it is possible to see that she moved her hands in an attempt to produce hands movement - the hands themselves are changed in position during the different phases of the utterance. The speaker maintained the hands in the higher position until the end of the sentence. She also moved her head in a nod and lifted her shoulder during the utterance.

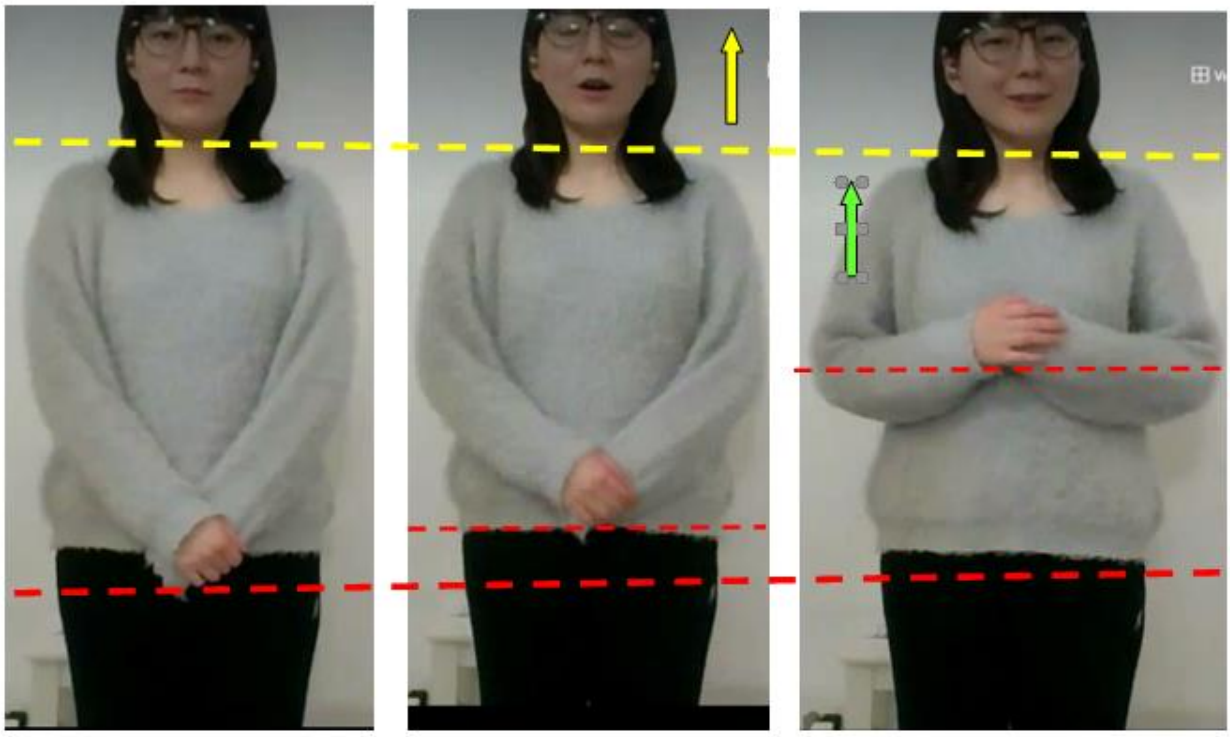


Figure 36 Japanese's speaker. Task 1.2 (J2). "nod", lifted shoulders and hands movement are observable here

In the case of Italian as well, Giorgi and Dal Farra (2019) noted the same movement of the shoulders. In particular, they noted this non-manual gesture in the experiments conducted in what they called "Condition B" and "Condition C", i.e. in those conditions where the hands were blocked in some way because they were holding a phone or a heavy bag. Thus, when the hand gesture is blocked in some way, speakers tend to convey the same meaning by means of different gestures. In Condition C, Giorgi and Dal Farra registered attempts to produce hands gestures even if it was obviously impossible in that the speakers had to hold a heavy bag containing a lot of big books.

Interestingly, in Japanese, manual gestures of the expected type have been found. Not all the Japanese participants gestured, but when they did it, they used the gesture expected, namely the palm-up open hand gesture.

Figure 37 Japanese's speaker. Task 1.2 (J5). PUOH gesture

In Figure (39) the speaker was uttering (152). In Figure (40) a different speaker was uttering “But weren’t you allergic to cats?”.

Figure 38 Japanese's speaker. Task 1.3 (J5). PUOH gesture

Figure 39 Japanese's speaker. Task 1.1 (J9). PUOH gesture

I noted that occasionally the speakers tended to enrich the interpretation of the sentences, which in some cases is not only connected to surprise but also to disapproval (further details will be given in the next section). Disapproval is vehicled essentially by furrowed eyebrows. As it is clear from Figure (41), in these cases, the speaker uses different non-manual gestures uttering the counter-expectational question.

Figure 40 Japanese's speaker. Task 1.2 (J4)

Summarizing, in 20% of the cases, the speakers produced the PUOH gesture. In 40%

of the cases, the speakers use other gestures such as pointing or the kind of gesture shown in figure 5.

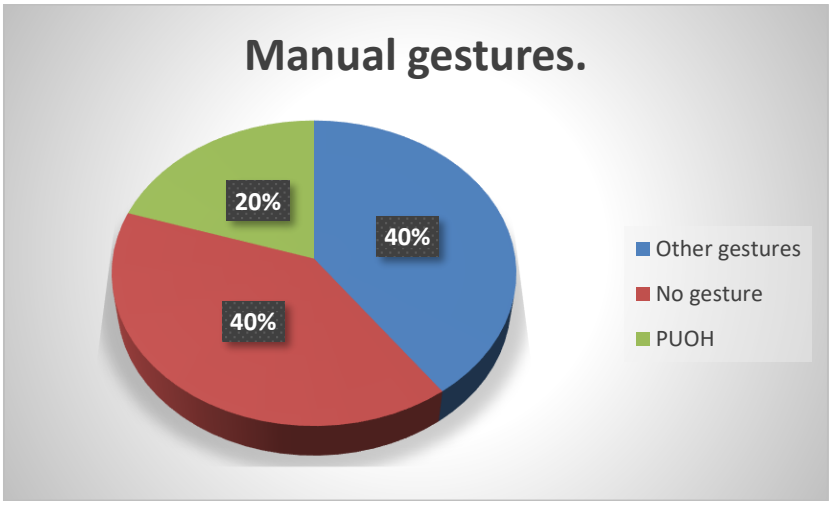


Table 1. Manual gestures. Counter-expectational questions in Japanese

As far as the non-manual gestures are concerned, the percentages are shown in Table 2.

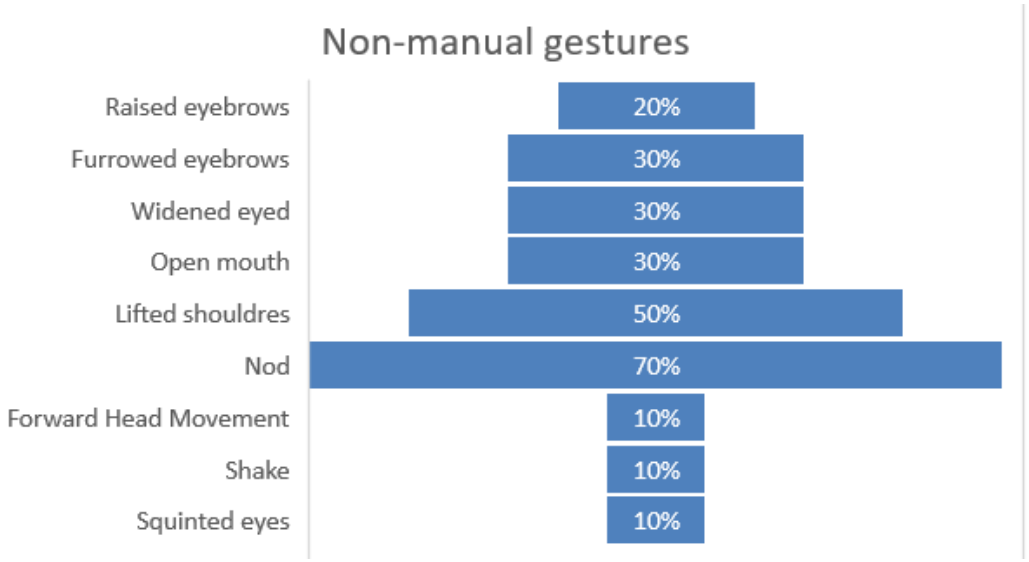


Table 2. Non-manual gestures in counter-expectational surprise questions (Japanese)

Let now focus on the qualitative analysis of the data. Some correlations are observable. Concerning head movement, all the speakers used "nod" except those cases of enriched interpretation where forward head movement is employed. Raised eyebrows and widened eyes always occur together and almost always are also accompanied by opened mouth. "Trapped hands" occurs with lifted shoulders in 50% of the cases.

In Giorgi and Petrocchi (forthcoming), presenting the very first results of the pilot experiment we conducted on surprise questions in Eastern languages and LIS, we noted that "The issue concerning the almost total absence of manual gestures deserves further attention. To make a very complex discussion short: among other factors, hand gestures can be considered in several cultures as *inappropriate*, and for this reason, avoided by consultants when completing their tasks." The spontaneous judgement shared by my consultants after each experimental session confirmed the existence of the cultural issue we referred to in that paper. However, I observed that by enlarging the number of speakers and their age range, manual gestures can be found in Japanese, actually. And these gestures are of the same type as the ones expected. My speakers gesticulate in 20% of cases. The youngest people tend to gesticulate more than older people. I predict that by enlarging the number of speakers involved and their age range, this percentage is bound to grow. Moreover, the experimental setting, especially in the cases of remote interviews, contributed to inhibiting the speakers and their natural reaction to the scenarios proposed. It would be useful to conduct an inquiry on natural data in future research, such as collections of face-to-face interactions or TV shows, for instance. Naturally, this inquiry would require a huge amount of time, but it could provide more clear data and percentages. Finally, I have to notice that all the speakers used non-manual components. The head

movement is the non-manual gesture more present in absolute (70% of the speakers use it and do it in 70% of the utterances, i.e., 28 cases on 40 in total). The head is moved in a nod in the case of the counter-expectational interpretation and forward in the case of the surprise-disapproval interpretation.

Regarding the prosodic component, I saw that in Japanese the intonation of counter-expectational questions differs from the intonation of canonical questions, in that the F0-contour characterizing them is higher than F0-contour in canonical yes/no questions (Figure 2).[144] In figure (42) I propose a comparison between the Praat representation of the counter-expectational question shown above and the analysis of canonical yes/no questions in Japanese conducted by Maekawa (1991). The yes/no question pattern is the one on the right, Figure (42a). The stimulus proposed by Maekawa (1991, fig. 42b) is the following one:

(153) Nánika miéru
Something visible
'Can you see anything?'

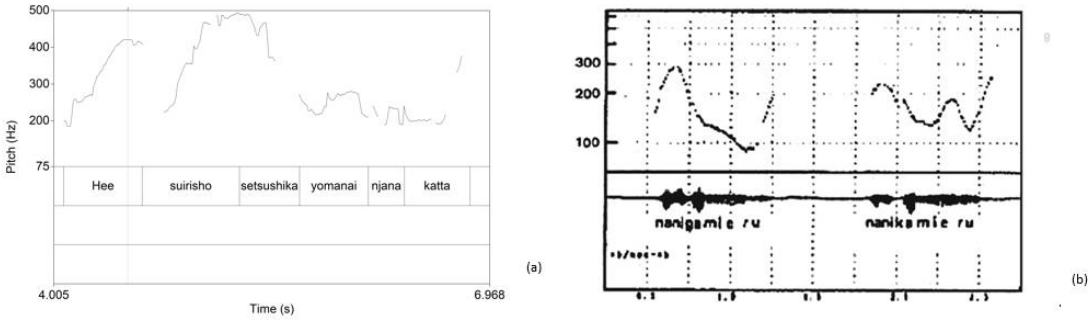


Figure 41 A comparison between the Praat representation of the counter-expectational question shown above in (1) and the analysis of canonical yes/no questions in Japanese conducted by Maekawa (1991).

As shown in section 2.2., one of the major features distinguishing canonical and non-canonical questions is the boundary tone. This has been proved to be valid cross-linguistically. Importantly, the prosodic contour of counter-expectational questions in Japanese turns out to be low rather than high (raising). It confirms the rhetorical nature of the constructions at issue.

As shown in section 2.2., one of the major feature distinguishing canonical and non-

[144] For a discussion, see Ishihara (2017). See also Giorgi and Petrocchi (forthcoming).

canonical questions is the boundary tone. This has been proved to be valid cross-linguistically. Importantly, the prosodic contour of counter-expectational questions in Japanese turns out to be low rather than high (raising). It confirms the rhetorical nature of the constructions at issue.

Figure (43) shows the Praat analysis of the following sentence:

(154) Tokorode neko-arerugi njana-katta?
By the way cat-allergy have-Neg-Past-Q
"But weren't you allergic to cats?"

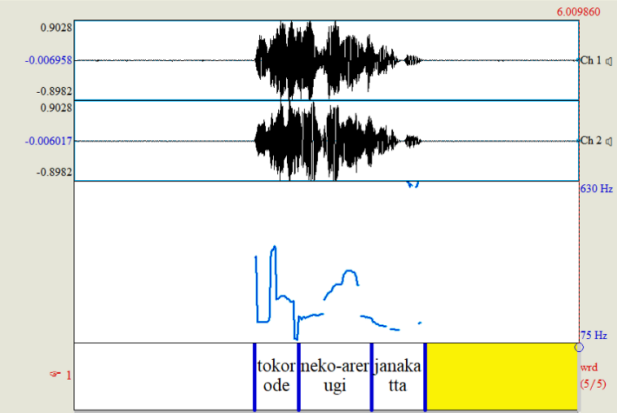


Figure 42 A Japanese speaker. Task 1.1. (J5). PRAAT Analysis

The most relevant pitch is found on "Hee" if present or it is registered after "tokorode" and the beginning of the following word. As far as the alignment between gestures and the prosodic component is considered, I noted that when the hand gesture is present it begins at the very beginning of the sentence or before this starts and lasts until the end of the sentence or it ceases after "tokorode". It can also start after "tokorode" and before the beginning of the following word in the sentence.

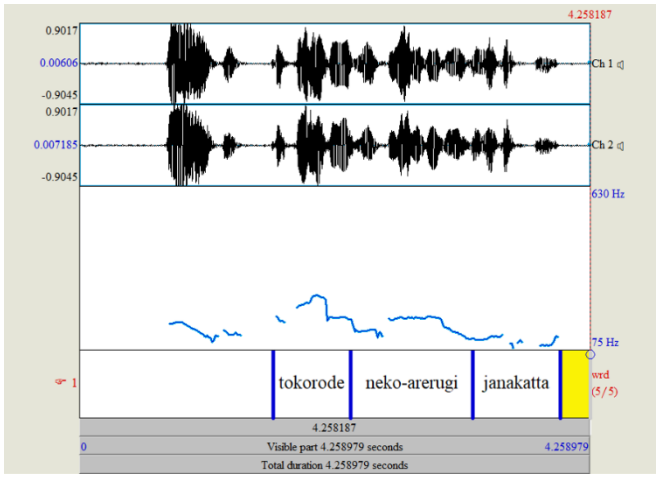


Figure 43 Japanese speaker. Task 1.1 (J6). Praat analysis

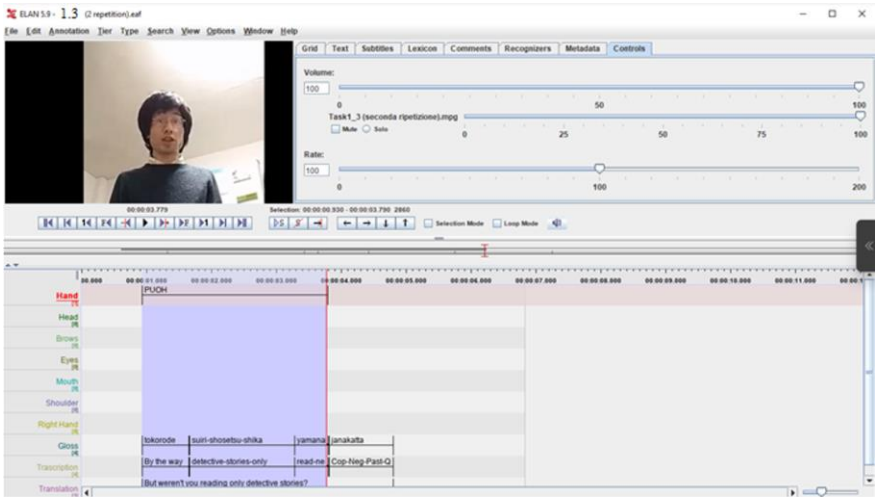


Figure 44 Japanese speaker. Task 1.3 (J5). Elan analysis. Detail non-manual component

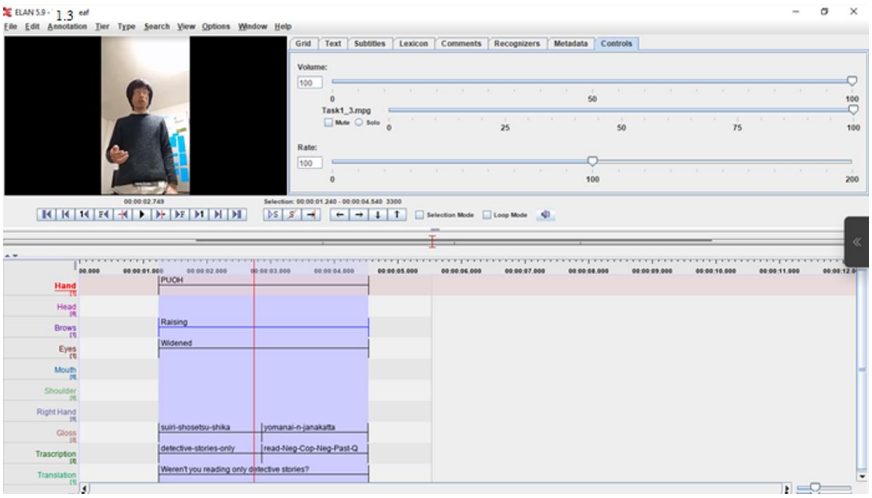


Figure 45 Japanese speaker. Task 1.3 (J5). Elan analysis. Detail manual gesture. This is a spontaneous repetition of stimulus 1.3. The speaker spontaneously repeated the sentence twice. Here "tokorode" and "Hee" have been omitted.

The non-manual gestures tend to spread over all the sentences, in the majority of the cases. However, the stroke of the head movement is aligned with the verbal form in the vast majority of the cases and/or it shows up after "tokorode" or in correspondence with "hee". The stroke of the raising eyebrows gesture is usually aligned with "hee".

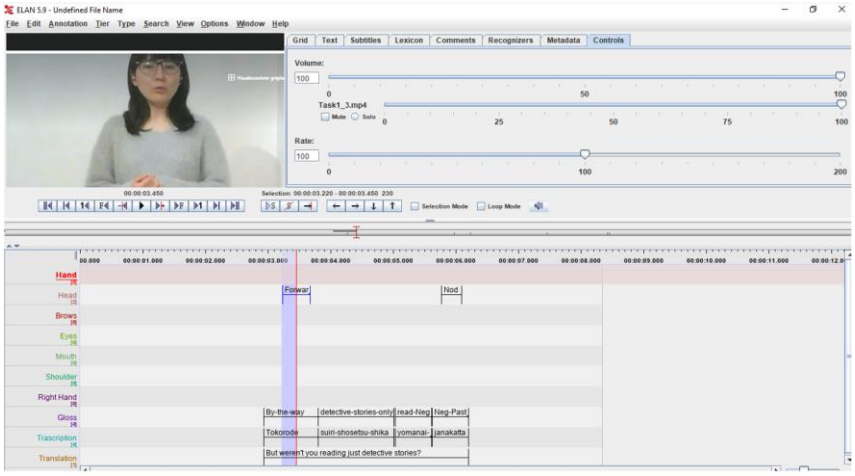


Figure 46 A Japanese speaker. Task 1.3 (J2). Elan analysis.

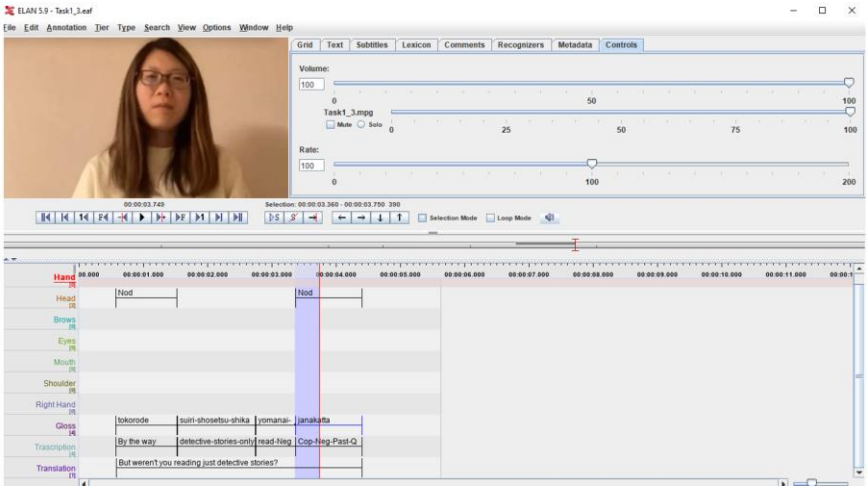


Figure 47 Japanese speaker. Task 1.3 (J8). Elan analysis

As shown, I found a consistent alignment between prosody and gestures. Such an alignment can be seen in the distribution of the emphatic pitches (prosodic component) and for the stroke of the hand gesture and/or for the head, which is usually realized in correspondence of "hee". I also noted head movement and relative stroke of the gesture on the verbal form. This has been observed for Italian (Giorgi and Dal Farra 2019), German (Giorgi, Dal Farra and Hinterhölzl forthcoming) and Spanish (Furlan 2019) as well. As expected, the gestures are aligned with the evaluative head ("Hee") when lexicalized and visible in Japanese, or it follows "tokorode" as observed in Western languages, where the stroke of the gesture is detected after the adversative particle regularly. Moreover, the gestures interest all the sentences. This result is expected: the *evaluative head* that triggers the relevant gestures and prosodic features has scope on the entire sentence.

Consider now (155), a counter-expectational question in Korean. The relevant scenario was: *You know that your friend John is allergic to cats. One day you see him with a big cat in his arms. You are surprised and utter:*

(155) Kundey (ne) koyangi alleyluki issci anh-ass-se?
Kundey (you) cat allergy have Neg-Past-Q
'But weren't you allergic to cats?'

Counter-expectational surprise questions in Korean are introduced by the particle *kundey*. It has been omitted in some cases. As in Japanese, in Korean these sentences show the obligatory presence of negation and of the past marker on the verb.

Figure 48 Korean speaker. Task 1.1 (K1)

Figure 49 Korean speaker. Task 1.1 (K1). Detail of the non-manual gestures.

In Korean as well, I found the presence of forward head movement, widened eyes and raised eyebrows along with shake on negation.

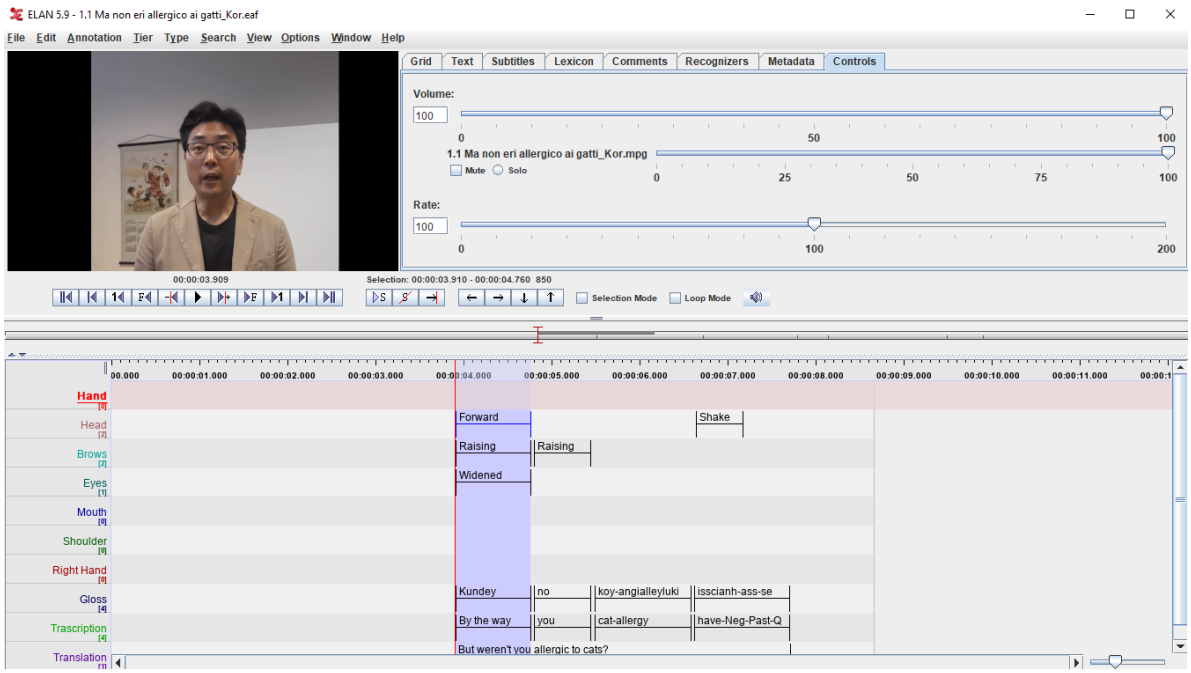


Figure 50 Korean speaker. Task 1.1 (K1). Elan Analysis

Figure 51 Korean speaker. Task 1.3 (K3). raising eyebrows

I noted that occasionally the speakers tended to enrich the interpretation of the sentences, which in some cases is not only connected to surprise but also to disapproval (further details will be given in the next section). Disapproval is vehicled essentially by furrowed eyebrows. As it is clear from Figure (53), in these cases, the speaker uses

different non-manual gestures uttering the counter-expectational question.

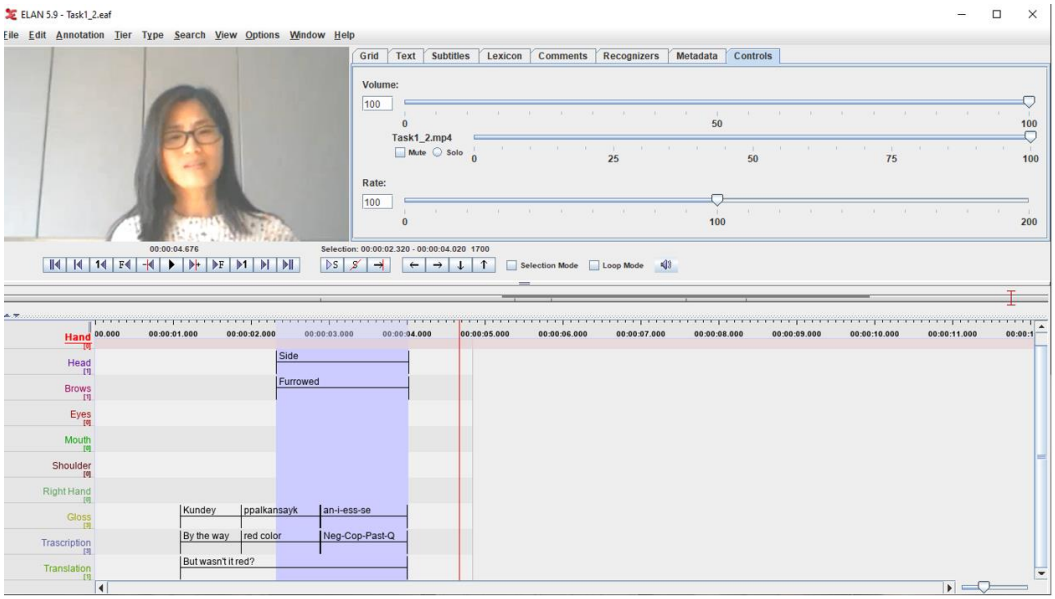


Figure 52 Korean speaker. Task 1.2 (K4). Elan Analysis

In realizing counter-expectational surprise questions, in 40% of the cases Korean speakers employ raising eyebrows. In 40% of the cases, they show also nod. In the 20% of the cases the speakers also show widened eyes, forward head movement and open mouth. See table (3).

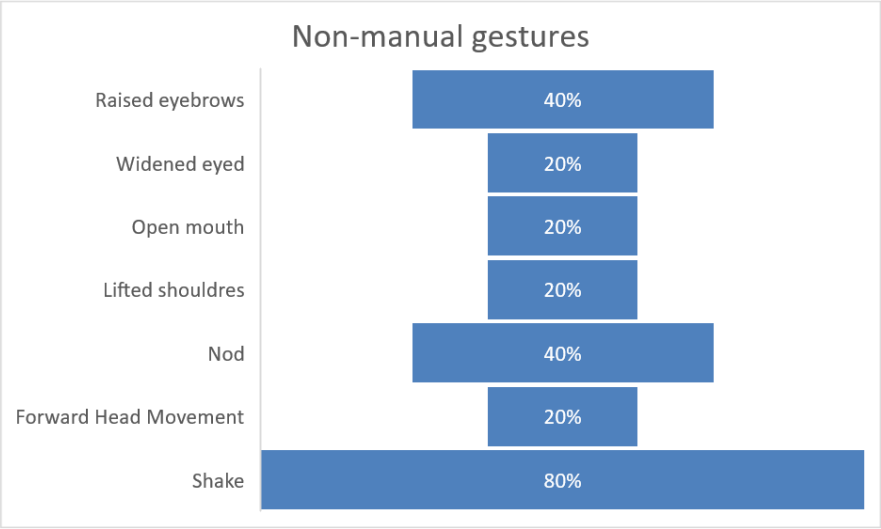


Table 3 Non-manual gestures associated with korean counter-expectational questions

Concerning head movement, all the speakers used "nod" except those cases of enriched interpretation where forward head movement is employed. Raised eyebrows and widened eyes always occur together and almost always are also accompanied by opened mouth.

Almost all the speakers used non-manual components. The head movement is the non-manual gesture more present in absolute (60% of the speakers use it). The head is moved in a nod in the case of the counter-expectational interpretation and forward in the case of the surprise-disapproval interpretation. Moreover, in the case of Korean, 80% of the speakers employ shake on negation.

No hand gestures have been found in Korean. However, I have to notice that in this case, the sample of participants consisted of half of the people tested in the case of the Japanese language. Furthermore, cases of voluntarily "trapped hands" occurs along with attempts to move hands during the uttering.

Figure 53 Korean speaker uttering "But weren't you alleric to cats?".

Even in this language, the F0-contour of counter-expectational questions differs from the F0-contour of canonical yes/no questions, in that the former turns out to be lower than the latter. Moreover, the prosodic contour of counter-expectational questions is low, whereas the canonical yes/no questions have a high sentence-ending form (Yun 2017). In Korean, the data about the canonical question-ending form, show that they are definable as H%.[145]

See table (4). A comparison between my Praat analysis of a counter-expectational yes/no questions (on the left) and the results of a study on canonical questions in Korean by Lee (2008) (on the right).

[145] See Hwang 2007; Lee 2005; Yun 2017 among the others.

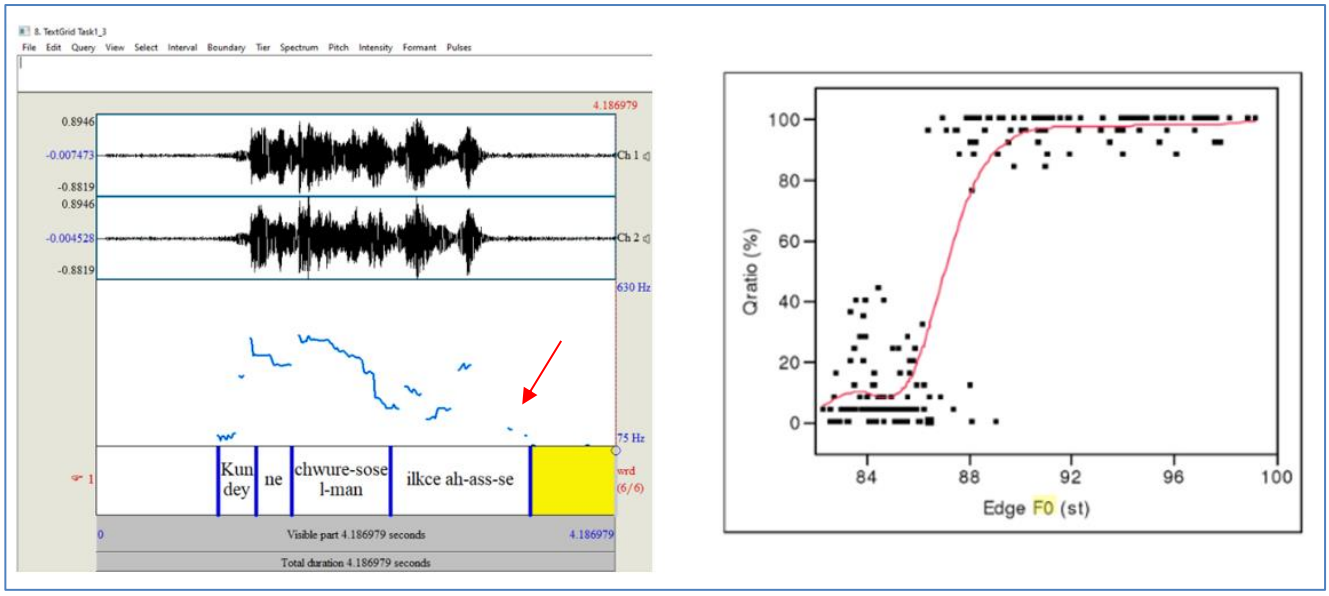


Figure 54 A comparison between my Praat analysis of a counter-expectational yes/no questions (on the left) and the results of a study on canonical questions in Korean by Lee (2008) (on the right).

As expected, the most relevant pitch is never found on the introductory particle "kundey". The non-manual gestures tend to spread over all the sentences, in the majority of the cases. However, the stroke of the head movement is aligned with the verbal form in the vast majority of the cases and/or it shows up after "Kundey" where the relevant emphatic pitch is observable.

Concluding, I found an alignment between prosody and gestures. Such an alignment can be seen in the distribution of the emphatic pitches (prosodic component) and for the stroke of the head movement. I also noted head movement and relative stroke of the head gesture on the verbal form. This has been observed for Italian (Giorgi and Dal Farra 2019), German (Giorgi, Dal Farra and Hinterhölzl forthcoming) and Spanish (Furlan 2019) as well. As expected, the gestures are aligned with what follows the discourse head "kundey". In Korean, as in Italian German and Spanish no visible, *evaluative head* is present. Moreover, the non-manual gestures tend to spread above all the sentences. This result is expected: the *evaluative head* that triggers the relevant gestures and prosodic features has scope on the entire sentence.

Consider the following example from Vietnamese. Scenario: *Your friend Mary calls you on the phone and tells you that she has a wonderful new red dress to wear at tonight's party. When you meet her at the party, you see that she has a blue gown, you are surprised and say*:

(156) Sao không phải cái váy đỏ à?
Why (negation word: not) (classifier) dress red (question word)?
'Why not the red one?'

In the case of Vietnamese, counter-expectational questions are almost always introduced by the adversative/concessive particle *sao*. We highlight the fact that in Vietnamese as well the presence of negation is obligatory in these structures. The negation employed here is usually present in yes/no questions only.

Interestingly, in Vietnamese, we could observe the same non-manual components associated with counter-expectational surprise questions, as in the other languages we studied.

Figure 55 Vietnamese speaker uttering "But weren't you allergic to cats?".

As far as the non-manual gestures are concerned, the percentages are shown in Table 5.

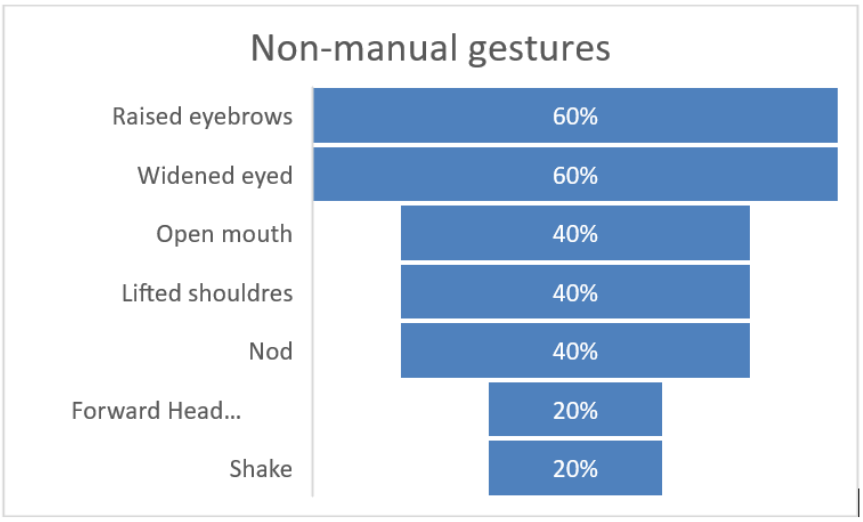


Table 4. Non-manual gestures associated with counter-expectational surprise questions in Vietnamese

Concerning head movement, all the speakers used "nod" except those cases of enriched interpretation where forward head movement is employed (I will describe these cases in a while). Raised eyebrows and widened eyes always occur together and almost always are also accompanied by opened mouth.

Interestingly, in Vietnamese, manual gestures of the expected type have been found. Not all the Vietnamese participants gestured, but when they did it, they used the gesture expected, namely the palm-up open hand gesture. In this case, I observed PUOH realized with one or both the hands.

Figure 56 Japanese speaker uttering "Are you holding a cat?"

Figure 57 Vietnamese speaker uttering "Is this not the red one [dress]?

Summarizing, in 20% of the cases, the speakers produced the PUOH gesture.

As anticipated above, I noted that occasionally the speakers tended to enrich the interpretation of the sentences, which in some cases is not only connected to surprise but also to disapproval (further details will be given in the next section). Disapproval is vehicled essentially by furrowed eyebrows. As it is clear from Figure (59), in these cases, the speaker uses different non-manual gestures uttering the counter-expectational question.

Figure 58 Enriched interpretation of counter-expectational questions in Vietnamese. furrowed eyebrows

In addition, I noted that when speakers voluntarily "trap" their hands crossing their arms, for example, or putting them on their hips, an additional non-manual gesture appears, namely "lifted shoulders". In Figure (60) it is possible to see some pictures of a Vietnamese speaker uttering the following counter-expectational surprise question. She crossed her arms blocking ay possible hands movement, however, it is possible to see that she moved her shoulders in a higher position with respecct to their rest position.

Figure 59. Vietnamese speaker uttering a counter-expectational surprise question. lifted shoulders.

In the case of Italian as well, Giorgi and Dal Farra (2019) noted the same movement of the shoulders. In particular, they noted this non-manual gesture when the hand gesture is blocked in some way, speakers tend to convey the same meaning by means of different gestures. I observed the same gesture in the same conditions in Japanese as well.

In Vietnamese, communicative functions and sentence types are primarily conveyed by a variety of sentence-final particles. However, intonation does play a role, albeit the degree to which this is conventionalized in the grammatical system is unclear (Duffield et al. 2019). These results are coherent with Tran's (1969) intuition about the existence of emotional questions in Vietnamese. Tran proposes that in these cases, intonation is modulated to reveal the speaker's personal attitudes such as surprise, annoyance, exasperation, etc.

The studies on intonation in Vietnamese argue in favor of wildly different conclusions. Intonation has been described as always contrastive (Hoàn 1980; Do 2009), not contrastive (Doàn 2000; Mai et al. 2007) and contrastive only when it is functionally necessary (Diep 1998). What is clear is that Interrogatives are marked by final particles and tend to have a higher and 'sharp' intonation on their focal element and no final declination. So far the investigation on Vietnamese intonation points to the fact that intonation is realized as a combination of pitch, intensity, voice quality and duration (Do et al. 1998; Nguyen and Boulakia 1999; Vu et al. 2006)., We know that the overall F0 range of interrogative sentences is higher than the overall F0 range of declaratives (Hoàng 1985; Do et al. 1998; Nguyen and Boulakia 1999; Vu et al. 1998; Dao and Nguyen 2018). Rhetorical questions are described with a raising contour and a higher overall F0 than neutral questions (Do et al. 1998). My study agrees with these results.

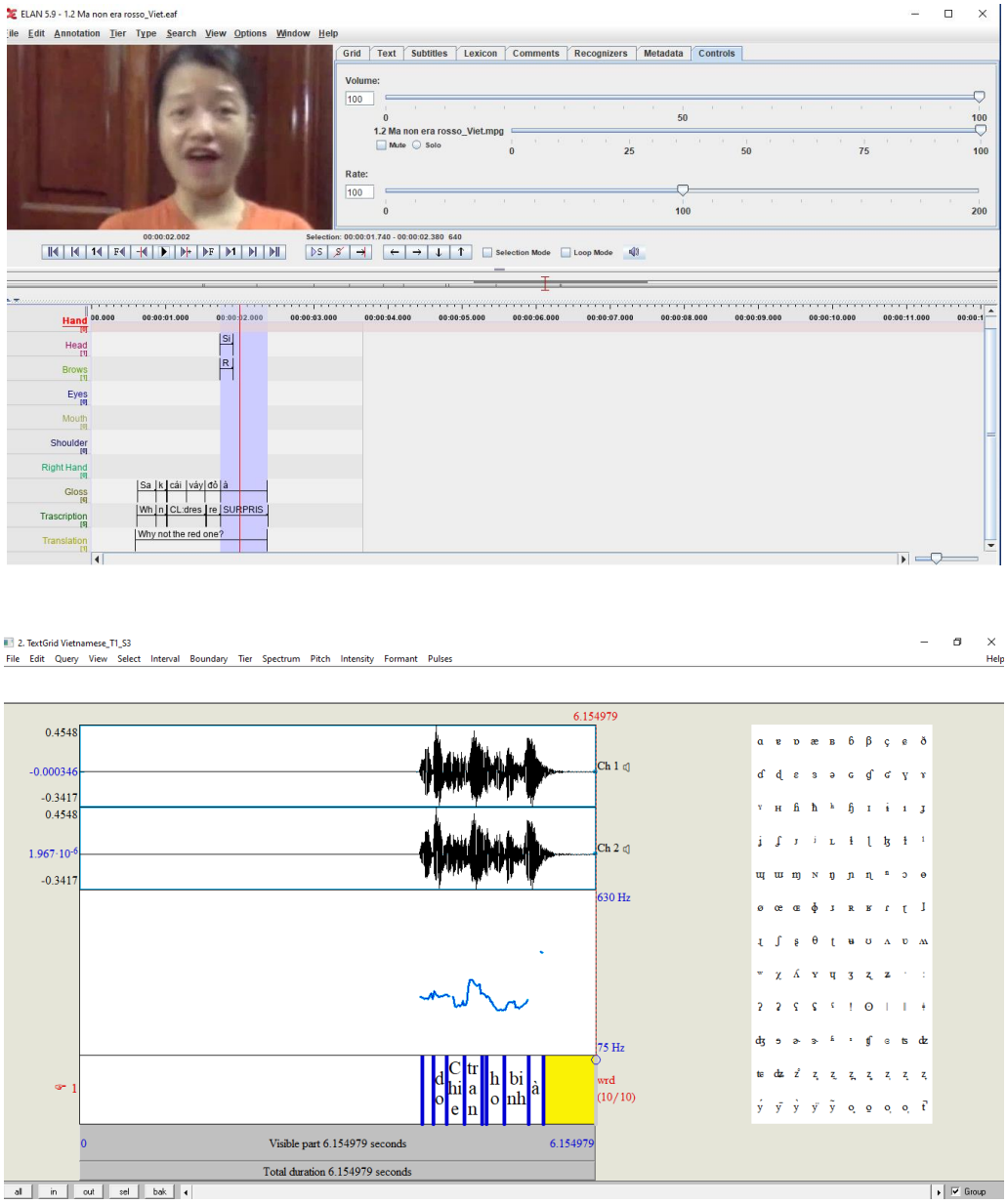


Figure 60. Elan and Praat analysis of a counter-expectational question in Vietnamese.

Interestingly, In Vietnamese I found manual gestures of the expected type – i.e. PUOH gesture. As in the case of Korean, the Vietnamese participants were half the size of the sample of speakers interviewed for the Japanese language. However, manual gestures showed up. In my analysis, it is dew to the fact that the age range of participants is lower in this case with respect to the Korean sample. This confirms that eastern younger speakers are less inihibited in using manual gestures.

Finally, consider Italian Sign Language.

As expected, I found that the prosodic contour is peculiar in these cases and differs from the one associated with the standard yes/no interrogatives in LIS, namely raised brows. The typical non-manual components associated with these sentences are extra-exaggerated raised eyebrows, widened eyes and open mouth. The brows can also be furrowed in some cases, whereas the corner of the mouth can be pointing down. When eyebrows are raised, the facial expression is exaggeratedly evident (enhancement). When the brows are furrowed, as far as the interpretation of the sentences is concerned, the surprise value is mixed with the disapproval one. The signer shows to express surprise along with disapproval/anger.

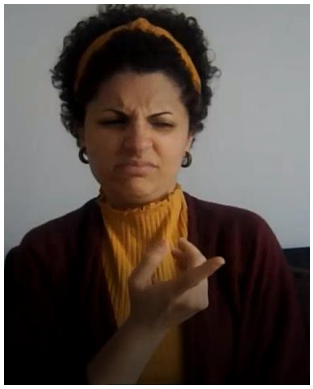
Figure 61. Comparison between surprise questions and real yes-no questions in LIS

In the visual-gestural modality, the special value of these sentences is identified by the regular distribution of the non-manual components, which turns out to be aligned with the intonational phrase. The activation of these non-manual features align with phrasal boundaries within the signed sentence and appear abruptly (they are not gradual). In sign language, prominence relies on features associated with manual articulators that convey signs and is also enhanced by leans of the body (see Pfau et al. 2012 for a systematic review). As far as the head movements are concerned (forward head movement), it aligns with the verbal form, whereas the shaking movement of the head aligns with negation when it is present. Consider that the same forward and shake head movement has been found in the non-manual components accompanying counter-expectational questions in spoken languages (Giorgi and Dal Farra 2019; Giorgi and Petrocchi forthcoming and this section). Indeed, it has been yet hypothesized that these head movements have a role in the gestural system of hearing speakers (see among the others, Sandler et al. 2009).

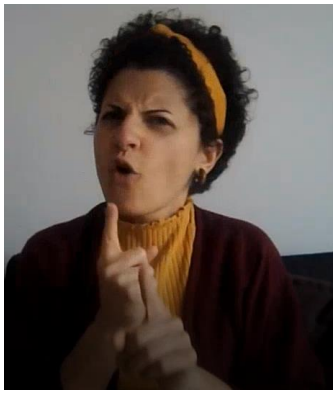
Figure 62. Non-manual components on a counter-expectational surprise question in LIS. Task 1.1 (L1) - CODA

Figure 63. Non-manual components on a counter-expectational surprise question in LIS. Task 1.1 (L3) - Monolingual Deaf Signer

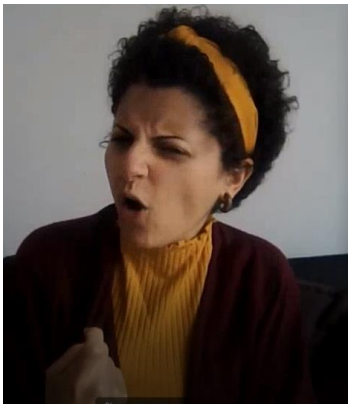
loc



TU



DOVEVA



ROSSO

Figure 64. Nonmanual components on a counter-expectational surprise questions in LIS. Task 1.1 (L5) – Late signer (Translation: but didn't you have to wear the red one (dress)?)

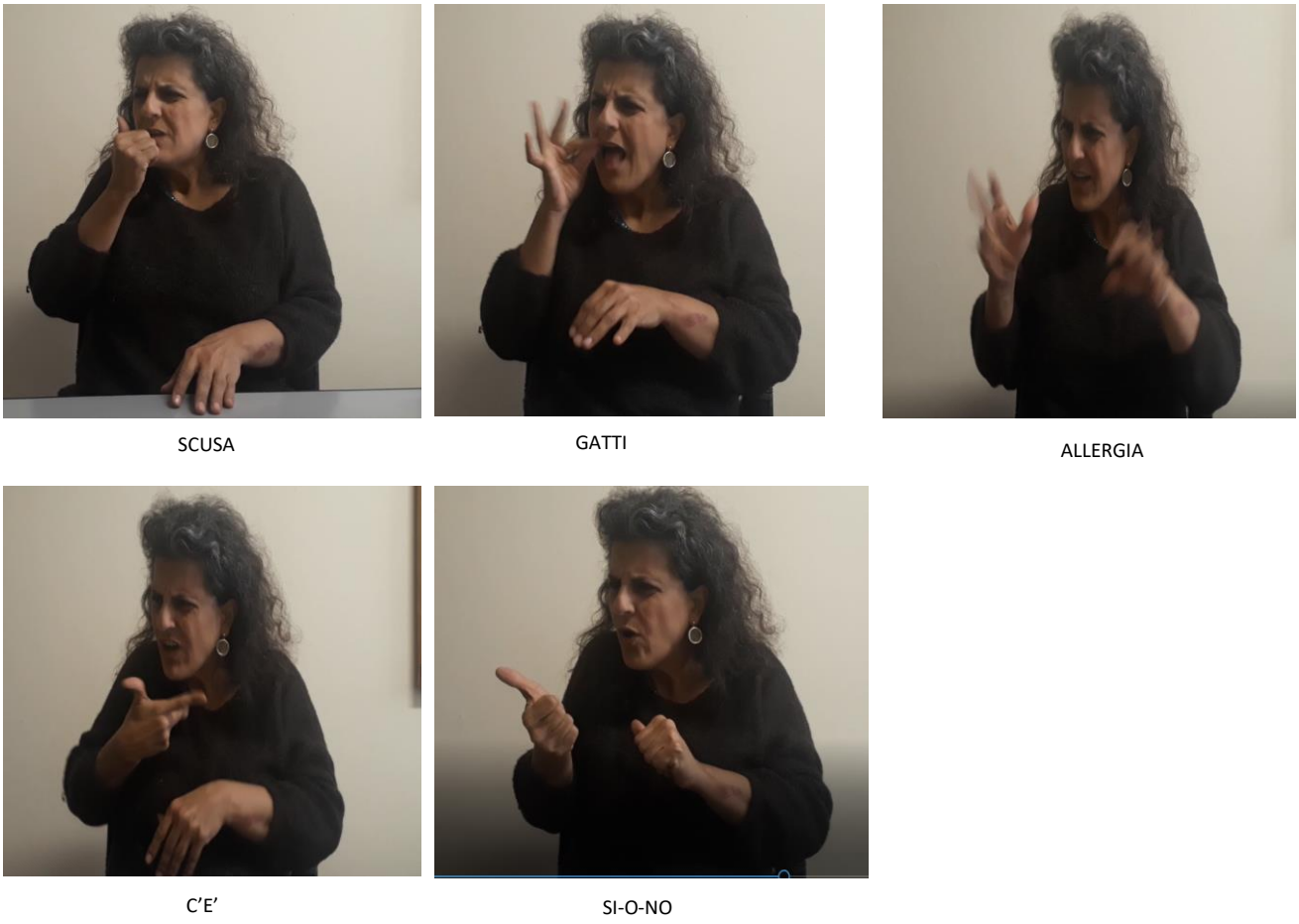


Figure 65. Nonmanual components on counter-expectational surprise questions in LIS. Task 1.1 (L2) – CODA (Translation: Sorry, are you allergic to cats, yes or not?)

As for the manual gestural pattern, with counter-expectational questions I found one gesture but only in those cases where the interpretation of the sentence has been enriched with disapproval value. In particular, I found the artichoke gesture. This gesture appears as iterated and it can be realized with one hand or both.

Figure 66 Manual components on counter-expectational surprise questions + disapproval interpretation in LIS. Task 1.4 (L3) – Monolingual Deaf signer

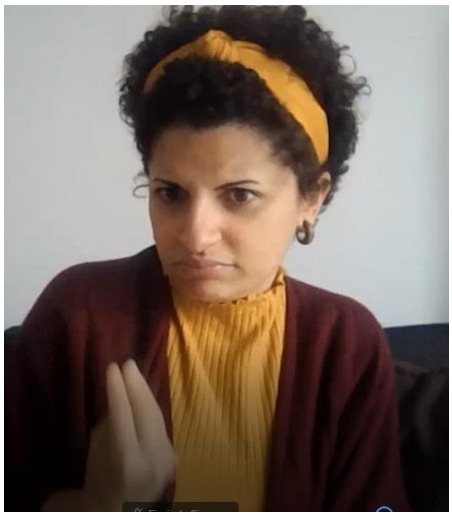


Figure 67 Non-manual components on counter-expectational surprise questions + disapproval interpretation in LIS. Task 1.4 (L5) – Late signer

To summarize, the non-manual components associated with counter-expectational surprise questions start as expected with the sentence, or before it, and last until the end of the sentence itself. The adversative sign "but" has been found. This has also been spontaneously omitted in many cases. Indeed, Giorgi and Dal Farra (2019) pointed out that

this could be an expected result since the role of the adversative particle, in the case of surprise questions, is retrievable from the context, in particular by the realization of the emotional content by means of prosody and gesture. Moreover, in Eastern languages as well I did find cases of omission of the adversative/concessive introductory particle.

The forward head movement signals the relevant emphatic pitch, which usually aligns with the verbal form.

With the elicitation task, we had participants produce spontaneously analogous types of sentences expected. Negation is expressed by head shaking in most cases.

In general, in LIS negative non-manual markers alone cannot negate a predicate or a whole sentence, they must be articulated with a manual negative marker or n-words. However, in some central and southern varieties of LIS, we can find negation conveyed through headshaking alone, occurring with the sign of the verb (Branchini and Mantovan 2020:419). My data confirm what has already been noted in the literature in that my signers belong all to the Deaf Community of Florence (central Italy).

I observed the presence of verbal formal expressed through the use of the modal DOVERE that could be associated with the value of the evaluative subjunctive hypothesized in the previous section.

(157) [DIS [CP … [DIS [EVAL Ø [WH Ø [TU VESTITO ROSSO DOVEVA NO]]]]]
You dress red should no?
Shouldn't you wear the red dress?

The sentence in (157) is realized as shown in (158) and has been uttered as a reaction to the following context: *Your friend Mary calls you on the phone and tells you that she has a wonderful new red dress to wear at tonight's party. When you meet her at the party, you see that she has a blue gown, you are surprised and sign:*

Corner lips downwards
Squinted eyes
Furrowed eyebrows

(158) IX2p VESTITO ROSSO DOVEVA NO?
(You) dress red should no?
'Shouldn't you were the red dress?'

Figure 68. Monolingual Deaf speaker. Task 1.2 (L3)

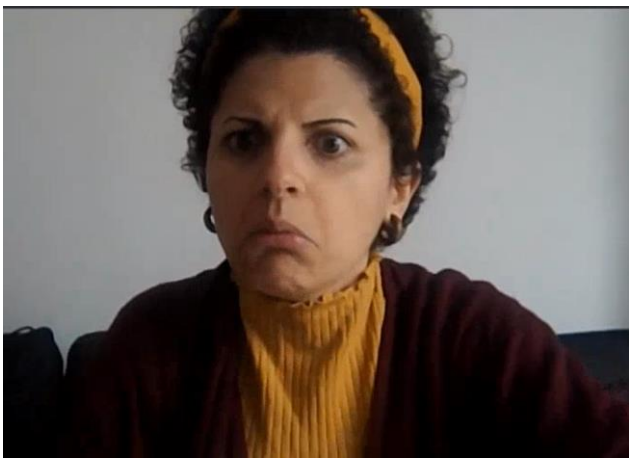


Figure 69. Monolingual Late Signer. Task 1.2 (L5)

SORRY

YOU

ALLERGY

NO

Figure 70. MONOLINGUAL LATE SIGNER. Task 1.1 (L5)

Summarizing, in all the Eastern languages I studied, with respect to non-manual gestures – i.e. head, eyes, brows and shoulders - we found that the head can nod, or be shaken, in correspondence with negation, occasionally lasting longer than the uttering of the negation. The head can move either forward or to the side. The brows can be either raised and/or furrowed in different moments of the realization of the sentence. The shoulders can be lifted. I also found a non-manual feature, not considered in the mentioned studies on Italian, German and Spanish, i.e. widened eyes. This feature regularly appears in association with raised eyebrows in counter-expectational questions in Japanese, Korean and, as will be shown in a while, in LIS as well.

Furthermore, I detected alignment between the relevant pitch, the (sentence-final) question particle and the gestural component (forward head movement and raised eyebrows). In Japanese and Vietnamese, I found the PUOH manual gesture and I found that non-manual components show a peculiar distribution. I also noted that the presence of the PUOH gesture seems to be related to the age of the participants. The younger speakers use gestures more. They seem to be less prone to the cultural bias according to which gesticulation is unpolite, in some way. What is interesting, however, is that not all the speakers gesticulate, but when they gesticulate they use the gesture expected in counter-expectational questions. As in the case of manual gestures, widened eyes and raised eyebrows start before the beginning of the sentence and tend to overlap the entire sentence. The head movement, instead, marks the relevant pitch.

As it is clear from this analysis, the non-manual components do not vary across languages.

3.6.2.2. Surprise-disapproval questions

Consider the following Japanese example. Scenario: *You know that your sister should do her homework, but you see that she is reading a romance novel. You are annoyed and utter (7):*

(159) chotto nani shiteruno?!
HEY (you) what do Prog-Q
'Hey what are you doing/reading?'

Figure 71. Japanese speaker. Task 2.1 (J1)

All the surprise-disapproval questions uttered by my Japanese participants are introduced by "chotto". Such as "Hee" in counter-expectational surprise questions, "chotto" lexicalizes *Eval* Head in relation to the expression of surprise. It is translated as "Hey" and has a connotation of blame, reproachfulness, and even irritation (Mastrangelo et al. 2016).

No negation has been found in the spontaneous productions of my participants. The sentences produced are always wh-questions.

Here we see the same non-manual components already observed in Italian and Spanish, namely furrowed brows and forward head movement. In these cases, I also noted the presence of squinted eyes. These non-manual components are the same as the enriched interpretations observed in the previous section except for squinted eyes.

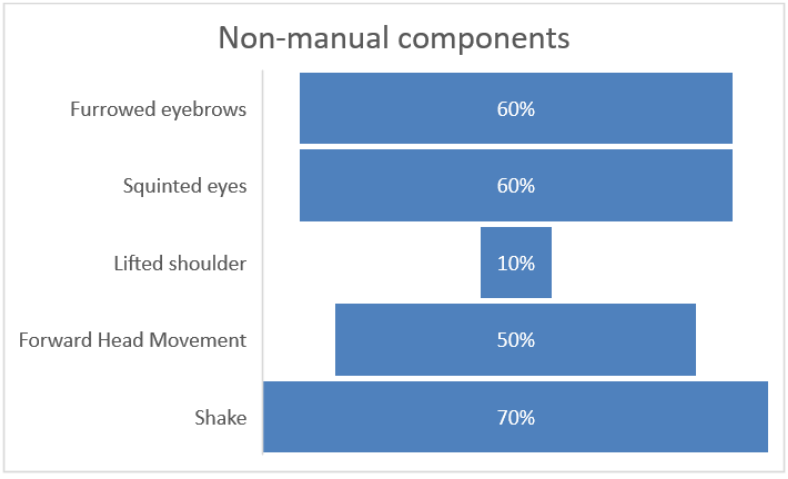


Figure 72. Non-manual components on surprise-disapproval questions in Japanese

In this case, I did not find any expected manual gestures. In one case only, a Japanese speaker used pointing (one occurrence).

Figure 73. Japanese speaker. Task 2.1 (J5)

Figure 74. Japanese speaker. Task 2.2 (J4)

Analysing the data, some correlations are observable. Concerning head movement, all the speakers used "forward head movement" as in those cases of enriched interpretation noted in the previous section. Furrowed eyebrows and squinted eyes always occur together. In cases of voluntarily "trapped hands", lifted shoulders is observable (10% of the cases).

Interestingly, I noted that occasionally the speakers tended to enrich the interpretation of the sentences, which in some cases is not only connected to disapproval.

As it is clear from Figure (43), in these cases, the speaker uses different non-manual gestures uttering the surprise-disapproval question, namely raised eyebrows. This is the first time that this kind of enriched interpretation is noted.

Figure 75. Japanese speaker. Task 2.2 (J5)

Regarding the prosodic component, I saw that in Japanese the prosodic contour of surprise-disapproval questions turns out to be low rather than high (raising). It confirms the rhetorical nature of the constructions at issue.

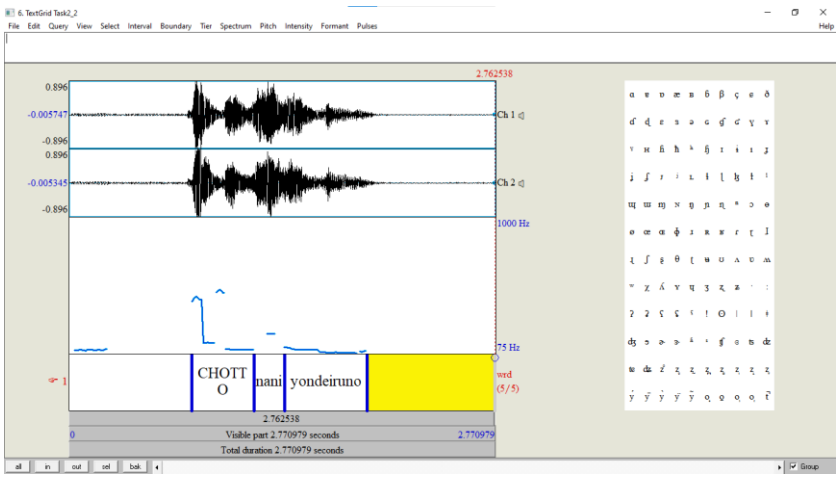


Figure 76. Task 2.2 (J7). Praat analysis

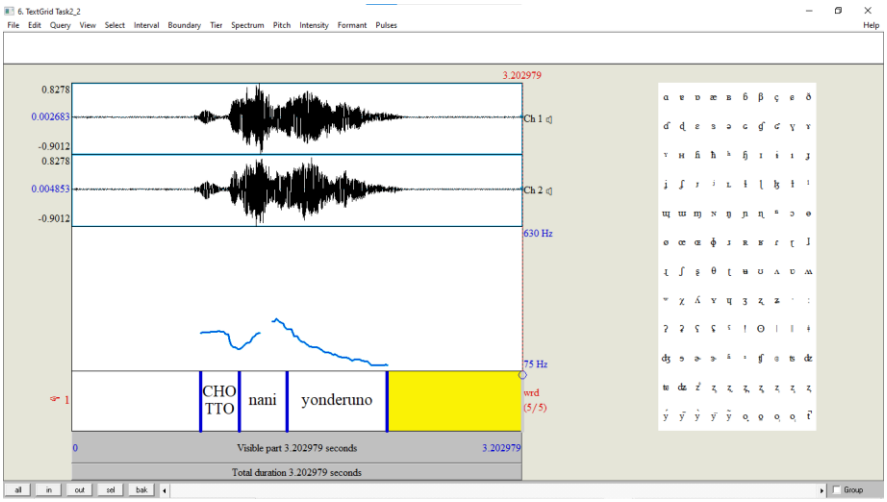


Figure 77. Task 2.2 (J5). Praat analysis

The most relevant pitch is found on "Chotto" or on "nani" the wh-constituent. Giorgi and Dal Farra (2019) and Furlan (2019) as well noted that the most relevant emphatic pitch can interest the wh-phrase as well.

As far as the alignment between gestures and the prosodic component is considered, the non-manual gestures tend to spread over all the sentences, in the majority of the cases. However, the stroke of the head movement is aligned with the verbal form in the vast majority of the cases, whereas the stroke of the furrowed/raising eyebrows is observable on "chotto" or on "nani".

Consider the following Korean example. Scenario: *You know that your sister should do her homework, but you see that she is reading a romance novel. You are annoyed and utter:*

(160) YA (ne) mwe-hako- iss-se?
HEY (you) what-do-Prog-Q
"Hey what are you doing?!"

Surprise-disapproval questions in Korean are always introduced by "ya". "Ya" is a pseudo-address term that is usually translated in English as "hey" (Kim et al. 2021). It has been defined as "vocative interjection" and is used to summon an addressee at the same age or younger and with a close relationship to the speaker. Wh-constituent is always present as well. As argued in the previous section, in these cases as well the evaluative subjunctive is interpreted depending on pragmatic and conversational elements. Recall that this holds for Japanese surprise-disapproval questions as well.

Here we see the same non-manual components already observed in Italian, Spanish and Japanese, namely furrowed brows and forward head movement (40% of the cases). In these cases, I also noted the presence of squinted eyes (20% of the cases). These non-

manual components are the same as the enriched interpretations observed in the previous section except for squinted eyes.

I did not find any manual gesture.

Analysing the data, some correlations are observable. Concerning head movement, all the speakers used "forward head movement" as in those cases of enriched interpretation noted in the previous section. Squinted eyes, when present, always occur with furrowed eyebrows.

Interestingly, I noted that occasionally the speakers tended to enrich the interpretation of the sentences, which in some cases is not only connected to disapproval.

As it is clear from Figure (46), in these cases, the speaker uses different non-manual gestures uttering the surprise-disapproval question, namely raised eyebrows.

Figure 78. Korean speaker uttering "ya". Task 2.2 (K1)

The most relevant pitch is found on "Ya", on the verbal form or on the wh-constituent.

As far as the alignment between gestures and the prosodic component is considered, the non-manual gestures tend to spread over all the sentences, in the majority of the cases. However, the stroke of the head movement is aligned with the verbal form in the vast majority of the cases, whereas the stroke of the furrowed/raising eyebrows is observable on "ya".

Regarding the prosodic component, I saw that in Korean the prosodic contour of surprise-disapproval questions turns out to be low rather than high (raising). It confirms the rhetorical nature of the sentences under investigation.

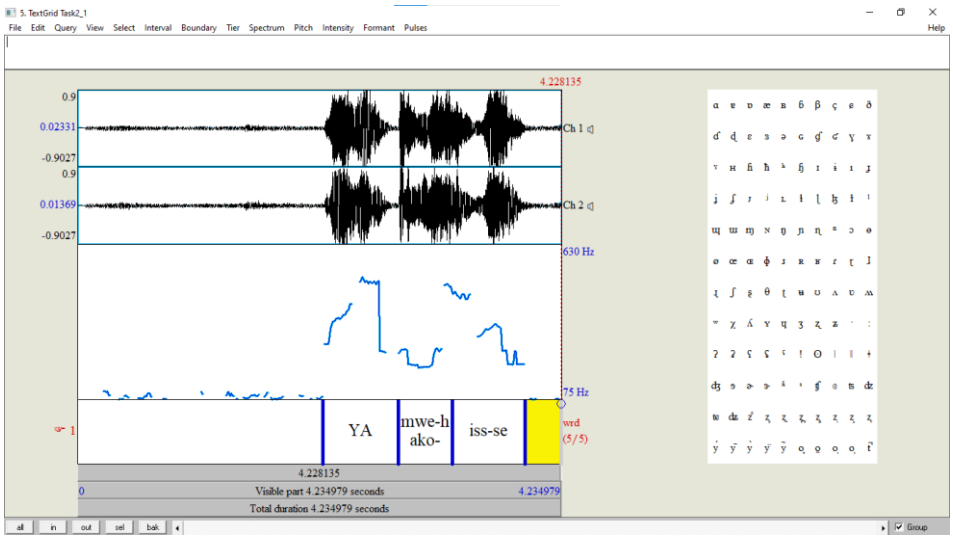


Figure 79. Korean Speaker. Task 2.1 (K4)

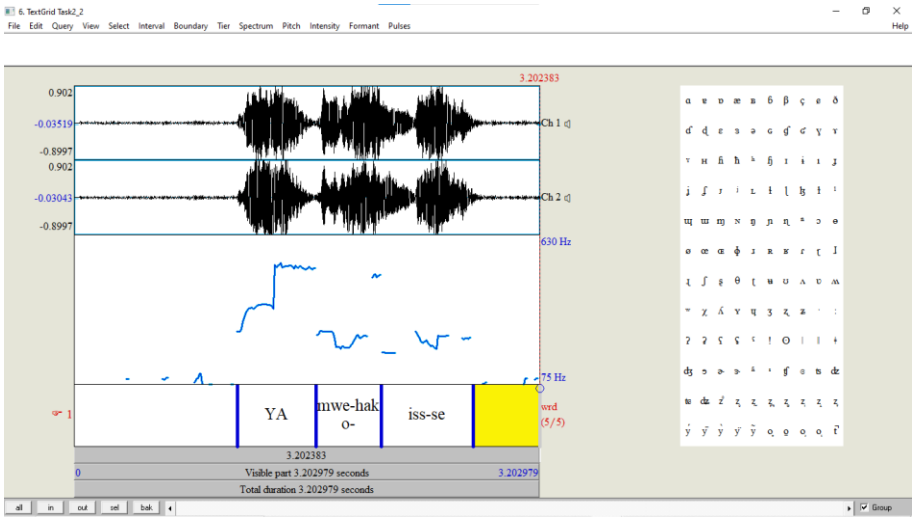


Figure 80. Korean Speaker. Task 2.2 (K4)

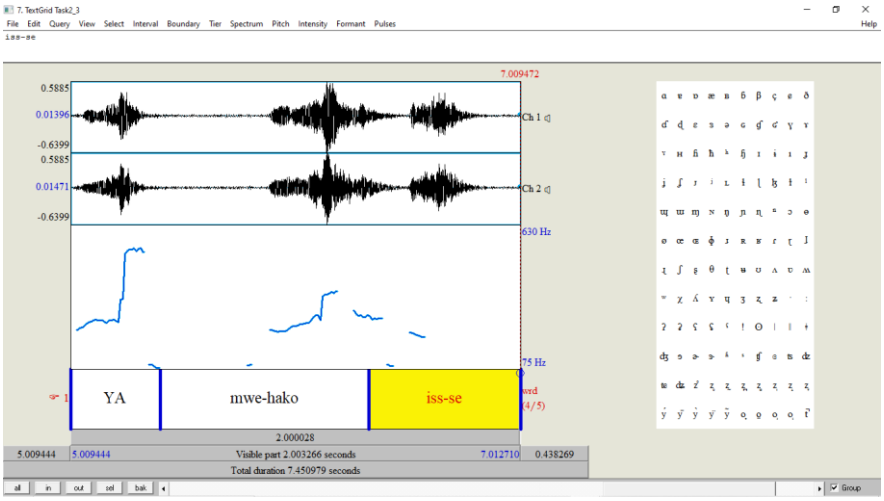


Figure 81. Korean speaker. Task 2.3 (K3)

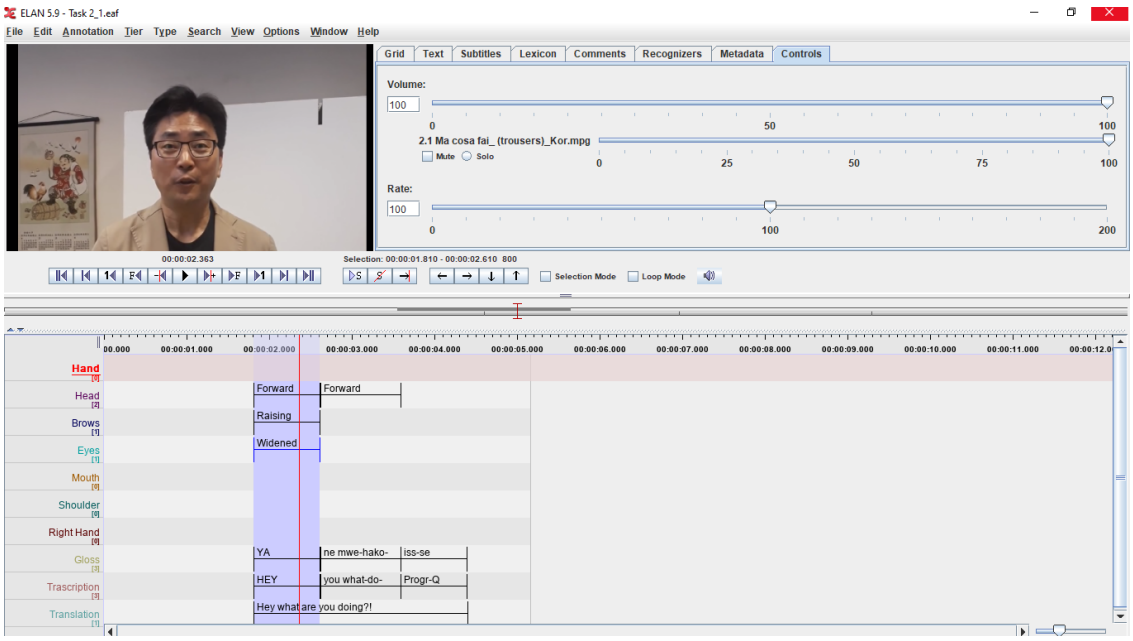


Figure 82. Task 2.1 (K1). Elan Analysis

Consider now Vietnamese. Scenario: *You know that your sister should do her homework, but you see that she is reading a romance novel. You are annoyed and utter:*

(161) Sao giờ này (em) lại đọc truyện?
Why now (you) should read a novel?
"Why are you reading a novel now?"

Here we see the same non-manual components already observed in Italian, Spanish, Japanese, and Korean, namely furrowed brows and forward head movement (40% of the cases). In these cases, I did not observe the presence of squinted eyes. These non-manual components are the same as the enriched interpretations observed in the previous section except for squinted eyes.

In Vietnamese, I found manual gestures, i.e. PUOH. One speaker used regularly the PUOH iterated gesture. The iteration is very slight. The speaker at issue is the youngest one included in the sample. Even if only a speaker gestured, we have to consider that when she gestured she employed the gesture expected, namely (slightly) iterated PUOH.

Figure 83. Vietnamese speaker. Task 2.4 (V2)

Analysing the data, some correlations are observable. Concerning head movement, all the speakers used "forward head movement" as in those cases of enriched interpretation noted in the previous section. Squinted eyes were never present. No cases of enriched interpretation have been found.

Regarding the prosodic component, Vietnamese data on surprise-disapproval questions are not clear at the present stage of the research. The only clear thing seems to be the position of the most emphatic pitch which is syncronized with the verbal form which is aligned in turn with head movement. The non-manual gestures tend to spread over all the sentences or to begin after "sao", lasting until the end of the sentence.

Finally consider LIS.

As expected, surprise-disapproval questions turn out to have a peculiar prosodic contour, i.e. furrowed eyebrows and squinted eyes. In addition, I also found a peculiar configuration of the mouth: it shows corners downwards.

In all the cases, the non-manual components associated with surprise-disapproval questions start regularly with the sentence or before it and last until the end of the sentence itself.

I have never found cases of mixed interpretation, in that, I never found the expression of surprise, i.e. raised eyebrows mainly, in association with the surprise-disapproval wh-question.

Figure 84 Manual components on surprise-disapproval question in LIS. Task 1.4 (L4) – Monolingual Deaf signer

In these cases as well, signs can be accompanied by gestures. Finally, I found the artichoke gesture. This gesture appears as iterated, and it can be realized with one hand or both.[146]

Consider (86), which has been uttered as a reaction to the following context: *You see your brother wearing his best trousers kneeling in the dirt in the garden. You think that he will ruin his trousers. You are annoyed and sign:*

[146] I will not discuss the role of the artichoke gesture in this paper. This will be the focus of a future article, however.

(162) [DIS [CP … [DIS [EVAL Ø [TU LEGGI COSA?!]]]]][147]
you read what?
What are you reading?!

Figure 85. Late Deaf signer uttering a surprise-disapproval question

Figure (87) is an example of canonical wh-question in LIS from the online dictionary spreadthesign.com curated by the European Sign Language Center.[148] For this question, the dictionary proposes the following translation in Italian "Cosa consigli?", in English "What do you suggest?".

The non-manual marker of the wh-question is spread only over the wh-constituent. In the case of surprise-disapproval questions, the (all) non-manual components involved always interest the whole sentence (see Figure 86, for instance).

[147] I live aside here the analysis of the special status of the wh-constituents in sign languages.
[148] https://www.spreadthesign.com/it.it/search/ (08/20/2021)

CONSIGLI
(suggest)

QUALE
(what)

Figure 86. The LIS translation of the Italian canonical question "Cosa mi consigli?" ("What do you suggest?") (from https://www.spreadthesign.com/it.it/search/(03/19/2022))

Interestingly, spreadthesign.com also proposes the LIS translations in (Figure 88) and (Figure 89) for the following sentences, respectively a neutral wh-question meaning "What?" and a wh-question meaning "what does it mean?":

WHAT?

Figure 87. The LIS translation of the Italian canonical question "Cosa?" ("What?") (from https://www.spreadthesign.com/it.it/search/(03/19/2022))

Figure 88. The LIS translation of the Italian canonical question "Cosa significa?" ("What does it mean?") (from https://www.spreadthesign.com/it.it/search/(03/19/2022))

Finally, in (Figure 90), the translation of the following canonical wh-question in LIS: "what happened?"

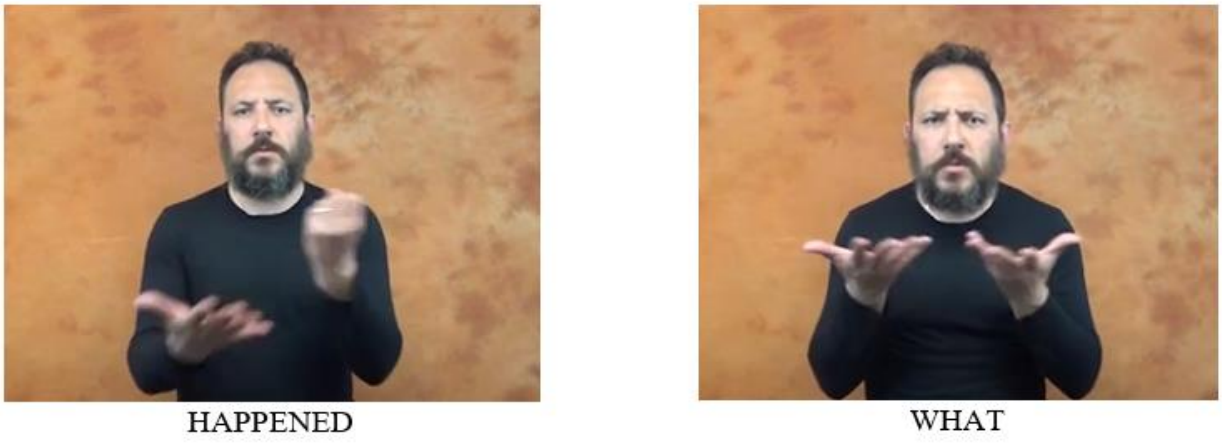


Figure 89. The LIS translation of the canonical question "What happened?" (from https://www.spreadthesign.com/it.it/search/(03/19/2022))

In the light of what is shown above, and in light of the analysis I propose in this work, the sentence presented in (Figure 89) could be a surprise-disapproval question.

Interestingly, in my experiment, signers tend to enrich the interpretation of the sentence by inserting a swear word in the target sentence. As it has been hypothesized for oral languages, the use of swear words in these cases could be connected to the disapproval meaning of this question. Giorgi and Dal Farra (2019) noted that some

Italian speakers introduce spontaneously a swear word in surprise-disapproval contexts, as in the following example:

(163) Ma che cazzo fai?
'But what the fuck are you doing?'
(Giorgi & Dal Farra 2019, ex. 26)

The swear word can only be introduced in rhetorical contexts and does not appear in normal requests of information. The authors propose that in this case, the swear word lexicalizes the *Eval* projection and the *wh*-raises to *Eval*, incorporating it. This conclusion converges with the analysis of the position of the *wh-constituent* in special questions provided by Obenauer and Poletto (2000), according to which the *wh*- occupies a higher position with respect to the normal cases.

We found the same phenomenon in LIS, namely in surprise-disapproval contexts signers often spontaneously enriched the interpretation of the sentence. Our consultant added to (165) the sentence in (164) (see also Figure 91):

(164) MA SCUSA ALLERGIA GATTI C'E' SI-NO
'But weren't you allergic to cats?'

(165) IX_{2p}PAZZO
'You are crazy?'

Figure 90. Sign "CRAZY" along with artichoke gesture

In other words, our consultant added the evaluative predicate *mad* to her production, showing that these structures do have an underlying evaluative syntax and interpretation. In Figure 91 the signer contemporarily sign “CRAZY” with her dominant hand and use the non-dominant hand to articulate the artichoke gesture.

The sentence in (166) has been followed by the hands in prayer gesture (see figure 92):

(166) (IX2p) GATTO- IN-BRACCIO IX2p ALLERGICO IX2p
‘Weren’t you allergic to cats?’

Figure 91. Hands-in-Prayer gesture. Coda signer.

Figure 92 Task 1.3 (L4) – Monolingual Deaf signer

Thus, in LIS I found two of the three typical gestures found by Dal Farra and Giorgi (2019) in the Italian surprise questions: the so-called artichoke gesture and the hands-in prayer gesture. In both cases gestures presented an iterated movement. Moreover, even surprise-disapproval questions turn out to have a peculiar prosodic contour, i.e. furrowed eyebrows, squinted eyes and corners of lips downward.

As a further consideration, let me point out that in several cases surprise and surprise-disapproval values co-exist: I observed the co-existence of counter-expectational (facial expression) and surprise- disapproval values (gestures).

3.6.3. Discussion

My experimental results show that the non-manual components tend not to vary across languages as observed in Italian, German, Spanish, Vietnamese, Korean, Japanese and LIS.

In Vietnamese and Japanese, I did find manual components as well. Therefore, it cannot be hypothesized that manual gestural patterns are culturally determined only. In LIS I found the same manual gestures observed in Western languages. The issue deserves further attention, in that a larger sample has to be studied. However, my sample included both bilingual and monolingual Deaf signers. Importantly, in all the languages I studied, I found an alignment between the gestural, prosodic and syntactic components, showing that the theoretical model adopted here is able to account for all the Eastern languages I investigated and for LIS.

3.6.3.1 The linguistic expressions of emotions

In this work, I studied two types of special questions: counter-expectational questions expressing surprise and surprise-disapproval questions, i.e. sentences expressing surprise with a negative orientation. I used an experimental design involving sentence repetition and spontaneous production. As a theoretical framework, I capitalized on Giorgi's (2016; 2018) work, and I expected these sentences to show a peculiar syntax, special prosody and typical gesture patterns. In particular, I focused on the realization of these sentences in a cross-cultural and cross-modal perspective and considered Vietnamese, Korean, Japanese and Italian Sign Language (LIS). The results obtained so far point to an interesting uniformity across languages and cultures.

I detected a striking formal and functional regularity in the non-manual gestural pattern typically associated with surprise and surprise-disapproval in all the languages investigated. Moreover, in Japanese and Vietnamese, the manual gestures expected have been found, i.e. I observed PUOH gesture and iterated PUOH gesture in counter-expectational questions and surprise-disapproval questions, respectively. In the signed modality, I found two of the three iterated manual gestures (i.e. not lexicalized items) found in Spanish and Italian along with signs. Thus, my results are coherent with recent findings in the literature.

The non-manual components involved in the linguistic expression of surprise and disapproval seem to be universal, and that may be considered as part of Universal Grammar: non-manual linguistic/bodily parameters seem to be regularized (synchronic alignment between syntax, prosody, and gestures) and show the same features cross-culturally and cross-modally.

FIGURE 37. JAPANESE SPEAKER UTTERING A COUNTER-EXPECTATIONAL QUESTION

FIGURE 39. KOREAN SPEAKER UTTERING A COUNTER-EXPECTATIONAL QUESTION

FIGURE 41. JAPANESE SPEAKER UTTERING A SURPRISE-DISAPPROVAL QUESTION

FIGURE 38. JAPANESE SPEAKER UTTERING A COUNTER-EXPECTATIONAL QUESTION.

FIGURE 40. VIETNAMESE SPEAKER UTTERING A COUNTER-EXPECTATIONAL QUESTION.

Figure 93. Manual and non-manual components on surprise questions in Vietnamese, Korean and Japanese.

Now, some concluding remarks on the linguistic expression of emotions and the presence of manual gestures in LIS are due. Thus, I dedicate the next sections to discussing these topics.

3.6.3.2 The linguistic expression of emotions in LIS

The investigation of the realization of surprise questions expressing surprise and disapproval (emotional content) in a sign language is crucial in that, in many sign languages including LIS, yes-no questions are prosodically marked by raised eyebrows whereas content questions are typically associated with furrowed eyebrows. Simultaneously, the expression of surprise and disapproval are typically associated with raised and furrowed eyebrows, respectively, as well.[149]

By running the experiments presented in this study, I found that in LIS, counter-expectational surprise questions and surprise-disapproval questions have a peculiar emotional (pragmatic) interpretation. In all these cases, the non-manual components associated with surprise questions start regularly with the sentence and last until the end. Moreover, I observed no variation in intensity (i.e., no graduality has been revealed).

In LIS, I found the same non-manual components as in counter-expectational and surprise-disapproval questions in oral languages: raised and furrowed eyebrows, mainly. These components are mandatory, together with the movement of the head. They are always present when the emotional interpretation is triggered. The difference between LIS and other oral languages is that the non-manual components are grammaticalized, becoming actual prosodic features.

As already argued for other non-manual marks, it is possible to hypothesize the role of raised eyebrows and furrowed eyebrows as prosodic features accompanying special questions expressing surprise and surprise-disapproval, respectively, in that they activate regularly.[150] Consider that I also found the regular presence of other tones associated with the eyebrow positions, namely widened eyes in the case of the expression of surprise and squinted eyes in the case of the expression of surprise-disapproval. I also observed the presence of another feature: lips corners downward.

This finding is coherent with what has already been observed in the study of the expression of irony in LIS. Mantovan et al. (2012) claim that the analysis of their corpus revealed that: (i) sentence meaning is expressed manually through the polarity of the evaluative lexical sign, (ii) signer's attitude is expressed non-manually through mouth-corners up and down; (iii) irony might be further signalled by non-obligatory non-manual and manual cues.

In the literature, it has been hypothesized that the enhanced physical realization of raised eyebrows and furrowed eyebrows in those cases of overlapping in the realization of

[149] See also (Ekman 1999).

[150] See, for example, the case of conditional in sign languages, marked by raised eyebrow in many sign languages including LIS (Liddell, 1980; Dachkovsky and Sandler, 2009; Pfau et al., 2012; Bertone, 2011; Branchini, 2014 among others).

surprise polar questions and content surprise-disapproval questions, respectively, are to be interpreted as the mixing between gestural and linguistic facial expression (Dachkovsky 2005; 2008; Dachkvosky and Sandler 2009; de Vos et al. 2009).

This hypothesis follows from two general facts: (i) physical properties alone cannot distinguish prosodic units from other kinds of non-manual elements; (ii) the articulatory system, in this case, uses the same articulators as linguistic facial expression and emotional facial expressions.

Paraphrasing Ekman, Friesen and Hager (2002), AU1+2- raised eyebrows - is realized over the surprise, polar questions and polar surprise questions, whereas AU 4 – furrowed eyebrows - interests anger, content questions and content surprise-disapproval questions.

However, contrary to the expectations, in counter-expectational and surprise-disapproval questions, the allegedly affective facial expressions do not show different properties in terms of temporal distribution, number of articulators involved and pragmatic functions with respect to the complementary linguistic facial expressions. In other words, the overlapping of the eyebrow positions is regular and typically associated with these sentences. At least in my cases, prosody is crucial in assigning the correct interpretation. Moreover, I found cases in which the polar surprise questions are enriched with the disapproval meaning. In these cases, the yes-no counter-expectational surprise questions are associated with furrowed eyebrows (AU 4) rather than raised eyebrows (AU 1+2).

Furthermore, consider that in literature, it has also been observed a fourth condition: extra-exaggerated raised eyebrows in association with content surprise questions.

Dachkovsky (2008) gave the related context and instruction: You went to a party in Haifa and saw your friend Yoni there. If you had known he was going, you would have asked for a ride. The question you ask him is: "Why didn't you tell me you were going to the party"?. The utterance realized by the signers in these cases, syntactically wh-questions, was accompanied by exaggerated raised eyebrows, widened eyes and open mouth, namely an expression that can be attributed to affect (surprise) in Dachkovsky's view. See Figure (94) below:

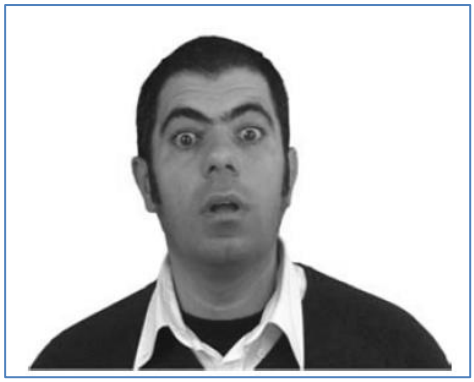


Figure 94. Atypical facial expression coextensive with a wh-question in Israeli Sign Language (Figure 4.7 from Pfau et al. 2012:67)

My idea is that, in these cases as well, we are dealing with different types of special (rhetorical) questions expressing surprise and disapproval. These structures have a peculiar syntactic representation. In particular, these sentences are in the scope of an *Evaluative Head* which projects the non-manual/prosodic components associated with the evaluative content, namely the emotional value.

(167) [DIS [CP … [DIS [EVAL Ø [WH [CP TU VESTITO ROSSO DOVEVA NO]]]]]
You dress red should no
'Shouldn't you wear the red dress?'

(168) [DIS [CP …] [DIS [EVAL Ø [IX$_{p2}$ LEGGI COSA ?!]]]]][151]
you read what
'What are you reading?!'

As already mentioned above, I observed that non-manual components associated with surprise questions start regularly with the sentence or before the introductory sign ("BUT"). This empirical evidence is explained by the syntactic models in (167)-(168) in that the non-manual components in question are projected by Eval°, which has in its scope all the following CP.[152] In this view, this apparent irregularity in timing is not due to the

[151] As already said, I live aside the analysis of the special status of the wh-constituents in sign languages.
[152] See among the others Cecchetto, Geraci and Zucchi (2009).

affective nature of surprise and anger facial expressions. Indeed, I did not reveal graduality in the intensity of the facial expressions used by signers-participants.

The table below summarizes the existing types of special surprise questions in LIS, NGT (The Sign Language of the Netherlands) and ISL (Israeli Sign Language):

Counter-expectational surprise questions	**Surprise-disapproval questions**	**Counter-expectational surprise question associated with disapproval value**	**Surprise-disapproval questions with counter-expectational surprise value**
Exaggerated raised eyebrows	Furrowed eyebrows	Furrowed eyebrows	Exaggerated raised eyebrows
Widened eyes	Squinted eyes	Squinted eyes	Widened eyes
Open mouth	Lip corners downward	Lip corners downward	Open mouth

Table 5. Surprise questions in sign Language

According to my results, the special values of these sentences influence the realization of surprise questions: each sentence type is marked by a peculiar intonational contour and a gestural component. This is required in order to convey such an additional emotional meaning. As already said, the prosodic and gestural components make these sentences grammatical.

Notice that I registered an alignment between prosodic and head gestural components. The alignment revealed underlines the importance of gesture and suggests that the model proposed for oral languages by Giorgi (2018) and Giorgi and Dal Farra (2019) can account for LIS as well.

Let me highlight here the fact that what is usually assumed on the formal differences existing between linguistic and affective non-manual components in sign languages is not supported by the data. It should not be surprising, however.

The only known study systematically testing these assumptions for any signed language is Baker-Shenk (1983). Some of the hypothesized differences in form between the linguistic and affective uses of facial expressions are not supported by her findings for American Sign Language (ASL). Specifically, the non-manual linguistic signal in her data was generally at the apex level before the initiation of the first manual sign in the sentence

(Baker-Shenk 1983:267). Moreover, she found that the intensity levels of the specific facial expressions associated with surprise (raised eyebrows) are higher in polar questions that express surprise than in neutral cases. Interestingly, the same phenomena are reported by De Vos et al. 's (2009) on surprise questions in Sign Language of the Netherlands (NGT). My results on LIS are coherent with these data and allow me to hypothesize that linguistic and affective functions of non-manual components in LIS can influence each other, at least in the linguistic expression of surprise and disapproval and result in a peculiar emotional prosody. I showed also that – at least in the cases I examined - it is the syntax that determines the timing of the activation/deactivation of non-manual components. This activation/deactivation seemed to be causal in the previous studies in that no syntactic model did exist that could account for the structures at issue.

In the same vein, I have to note that my study also contributes to the debate on intonation in spoken and sign language.

In the intonation view of the first studies conducted on sign language, the facial pattern occurring on an utterance was predicted by semantic and pragmatic factors such as discourse markers. Other researchers, in the vein of Liddell's (1980) work on syntax, treated these markers as explicitly syntactic elements that necessarily occur on structures defined syntactically, such as yes-no questions, wh-questions, topics, relative clauses.[153] The tension between these two lines of research has only recently begun to be addressed. The question is whether syntax makes the best predictions about the distribution and specification of the relevant prosodic markers (Wilbur 2000) or whether they are best predicted by pragmatic/semantic factors (Sandler and Lillo-Martin 2006).

Those authors claiming that facial expression in sign language works as intonation in spoken languages argue that (i) facial expressions fulfil many of the same pragmatic functions as vocal intonation, such as cuing different types of questions, continuation from one constituent to another, and shared information; (ii) it is temporally aligned with prosodic constituents, in particular, with intonational phrases; (iii) it can be dissociated from syntactic properties of the linguistic string (e.g., Reilly, McIntire, Bellugi 1990 for ASL). On the other hand, those researchers claiming that the semantic/pragmatic factors better predict the distributions of facial expressions link the meanings or pragmatics intents of different constituents characterized by a particular facial expression.[154]

The evidence I presented in this work suggests that at least in the case of surprise questions in LIS, namely in syntactic structures expressing emotional affect and showing a peculiar interpretation, intonation is projected by syntactic constituents.

Thus, we are clearly dealing with an integrated multimodal linguistic system rather than a partitioned system than divides language into a linguistic and a paralinguistic domain.

[153] See among the others, Petronio and Lillo-Martin (1997); Neidle et al. (2000).
[154] Dachkovsky (2005; 2008); Dachkovsky and Sandler (2009).

3.6.3.4 Sign language and gesture. Insights from the surprise-disapproval artichoke gesture in Italian Sign Language

Most researchers in the field of gesture studies agree on the fact that gesture can be considered part of linguistic competence. Gestures and speech form a unified system and are equally involved in processing and learning a language.[155] Gestures and speech are realized in two different modalities but they indissolubly integrate. Gesture is central to language and cannot be considered merely an add-on, this means that language includes both the more categorial elements (speech) and the more imagistic (gestural) components (Kendon 2008; 2014). Thus, a full analysis of language needs to include both gesture and speech in their multimodal unfolding.

If this is true for oral languages, it has to hold equally for sign languages, in that these are full-fledged natural languages as well. In the latter case, gestures and signs would be realized in the same modality, though.

Gestures and signs have been given different theoretical treatments having developed independently along with diverging research fields. Nonetheless, recently the two line-ups are getting closer. Researchers in the field of gesture studies agree on the fact that gestures are part of the linguistic system, whereas sign language linguists are discovering that modality does influence the structure of language, and some of them have revived the claim that sign could be considered (at least in part) gestural. In particular, there are differences between signed and spoken languages that seem impossible to be accounted for within a grammatical framework. These differences could be analyzed using tools developed to code the co-speech gestures that hearing speakers produce when they talk (Goldin-Meadow and Brentari 2017). This could be the case of the so-called 'agreeing' verbs in sign languages. Sign languages realize the person and number features of the arguments of a verb through agreement in that the verb is signed in the space indicating the position of its arguments explicitly.[156] However, the number of locations toward which the verbs can be directed is not a listable or finite set as the agreement morphemes in spoken languages are. In addition, it is not possible to list all the loci that could serve as possible morphemes for these verb signs. Indeed, the form of these signs varies as a function of the referents they identify or with which they agree (e.g. Fischer, Gough 1978). For these reasons, Liddell (2003) prefers to call verbs of this sort 'indicating' verbs (rather than 'agreeing' verbs), because they indicate, or point to, referents just as a speaker might gesture toward a person when saying *I told her*.[157] The idea is that the variable components of these signs make them more gestural than linguistic (e.g. Dudis 2004).

Howbeit, if gesture can be considered part of linguistic competence, what does it mean that sign language is (at least in part) gestural? In the spirit of Goldin-Meadow and

[155] See among the others Goldin Meadow and Brentari (2012)
[156] Mathur, Rathmann (2010 a,b); Rathmann, Mathur (2012).
[157] See also Liddel and Metzger (1998).

Brentari (2017), I assume that we have to compare signers' productions and speech-plus-gesture directly, suggesting the natural alignment sign-plus-gesture versus speech-plus-gesture.

This approach includes sign languages in the theoretical framework presently shared by formal linguistics, psycholinguistics and gesture studies: gestures and categorial components form an integrated system. This implies, in principle, that would be possible to find in sign languages gestures along with signs. [158]

In this work, in order to address this issue empirically, I focused on the commonalities that can be found in signers' and speakers' gestural forms in the specific case of the so-called artichoke gesture realized in association with surprise questions in LIS. These have been my research questions: (i) has the artichoke gesture I found in LIS been grammaticalized? (ii) Or, if it has to be considered a gesture as opposed to a sign, what kind of gesture is it?

My experimental results suggest that showing that artichoke gesture can be considered a gesture on the basis of two traditional criteria: conventionalization (consistency of the handshape used by signers) and reduction (duration) following Fenlon et al. (2019).

As far as counter-expectational questions are concerned, consider (169) and (170) related to the following scenario: *You know that your friend Gianni is on a diet and decided to eat only fruit. One day you see him eating a big hamburger. You are surprised and sign*.

Figure 95. Gestural and nonmanual components associated with the sentence in (169)

[158] See Holler et al. (2018) and Holler and Levinson (2019) among the others.

Figure 96. Gestural and nonmanual components associated with the sentence in (170)

counter-expectational

(169) (IX2p) MANGIARE PANINO
(You) eating a sandwich
"Are you eating a sandwich?"

counter-expectational

(170) IX_{2p} DIRE (MANGIARE) SOLO FRUTTA
You to say (to eat) only fruit
"Did not you tell me that you only ate fruit?"

Consider now the sentence produced by another consultant for the same context.

counter-expectational

(171) TU MANGI QUELLO? DIETA INUTILE
You eat-2p that (sandwich)? Diet useless.
"Are you eating that (sandwich)? In this case, it is useless for you to diet"

Figure 97. Signer uttering (5)

Consider now the following scenario for surprise-disapproval questions: *You know that Gianni is going to marry Luisa soon, but one day, while you are walking around with a friend, you see him with another woman. You are surprised and say to your friend.* Signers realized the sentence in (172) and (173) showed in Figure 98, 99 and 100:

(172) PANTALONI SPORCO
Trousers dirty
"You are getting dirty your trousers"

(173) NO SPORCO
No dirty
"No (Don't do this)! It is dirty there"

Figure 98. Coda signer signing "trousers"

Figure 99. "dirty"

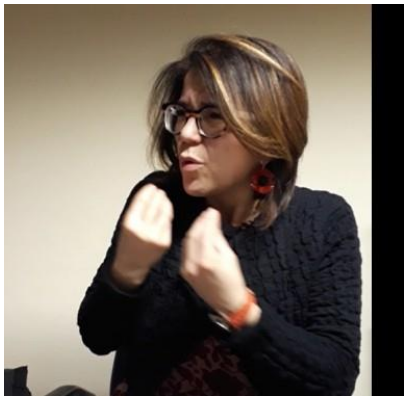


Figure 100. Artichoke gesture

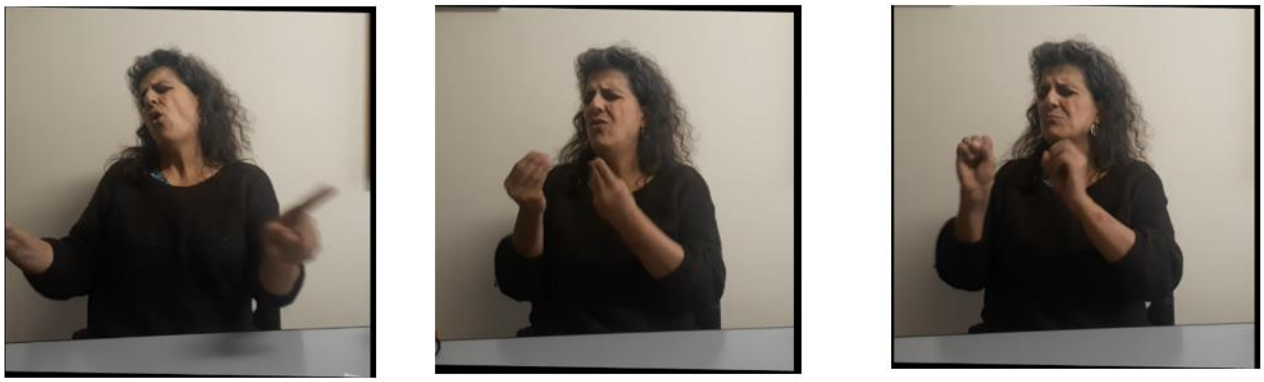


Figure 101.

Consider the last example, where surprise and surprise-disapproval values co-exist.

Consider the following scenario, meant to introduce counter-expectational value: *You know that Gianni is going to marry Luisa soon, but one day, while you are walking around with a friend, you see him with another woman. You are surprised and say to your friend.* In this case, in fact, the signer's eyes are not squinted and the mouth is slightly downwards. The surprise expression is "tempered" by the presence of disapproval. Disapproval is yielded by the artichoke gesture.

counter-expectational

(174) MA, IX$_{3P}$ LUISA FIDANZATA SUA VERO?
But he Luisa girlfriend of him true
"But Luisa is his girlfriend, is it true?"

BUT

HE

LUISA

GIRLFR-

-IEND

HIM

TRUE

Figure 102 Signer uttering (174)

I analyzed the relationship between signs and gestures in LIS focusing on the specific case of the surprise gesture. In order to address this issue empirically, I checked two traditional parameters typically used to distinguish gestures from signs: conventionalization and duration of the gestures.

I investigated the communication forms in LIS which show a clear resemblance to oral languages' gestures and which appear in the same pragmatical contexts as in oral languages, paying attention to their conventionalization and duration. The conventionalization parameter measure if and to what extent a form for a given meaning has become stable, showing less variation in formational features across uses.[159] Conventionalization is considered one the most important parameter involved in the development of emerging sign languages (see among the others Sandler et al. 2011). It has been claimed that gesturers are less limited more in variation of handshapes in gesturing, because in this case, the phonological and morphological constraints that characterize the signs do not hold.

Studies such as the one conducted on the comparison between signs and silent gestures by Goldin-Meadow and Brentari (2012) suggest that signs may be more conventionalized than the spontaneous gestures used by hearing speakers. We might therefore expect signs to exhibit more formational consistency across uses and users than gestures. Another change gestures can undergo over time is reduction – i.e. the loss of some phonological material. It is well known that in sign languages gestures that can be used by the surrounding hearing community can be grammaticalized (see for example Fenlon et al. 2019). The grammaticalized forms are articulated more quickly and with less movement than the less grammaticalized forms. One plausible hypothesis could be that signs are more reduced than gestures simply because they have been grammaticalized. I propose an example of ELAN analysis in Figure 103:

[159] The phonological description of signs is usually based on handshapes, palm orientation and hand movement in the space (for a detailed discussion see Pfau et al. 2012).

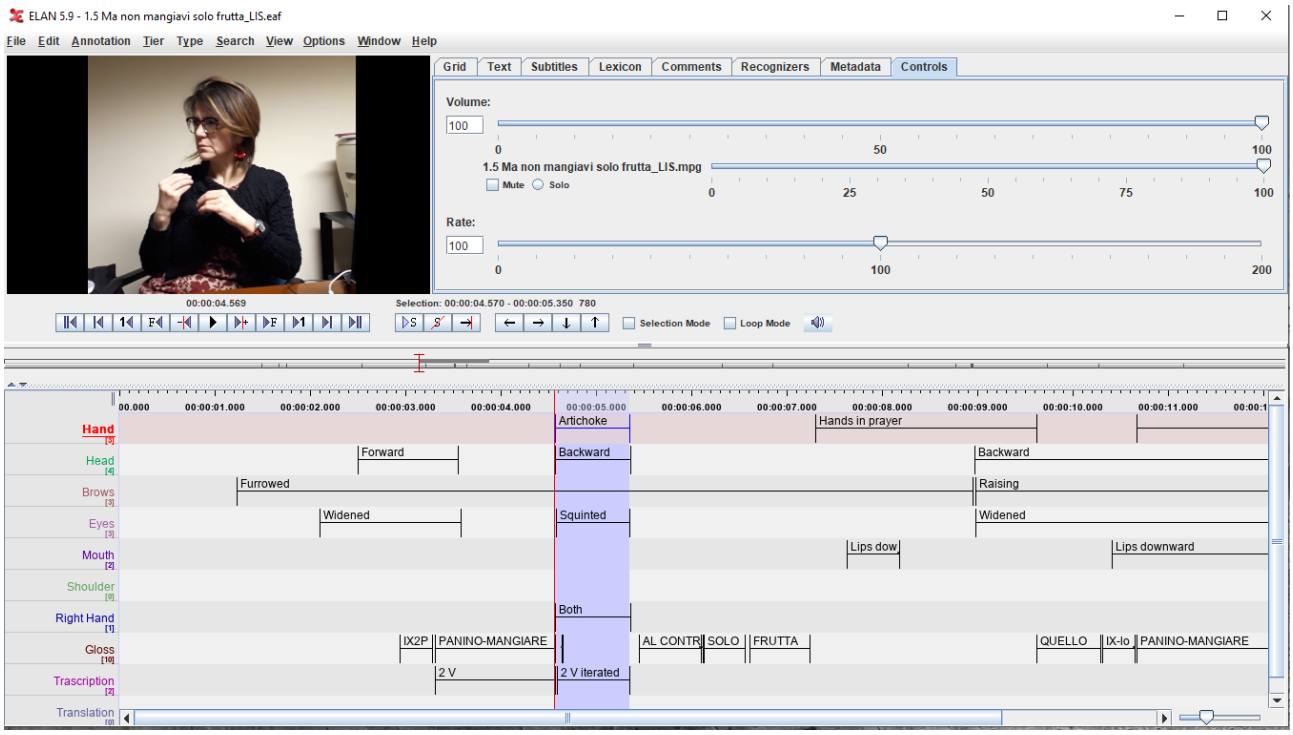


Figure 103. Elan analysis of the sentences in (3) and (4)

Figure 104. Gestures produced by a CODA signer

Figure 105. Gestures produced by a signer

Analysing my data, it turns out that the handshape of the gestures produced by the signers might be irregular. As you can see from Figure 104 and Figure 105, the two signers realize the gestures in different ways: the form of the hand is not always the same properly. The realizations differ also in that the consultants can use one hand or both. Furthermore, they show differences in the orientation of the palm and in the position of the dominant hand in relation to the non-dominant one. Finally, I noted that the speakers can articulate the artichoke gesture with both the dominant and the non-dominant hand and they can also articulate the gesture with one hand and a sign with the other hand contemporarily.

These might be idiosyncratic features. In all the other cases, the signers use the same identical sign or use a completely different form (another lexeme) according to the regional variation of LIS they sign.

Figure 106 Task 1.4 (L3) – Monolingual Deaf signer

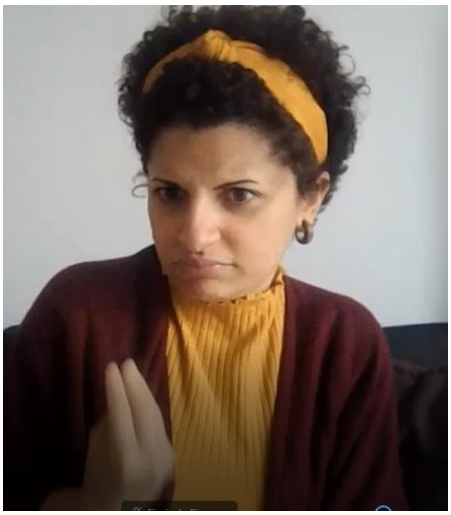


Figure 107 Task 1.4 (L5) – Late monolingual signer

Figure 108 Task 1.4 (L4) – Monolingual Deaf signer

Figure 109 Task 2.1 (L4) – Monolingual Deaf signer

Concerning the duration of the gesture, I noticed that they are significantly longer than the expectation. I found 52 occurrences of gestures, 34 artichoke gestures and 18 hands in prayer gestures which show an average length of 913 milliseconds. This average is coherent with the one found by Fenlon et al. (2019) in the case of pointing gestures. On the contrary, the pointing signs analyzed by Fenlon and colleagues were

consistently shorter than pointing gestures, a pattern that was robust across the types of pointing gestures studied: self-points were 245 msec in duration for the signers (compared to 865 msec for the gesturers. Addressee points were 228 msecs for the signers and 752 msecs for the gesturers. Other-entity points were 262 msecs for the signers and 790 msecs for the gesturers. As in the case of Fenlon et al. (2019) work, I did not find significant individual differences between my consultants.

3.6.3.5 Concluding remarks

In gesture studies, the artichoke gesture is commonly defined as an emblem, i.e. as a gesture assimilable to the so-called 'silent gestures' defined also as 'spontaneous signs' (Goldin-Meadow and Brentari 2017).

The disapproval-artichoke gesture I observed LIS is no more conventionalized than the artichoke gesture found in Italian in the same contexts, it is not reduced (as grammatical signs in sign languages are) and do not differ with respect to the duration from gestures produced along with speech.

The present analysis has been constructed on the basis of the work of Fenlon et al. (2019). These authors used three criteria for the identification of the sign versus gesture, namely conventionalization, reduction and integration in the linguistic system. According to Fenlon and colleagues' comparison between pointing gestures and pointing signs, signs are more integrated in the prosodic system. Broadly, in their perspective, it would mean that signs are more integrated in the linguistic system. However, I assume that this cannot be a good criterion in that several studies on gestures have shown that there exists a clear correlation between the distribution of the emphatic pitches in the prosodic component and the stroke of the hand gesture.[160] From an empirical point of view, these findings have been confirmed by recent works on surprise questions (Giorgi and Dal Farra (2018; 2019), Furlan (2019) and Giorgi, Dal Farra and Hinterhölzl (forthcoming). Gestures are not less linguistic than speech and signs and they can be integrated in the syntactic structure as well.[161]

In a completely different perspective, these same conclusions have been drawn by descriptive studies on quotable gestures in Italian.[162]

In her work on the 'hand in pursue gesture' – i.e. what I have called artichoke gesture - Isabella Poggi (1983) noted that this gesture has to be defined as 'holophrastic' in that it functions as the equivalent of a complete communication act whose

[160] See among the others Kendon (1980), McNeill (1992) and Abner et al. (2015)
[161] For a syntactic analysis of this sort see Giorgi (2016; 2018).
[162] See also the analysis of Poggi's works proposed by Kendon (1992).

performative character is always the same. The holophrastic gesture is not related to a precise lexical meaning and does not realize a specific propositional content. In Poggi's informal analysis, this gesture is used to signal the illocutionary force of the sentence. It is also expressively used as a comment on another person and as a self-revelatory display, namely in the evaluative domain.

These observations are coherent with the more formal analysis of (at least some of) the syntactic structures with which this gesture is aligned: in the case of surprise questions, according to Giorgi (2018), the input to the sensorimotor component for prosody and gesture realization is unique in that they are both triggered by the same syntactic property, i.e. the presence of a left-peripheral *Evaluative* head – a prosody/gesture-oriented head in the sense of Giorgi (2014).[163] This for obvious reasons cannot accompany the whole sentence as it occurs in non-signed language, however, it appears at the beginning and/or at end of the sentence. Furthermore, in some cases, the signer articulates the artichoke gesture with one hand while contemporarily articulates a proper sign with the other hand. In the same manner, the relevant emphatic pitch in prosody in oral languages can occur only concurrently with a single portion of the linguistic string/sound and cannot last for the entire sentence.

Thus, my observations suggest that the artichoke gesture in the case of surprise questions in LIS has the properties of a gesture. This is not a sign in that it does not show a particular degree of grammaticalization. Moreover, this is not reduced in its realization and shows a peculiar distribution.

In the literature, it has been proposed that the artichoke gesture/sign could be seen as a generic wh-sign (Branchini et al. 2013). However, this cannot be the case of the artichoke gesture found in surprise contexts in that, according to the data I presented in the present work, this element appears either in wh-questions or in yes/no questions. Moreover, I did not find any case of improper duplication, i.e. the only other peculiar context in which Q$_{\text{ARTICHOKE}}$ in Italian Sign Language has been observed (Branchini et al. 2013). I suggest that the so-called Q$_{\text{ARTICHOKE}}$ and the artichoke gesture in emotional

[163] Consider that Poggi (1983) proposes an example of sentence with which the artichoke gesture could co-occur. This example is reported by Kendon (1992:193). I give these example in (i). I formalize the context proposed by Poggi as follows: *a mother is surprised to see the child she had just fed looking for something else to eat and utters*:

(i) Didn't I just give you lunch?

This is not an information-seeking question in that the mother is aware of the fact that she has just fed her child, actually. She is not asking in order to receive an answer. She is just showing her surprise. This question seem to be of the same kind of surprise questions I investigate in this work. Consider one of the stimuli I included in my experiment from Giorgi (2016): Scenario: *Mary calls me on the phone and tells me that she has a new red dress to wear at tonight's party. When I meet her at the party, I see that she has a blue gown. I'm surprised and utter (ii):*

(ii) Ma non era rosso?
'But wasn't it red?' (from Giorgi, 2016b, ex. 1)

Consider that the adversative particle 'ma' is usually omitted (Giorgi 2016; 2018; Giorgi and Dal Farra 2019).

contexts are different elements that seem to share the same form. The QARTICHOKE is the token that has been grammaticalized from the artichoke gesture for biomechanical and semantic reasons. Consider that Branchini and colleagues investigated the duration of wh-signs paying attention to the lengthening due to the sentence final position wh-items occupy in LIS. From the data presented by Branchini and colleagues, it is possible to see that as in the case of Fenlon et al (2019), grammatical signs show a duration between the range of 200 and 300 milliseconds, approximately.

In LIS, the existence of the QARTICHOKE on the one hand, and the presence of the hands-in-prayer gesture, on the other hand, an item which has not been lexicalized, meet my expectations: a gesture can be used to build a sign, but it has not to be used only in this way. Gestures and signs can co-exist as such, as well.

4. MULTIMODALITY IN GRAMMAR

This work aimed to investigate multimodality in language. In particular, it addressed the relationship between the pragmatic context – intended as the mutual beliefs/the common ground shared by the interlocutors engaged in a conversation – and the syntactic, prosodic and gestural components. At least in the case of surprise questions, these components literally integrate each other and incorporate in turn the pragmatic context. In this perspective the terms "grammar" and "language" mirror each other.

Consider the syntactic model assumed in this study as the appropriate representation for counter-expectational (175) and surprise-disapproval questions (176):

(175) [DISP [CP CP1] [maDIS° [EVAL° Ø [WH Ø [non mangiavi solo frutta]]]]]
But weren't you eating only fruit

(176) [DISP [CP CP1] [maDIS° [EVAL° Ø [WH cosa [fai]]]]]
But what are you doing

In this model "CP1" stands for the pragmatic context, i.e. for the mutual beliefs shared by the interlocutors.

The fact that the context is of primary importance in the case of rhetorical questions is a longtime assumption no longer up to debate (see section 2.1.). According to Lakoff (1971), in these cases, it is always present an assumption about the background belief relating to an utterance whose truth is taken for granted in the universe of discourse. And, in the case of surprise questions, it is precisely the unexpected discovery that this assumption has been 'betrayed' by the interlocutor that causes the speaker's surprise and/or disapproval. Consider, for example, (175). This sentence in all the languages I investigated and in Spanish, Italian and German, cannot be considered a neutral question. This is due precisely to the context in which it is uttered. Namely, what counts in this case is the 'betrayed' presupposition taken for granted in the universe of the discourse (177):

(177) Presupposition: you were eating only fruit

In these cases, the speaker's presupposition undergoes a change due to the interlocutor's unexpected behavior. The presupposition trigger is contained in the speaker's expectations then, namely in the pragmatic context, that is in CP1.

This pragmatic fact has semantic and syntactic consequences. As clearly noticeable in Japanese and Korean (see section 3.6.1.), the adversative introductory particles observable in surprise questions resemble turn-taking tokens which usually are positioned not just in the left-most position available in the sentence but, precisely, at the beginning of the conversation.

Kundey in Korean and *Tokorode* in Japanese are translated by the dictionary, the traditional grammar and the specialized literature as 'but' or as 'however'. Nevertheless, the native speaker linguist experts who collaborated with me proposed the translation 'by the way' for these items in the case of surprise questions. Moreover, they also suggested that, in the case of Japanese and Korean languages, interjections can also be present in these environments: *hee* and *ya*, respectively. The participants in the repetition task experiments I conducted, confirmed this intuition.

These items have been analyzed in the literature as turn-taking tokens as well. This pattern seems to resemble the western languages pattern described above. The interjections lexicalize the evaluative head, Eval° in (175) and (176), whereas the adversative particles *tokorode* and *kundey* are discourse heads, and occupy the position DIS° in (175) and (176).

According to many studies conducted in the discourse analysis approach, the interjections *hee* and *ya* can be used to abruptly start a conversation that is related to something said or occurred previously (acquired knowledge/common ground/interlocutor's shared beliefs/CP1). The same holds for the Japanese particle 'chotto' used in the case of surprise-disapproval questions (see section 3.6.1.).

As already noted in the present work (see sections 2.1.2., 2.1.3. and 2.1.4.), when in emotional contexts, the adversative particle introducing surprise questions can appear at the beginning of a conversation. On the contrary, a non-emotional sentence introduced by *ma* uttered out of the blue gives rise to a violation arising at the syntax-interpretation interface. In the case of canonical *ma/but* coordination, the omission of the first conjunct is not possible in that the presupposition trigger has to be necessarily associated with a lexical item precisely in the first conjunct, thus it can not be eliminated. As a result, it would not be interpretable. Without the context, the adversative value of the sentence (i.e. the contrast between the expectation triggered by the first conjunct and the contradicting state of affairs conveyed by the second conjunct) cannot be interpreted. Precisely to account for this evidence, Giorgi proposes that in the case of the Italian surprise questions, the adversative particle *ma* does not syntactically belong to the sentence on its right. On the contrary, *ma* is a *discourse head*, connecting two separate sentences. In Giorgi's view, this minimal discourse can be syntactically represented as follows:

(178) $[_{DIS}\ [_{CP1}\ \ldots\ ][DIS\ [_{CP2}\ \ldots\ ]\ ]\ ]$

In a common adversative coordination environment, the speaker's expectations - suggested as reasonable or not unreasonable by the previous discourse – triggered by the first conjunct, take the leading role in understanding adversative constructions. In the case of rhetorical questions, the pragmatic context plays a crucial role. This can be formally represented in generative linguistics. Indeed, generative syntax can capture the generalized observation made in semantics and traditional pragmatics presented above.

(179) [DIS [CP …] [DIS° [EVAL [WH [CP2]]]]]

Furthermore, from a prosodic point of view, in surprise questions, in the case of Japanese and Korean, the *emotional* interjections are interested by the most relevant emphatic pitch. When these interjections are omitted, the most relevant emphatic pitch is observable on the verbal form. As far as the stroke of the gesture is concerned, I can say that the stroke of the hand and/or head gesture aligns with the most relevant emphatic pitch in both cases. In western languages, the most relevant emphatic pitch is observable on the verbal form. In these languages, the lexicalization of Eval° is not visible (see section 2.1.4.).

In the western languages already investigated, the most emphatic pitch observable in alignment with the verbal form and the stroke of the hand and/or head gesture is a bitonal pitch accent. According to Pierrehumbert and Hirschberg (1990), this bitonal accent is usually used to evoke a particular relationship between the accented items and the speakers' mutual beliefs. In particular, the speaker uses H*+L accents to indicate that support for the open expressions instantiations with the accented items should be inferable by the hearer from her representation of the mutual beliefs. This pitch accent is used to bring into play the shared knowledge and the expression of surprise is due to the clash between the shared knowledge evoked – CP1 in Giorgi and dal Farra's terms - and the 'betraying' interlocutor's behavior (newly acquired information). The same bitonal accent seems to be observable in Korean and Japanese as well (Figure 110), even though further research on a larger sample of native speakers is needed.

In the same way, in these cases in LIS widened eyes and squinted eyes are observable. The tone 'squinted eyes' have been already described in the literature on Israeli Sign Language as the tone that instructs the interlocutor to retrieve information that is shared but not readily accessible. According to Sandler (2012:65), put together with brows raised in conditional, the squint conveys a meaning of an outcome that is not readily accessible because it is not realized, namely a 'counterfactual conditional' in Sandler's terms. The facial action squint, common in Israeli Sign Language is not widely reported in other sign languages, however, my data on LIS are perfectly coherent with those presented in the case of Israeli Sign Language (Dachkowsky 2005; 2008; Dachkowsky and Sandler 2009).

As far as I can see, no studies addressed directly the tone 'widened eyes', however, it has been noted, as in the case of squinted eyes, that in Israeli Sign Language this feature can be associated with topicalization. In particular, it occurs in combination with raised eyebrows, head nods and other non-manual components between the topic and the remainder of the sentence – i.e. the comment – (Nespor and Sandler 1999; Rosenstein 2001). These findings are coherent with my data on LIS as well. Moreover, as already shown in section 2.2.3.2., the feature 'widened eyes' has already been observed in surprise questions in Israeli Sign Language and in the Sign Language of the Netherlands (Dachkovsky 2005; 2008; Dachkvosky and Sandler 2009; de Vos et al. 2009). Moreover, in the case of surprise questions, I observed another feature, namely the corner of the lips downwards. This feature has been already noted in the expression of irony in LIS (Mantovan et al. 2012) and analyzed as belonging to the evaluative domain.

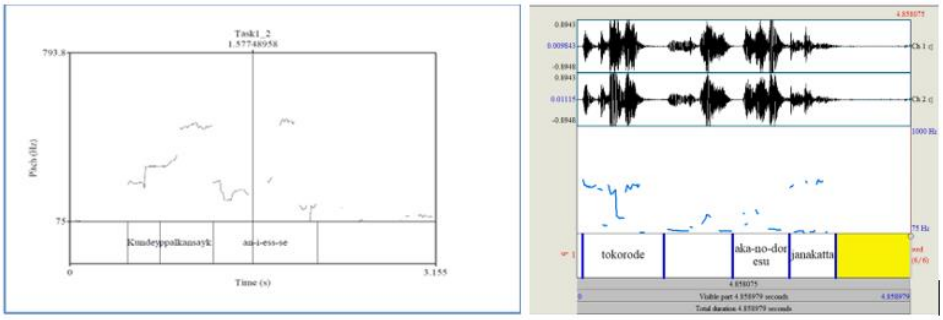


Figure 110 Praat analysis of a counter-expectational surprise question in Korean (on the lest) and Japanese (on the right)

In the same way, as widened and squinted eyes, in Korean and Japanese, the surprise interjections are used by the speaker to bring into play the shared mutual beliefs – the acquired knowledge - in order to highlight its incoherence with respect to the interlocutor's behavior – newly acquired knowledge -, who is betraying the expectations triggered by the knowledge previously shared. This clash causes the speaker's surprise (section 3.6.1.).

Coherently, from a semantic point of view (Foolen 1991; Malchucov 2004), the adversative particle is exploited as a form of denial of expectation, strengthening the contrast already present in the conjuncts or in the previous discourse. Adversativity should be considered a universal semantic base and should be analyzed as a type of meaning that facilitates the integration of communicated state of affairs into the surrounding discourse. In particular, *but* is relevant to the integration of new

information (the second conjunct) into the previous discourse (the first conjunct and/or its context). Expectations, suggested as reasonable or not unreasonable by the previous discourse, were shown to play a crucial role in understanding adversative constructions (see section 2.1.2.).

The fact that time is needed in order to accommodate the newly – surprising - acquired knowledge in the speaker's epistemic model maintains the information in the irrealis domain. This is expressed in syntax by the presence of the non-indexical verbal form (imperfect verbal form in the case of Spanish and Italian, evaluative subjunctive in the case of Korean, Japanese, Vietnamese and LIS) and the non-void (non-expletive) evaluative negation. As already noted above, interestingly, commonly, the bitonal pitch accent can interest the non-indexical verbal form as well (see section 3.6.1.).

On the mandatory presence of non-indexical verbal form in special questions, generative syntax, discourse analysis approaches, semantic studies and eastern language linguists agree.

Shinzato (2002) analyzed surprise rhetorical questions in Old Japanese – namely what she called 'exclamatives' -, Maynard (1995) investigated non-information-seeking interrogatives in Modern Japanese using the concept of 'information status' and Akatsuka (1985) elaborated on an epistemic scale studying the different status of 'knowing' the speaker exhibits on the conceptual continuum of domains of realis and irrealis (see section 3.6.1.). According to Shinzato's examples (Shinzato 2002:558-9), exclamatives in Old Japanese have the form of surprise rhetorical questions and indicate the speaker's strong feelings evoked by an unexpected encounter with a situation or sudden realization of a situation. Faced with an unexpected encounter with the situation in front of her eyes, the speaker may question if the perceived situation is what is really the case. Casting a doubt in such a way elevates the tone of voice to produce exclamatory effects, according to Shinzato.

In Akatsuka's (1985:625) terms, surprise can be described as "I didn't know this until now!". This speaker's attitude - intended as the speaker's subjective evaluation of the ontological reality of a given situation" (Akatsuka 1985:634-6) – stands in the realm of the irrealis and what the speaker knows at the current stage, with respect to the past knowledge status, represents newly learned information. In other words, according to Akatsuka, newly learned information belongs to the domain of irrealis, even though the speaker has a strong endorsement for its truth value. This is because surprise information is not yet fully assimilated into the pool of the speaker's knowledge. People need time to internalize acquired information, and until it is fully internalized, it is not regarded as knowledge in the realis domain. According to Akatsuka, in Japanese, the indicative mood expresses the speaker's attitude of uncertainty – i.e. something on the following line: "I do not know if this is the case". Instead, what underlies the subjunctive mood is the speaker's negative conviction (let's say a counter-expectational value), namely something as follows: "I know that this is not the case". In her terms, surprise and uncertainty are different things. Indeed, according to Pierrehumbert and Hirschberg

(1990) and references cited there, at least in western languages, uncertainty and surprise show a different prosodic contour.

Thus, in this sense, the subjunctive mood in Japanese could disambiguate between uncertainty and surprise. Indeed, the subjunctive can refer to – among other things - a communicative situation in which a clash is verbalized between the speaker's expectations and the real situation she is immersed in. In this situation, what the speaker is learning right now and the information she previously accommodated in her epistemic model is not the same thing. And, precisely, in Akatsuka's epistemic scale, the status of newly learned information is "surprise" (Akatsuka 1985:625). This is expressed in syntax by the presence of evaluative negation and evaluative subjunctive mood of the verbal form which is clearly not selected by the negative semantics of the predicate, in these cases.

In Petrocchi (2016, MA Thesis), a work on the parenthetical constructions of Free Indirect Discourse in Italian Sign Language (LIS), I explored the hypothesis that this would be a way of constructing tenses in sign language as well. Based on Zucchi (2009) and Bertone (2011), I identified the existence of an absolute temporal value that I compared to the non-indexical use of Italian "passato remoto" and the equivalent form "historical present". In LIS – such as in Japanese and Korean - only two ways of constructing tenses are recognized. In the case of signed language, these ways are (i) using temporal adverbs along with the citation form of the verb and (ii) using non-manual components spread on the citation verbal form. In these cases, the speech time coincides with the reference time and "moves" forward or backwards with reference to the utterance time depending on the temporal adverbs or the non-manual components employed. A very similar proposal has been made for Vietnamese as well - see the notion of "imaginary present" (Ngoová 2016) - as in this language, the absolute verbal form cannot express the anteriority of the speech time with respect to the utterance time. Rather, it imposes a constraint in this sense: the reference time has to precede the speech time, which has to coincide with the utterance time. The temporal adverbs or the contextual clues can shift the speech time in the past and in the future. On the contrary, the present tense requires that utterance time and reference time coincide. In this respect, Vietnamese and LIS verbs behave in the same manner resembling what has been observed for Japanese and Korean as well. I claim that the verbal form can be interpreted as an evaluative subjunctive. Indeed, in both Vietnamese and LIS surprise questions, evaluative negation can be observed. The evaluative negation, in the case of Japanese and Korean, is considered to be the trigger that licenses the evaluative subjunctive mood (see section 3.6.1. for further details). In Vietnamese, the surprise value of the questions is expressed by the particle *á*, whereas in LIS the same value is expressed by the non-manual prosodic components. In LIS the susprise non-manual components are spread over the whole sentence. Consider now Vietnamese. As far as F0 value is concerned, the surprise particle in Vietnamese is interested by the most relevant (right-most) emphatic pitch. These would make the special questions in Vietnamese, characterized by a high

boundary tone. However, Vietnamese is a tone language. In *absolute value*, the tone associated with *á* is higher with respect to the tones of the other lexemes in the sentence, then, as expected, it remains higher in special questions and in final-position as well. Nevertheless, the general F0 value associated with surprise questions in Vietnamese turns out to be lower than the F0 value typically associated with canonical questions in Vietnamese. This is expected in the case of a (low terminus) rhetorical question in a tone language (see sections 2.2.2.2. and 3.6.1.).

The introductory particles selected in all the languages I investigated, fit in the spectrum of "denial of expectations" semantics. As shown above, in Japanese and Korean I observed the presence of *kundey* and *tokorode*. In LIS, I found the adversative introductory sign "BUT". In Vietnamese, I observed the introductory particle *sao*. *Sao* is commonly translated as "why"; however, it shows bleaching semantics in these and other cases. This form has been described as "deictic" by Thompson (1963). In the same paper, Thompson provides a translation for "sao", namely: "however". It seems to share with all the other adversative particles observed in eastern languages and LIS surprise questions, the property of being a turn-taking-like element, positioned at the beginning of the conversation.

The presence of these tokens is precisely due to the fact that these particles are used to semantically express the unexpectedness of the surprise questions with respect to CP1, exactly in the same way as in canonical uses of adversativity the adversative particle conjoins one conjunct with a second conjunct containing contradicting information. For instance, consider the sentence *John is short but strong.* Here, "but" suggests that John's strength is unexpected with respect to his shortness. In the same way, "but" is inappropriate in a sentence such as *Mario is a taxi driver but he has a driving license*. In this latter case, indeed, the fact that Mario has a driving license is expected given the fact that he works as a taxi driver. Importantly, in these cases, the pragmatic context plays a crucial role. If we substitute "and" with the occurrences of "but" in the sentences used above as examples, we obtain a peculiar effect indeed: the additive reading of "and" is not possible.

(180) #John is short and strong
(181) #Mario is a taxi driver and he has a driving license

In (180) and (181) only the surprise *and*-reading makes the sentences less deviant, along with a peculiar prosodic intonation in a relevant scenario. For instance, we can imagine that Mario was a very reckless, distracted and inattentive person, wholly incapable of driving, however, he voluntarily changed his character, worked very hard and succeeded in the trial of becoming a taxi driver. As expected, the scenario is of primary importance especially in the interpretation of (181), in that in (180) the unexpectedness and the relative surprise value are triggered by the lexical item 'short'

that commonly (common ground) is intended to indicate something as opposed to 'strong'.

Indeed, analogous cases of and-surprise have been found in Russian (182) and Dutch (183):

(182) Ona zan'ata, a pomogajet nam
"She is busy, yet she helps us"

(183) Ze had het druk en ze hielp ons!
"She was busy, and she helped us!"

(Carlson 1983:181)

Moreover, Slings (1980) proposes a similar analysis for *kai,* namely in the case of coordination word equivalent to *and* in ancient Greek. *Kai* could be considered a case of adversative and coordination with a denial of expectation value. As I argued in section 2.1.2., this is evident in the well-known formula καλὸς καὶ ἀγαθός (*kalòs kai agathòs).* In this case, the denial of expectation interpretation of *and/καὶ* is clear. The formula in question expresses indeed the fact that the virtuous man (unlike ordinary mortals) surprisingly possesses contrasting qualities such as beauty (he is καλὸς, 'beautiful') and goodness (he is *agathòs*, 'good'). Commonly, the expectations are different: the two qualities rarely come together in the same individual.

Thus, it is the context (CP1) that determines the selection of the adversative surprise particle. We cannot freely choose to substitute an adversative particle with an additive *and* in a non-neutral pragmatic context.

In this dissertation, I showed also that and-surprise constructions are possible in Italian as well (184). At least in the cases of modern languages, the verbal form required in these constructions is a non-indexical, evaluative mood – i.e., evaluative subjunctive, indicative imperfect and historical present. This holds for LIS as well (see section 3.6.2.).

(184) Ieri vado al mare e chi ti incontro? Il mio capo-ufficio!
Yesterday I go-pres to the beach and who CL2ps meet? The my office manager!
"Yesterday I went to the beach and who did I meet? My office-manager!

Surprise is connected with unexpectedness, and as said above, surprise and uncertainty are not the same things. They have also different prosodical patterns.

The discourse heads *tokorode* and *kundey* and the interjections *hee* and *ya* tend to not occur together in my data, probably because they belong to different registers of the language, formal *versus* colloquial, respectively. However, in Vietnamese *á*, the particle expressing the surprise value, and *sao,* the adversative introductory particle, always co-occur. In LIS as well, the surprise non-manual prosodical components spread over all the sentence, the sign"BUT" included.

Finally, consider also that the introductory adversative particles can be omitted in all the languages I investigated and in all the western languages previously investigated. On the contrary, in non-emotional contexts, the adversative particle cannot be omitted.

(185) (Ma) non era rosso?
But wasn't it red?

(186) A. Maria è povera
Maria is poor
B. Si, *(ma) è felice
Yes, *(but) she is happy

The lack of *kundey* and/or *tokorode* is not so surprising then. This lack is due to the fact that the antecedent required for the correct interpretation of the emotional sentences lies in the pragmatic context (CP1) – the scenario administered in my experimental design – whereas in canonical cases the antecedent needed for the adversative interpretation of the *but-clause* is to be found in the first conjunct. If the first conjunct lacks, the adversative value of 'but' cannot be interpreted. In these latter cases, the presupposition trigger is associated with what is (lexically) expressed in the first conjunct.

Indeed, the ordering of the conjuncts is not free. If we change the order of the conjuncts the interpretation of the sentences conjoint changes.

(187) Maria è povera ma felice
Maria is poor but she is happy

(188) Maria è felice ma povera
Maria is happy but she is poor

In (187) the unexpected fact is the happiness of Maria with respect to her poverty, whereas the unexpected fact in (188) is the poverty of Maria with respect to her happiness. The interpretive features are tied to the c-command relation between the first and the second conjunct (CP1 and CP2).

In this perspective, taking into account the alignment among syntax, prosody and gesture detected in all the languages investigated, the integration of the pragmatic

context at the interface with the syntactic component and with the sensorimotor system (prosody and gestures, according to Chomsky (2011)) becomes very clear. Moreover, this work shows that this multimodal integration holds for very distant languages such as Italian, Spanish, German, Korean Vietnamese, Japanese and LIS. These languages have different prosodic systems, are realized in different modalities and are considered to differ also from a syntactic point of view. However, surprise questions show in all these languages the same interpretive, prosodic, syntactic and gestural features. I provided experimental evidence to support this conclusion and I showed also that many researchers in different fields such as discourse analysis approach, semantics, pragmatics, generative syntax, psycholinguistics, psychology, traditional grammar, gesture studies, and sign language studies coherently agree on this point even if the theoretical frameworks varied along with the experimental methods employed. I demonstrated that visible parts of the body can be engaged in language computation.

This might mean that the classic model of language conceived as the a-modal translation of the sensorimotor experience in a set of representations and computations independently elaborated (Fodor 19875; 1983; Pylyshyn 1984), and the most recent theories on multimodal language elaborated in the embodied cognition field (Borghi and Cimatti 2010) might be efficiently coordinated.[164] This would support a view of linguistic computations (core grammar) as thoroughly grounded in action and interaction. Moreover, the faculty of language and its performance instances are found to be precisely on the seat they have been biologically assigned: the human body. Language permits thought, and it is firmly rooted in the human bodily experience.

Indeed, reading my experimental results on the realization of surprise questions along with the previous experimental studies conducted on these structures in Italian and Spanish, mainly, makes clear that the vast majority of the speakers gesticulate. More precisely, simplifying a lot and relying only on the more explicit experimental results available at the current stage of the research, the speakers use the same gestures, i.e. PUOH gesture in case of counter-expectational surprise questions and iterated PUOH gesture in the case of surprise-disapproval questions. They also use the same non-manual gestures, i.e. furrowed eyebrows and squinted eyes in the case of surprise-disapproval questions and raising eyebrows and widened eyes in case of counter-expectational surprise questions. My data on LIS, Korean, Vietnamese and Japanese are limited in quantity, however, it is a fact that when the signers and the few Japanese and Vietnamese speakers gesticulate they only use the manual and non-manual gestures expected. As Giorgi and Dal Farra (2019) showed, the speakers gesture even in absence of a visible addressee and if their hands are 'blocked' in some way, the non-manual gestures are more evident and a new non-manual gesture regularly appears, i.e. lifted shoulders. This seems to suggest that when the hands cannot move, other parts of the body take upon themselves the burden of emotional communication. The speakers use gestures even if they cannot be seen by any interlocutor. This means that gestures are

[164] For an overview on embodied cognition see Wilson (2002).

not used in order to clarify, integrate or disambiguate what is being said orally. The gesture is not needed in comprehension in that the interlocutor can receive the speaker's message through phone communication perfectly well. Then, why do speakers gesture in production, even if no visible addressee is present?

As it is clear, at the present stage of research, I cannot certainly provide an exhaustive and comprehensive response to this relevant question. However, I can suppose that this profound - let's say intimate - relationship among the gestures, the pragmatic context, the prosody and the syntactic trigger with which prosody and gestures turn out to be regularly aligned is due to evolutionary reasons.

In the 'Embodied Cognition' approach, relationships have been shown to exist between the sensorimotor system and the superior cognitive functions (Caruana and Borghi 2013). The existence of 'affordances' and 'embodied simulation' revealed that human beings started elaborating meanings by experiencing the objects and the social environment around them (Rizzolatti and Fadiga 1998; Gallese 2005). The way in which an object can be handled is the departure point for the mentalization of meanings that can become mental representations and words.[165] Observing another human being performing an action activates - in our brain - the same neural response as if we were performing the same action in turn (Rizzolatti and Fadiga 1998). Seeing another human being experiencing an emotion activates the same neural response as if we were experiencing that emotion firsthand (Gallese and Friedberg 2008).

Gallese and Lakoff (2005) argue, on neurological and linguistic grounds, that our grasp of concepts that involve bodily actions, and possibly of their metaphorical extensions (Lakoff and Johnson 1980), involves simulating these actions, i.e. partly performing them in the motor system of the brain. Borghi and Cimatti (2009) propose an important extension of this approach to account for abstract words. They hypothesized that linguistic meaning is grounded in our embodied *social* experience. That is, we experience the use of words, our own, and others', in various social settings as a situated bodily action. We may have no direct experience of the object represented by abstract words, but we have ample experience of occasions on which these words have been used, just as we have experience of grasping objects. In Borghi and Cimatti's view, word meanings are therefore grasped through simulating the *communicative* behavior of oneself and others.

In Borghi and Cimatti's perspective, our linguistic representation would be definable as *co-implicated*, in the sense that they include sensory information along with a series of motor patterns, i.e. affordances, intended as all those series of social actions we can perform on the object we are representing abstractly in our mind.

[165] In my view, a non 'Radical Embodied Cognitive Science' (Chemero 2009) is to be preferred, in the sense that it is not desirable to reject *in toto* the traditional representational model of the human language and cognition. Linguistic computations and the concept of linguistic representation still remain a theoretical tool of significant heuristic power, however, these are to be re-elaborated, at least in part, in accordance with the most recent scientific findings on the existing relationship between the sensorimotor system and the superior cognitive functions (see for an overview Caruana and Borghi 2013).

In this view, the entire human cognition would benefit from a multimodal experience of the context/environment in which the human being is immersed as an agent.

Furthermore, consider that expressing emotions is not properly a communicative act. Ekman (1979, 1992) claimed that there is a set of facial expressions that are innate, and they mean that the person making that face is experiencing an emotion; i.e., brow raising means "I feel surprised." However, according to this view, these facial expressions are to be considered as "read outs" of inner emotional states and the fact that they have a meaning to the observer is incidental (Elliott and Jacobs 2013). This hypothesis has to be inserted in the framework of a widespread universality hypothesis in the psychological literature, claiming that there is a basic subset of emotions that can be found in every culture (Frijda 1986). What is more, the so-called basic emotions are universally expressed in similar ways, and thus cross-culturally identifiable (Ekman 1979; 1993; Izard 1994). According to this hypothesis, surprise is universally marked by raised eyebrows and anger by furrowed eyebrows. These facial expressions are the same observed in surprise and surprise-disapproval questions in all the languages investigated and are also used in the expression of surprise and anger/disapproval/annoyance in signing in American Sign Language (Baker-Shenk 1986; Reilly, McIntire & Seago 1992), Israeli Sign Language (Dachkowsky 2005; 2008; Sandler and Dachkowsky 2009) and Sign Language of the Netherlands (De Vos et al. 2009). The concrete independent evidence we have for this is the realization of signed lexical items for basic emotional states such as 'angry' and 'surprised' in the sign languages considered which are indeed accompanied by the predicted facial expressions (i.e., lexical non-manual components).

Thus, in expressing her emotion of surprise and disapproval/anger, the speaker might not aim to *communicate* her feelings but just to *feel/embody* them. As she involuntarily uses her brows and her eyes for this purpose, in the same way, she uses her hands in that, probably, these latter are naturally involved in the expression of emotions as well. Ekman's studies rely on the old tradition according to which these gestures might have had some instrumental purpose in evolutionary history (from Darwin 1904 on). For example, lifting the eyebrows might have helped our ancestors respond to unexpected environmental events by widening the visual field and therefore enabling them to see more. Even though their instrumental function may have been lost, the facial expression remains in humans as part of our biological endowment and therefore we still lift our eyebrows when something surprising happens in the environment whether seeing more is of any value or not.

The same might hold for manual gestures as well, even if the clear primordial use of PUOH gesture is not clearly apparent. What I observed is that if this gesture occurs, it shows up in surprise contexts. So it could be seen as related to the expression/embodiment of surprise and/or surprise-disapproval.

Let me recapitulate in the interests of clarity: in the counter-expectational and surprise-disapproval contexts, the speaker brings into play the shared mutual beliefs – the acquired knowledge - in order to highlight its incoherence with respect to the interlocutor's behavior – newly acquired knowledge -, who is betraying the expectations triggered by the knowledge previously shared. As already said before, this clash – precisely - causes the speaker's surprise. The fact that time is needed in order to accommodate the newly – surprising - acquired knowledge in the speaker's epistemic model maintains the information in the irrealis domain. Probably, PUOH gesture is related in some way to the process of waiting for the accommodation of the newly learned information, a gesture that embodied the bewilderment of the speaker who cannot believe what she was convicted of but neither can she be convinced of the newly contradicting state of affairs she is learning. The disapproval value requires the adjunction of the iteration of the gesture. Probably, the insisting on the iteration of the gesture, adds to the bewilderment the speaker is experiencing annoyance/anger. Coherently this gesture compares in association with furrowed eyebrows in case of annoyance and with raised eyebrows in case of surprise without annoyance. In these emotional contexts, the speaker would like to ask for an explanation - the meaning that has been attributed to PUOH gesture in the literature is roughly 'asking for something' (Kendon 2004) - but she actually cannot because her epistemic model has to be re-arranged in that situation.

According to Corballis (2009), language, whether spoken or signed, can be viewed as a gestural system, evolving from the so-called mirror system in the primate brain. In nonhuman primates, the gestural system is well developed for the production and perception of manual action, especially transitive acts involving the grasping of objects. The emergence of bipedalism in the hominins freed the hands for the adaptation of the mirror system for intransitive acts for communication, initially through the miming of events. With the emergence of the genus *Homo* some two million years ago, pressures for more complex communication and increased vocabulary size led to the conventionalization of gestures, the loss of iconic representation, and a gradual shift to vocal gestures replacing manual ones— although signed languages are still composed of manual and facial gestures.

In this view, language is fundamentally a gestural system and evolved from manual gestures rather than animal calls, and indeed it persists in this form in signed languages. This assumption is in accord with the notion that language is an embodied system (e.g., Barsalou 2008), rather than a system based on a-modal abstract symbols.

Commonly, this perspective conflicts with the Chomskyan view on language and with the existence of universal grammar. However, I think that my work shows that indeed the two perspectives might be conciliated.

In his paper on the relationship between language and other cognitive systems, Chomsky (2011) tries to answer the following question: What is special about language? Language does exist, namely, language is a coherent system that can be described by

principles of Universal Grammar (UG). I showed evidence in this work that clearly supports this claim. However, I also showed that the principles and assumptions elaborated in the generative framework are able to account for multimodal linguistic/prosodical/gestural phenomena as well.

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Sitography

Spreadthesign Project: www.spreadthesign.com

APPENDIX

In this section, it is possible to consult the materials used in the experiments. As far as LIS is concerned, I devised video materials, which cannot be set here for obvious reasons.

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TASK 1

Scenario 1

*You know that your friend John is allergic to cats, one day you see him with a big cat in his arms. You are **SURPRISED** and utter (1):*

(1) a. *Tokorode neko-arerugi jana-katta?*
b. By the way cat-allergy have-Neg-Past-Q
c. *But weren't you allergic to cats?*

Scenario 2

*Your friend Mary calls you on the phone and tells you that she has a wonderful new red dress to wear at tonight's party. When you meet her at the party, you see that she has a blue gown, you are **SURPRISED** and say (2):*

(2) a. Tokorode aka-no-doresu janakatta?
b. By the way red-color- dress Cop-Neg-Past-Q
c. But was not it red?

Scenario 3

*You know that your brother reads only detective stories. One day you see him reading "War and Peace". You are **SURPRISED** and utter (3):*

(3) a. Tokorode suiri-shosetsu-shika yomanai-n-janakatta?
b. By the way detective-stories-only read-Neg - Neg-Past-Q
c. But weren't you reading just detective stories?

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Scenario 4

You know that Takeo is going to marry Yoshiko soon, but one day, while you are walking around with a friend, you see him with another woman. You are ***SURPRISED*** *and say to your friend (4):*

(4) a. Tokorode Takeowa Yoshikoto tsukiatte nakatta?
b. By the way Takeo-Top Yoshiko-with relationship- have Neg-Past-Q
c. *But didn't Takeo have a relationship with Yoshiko?*

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TASK 2

Scenario 1

*You see your brother wearing his best trousers kneeling in the dirt in the garden. You think that he will ruin his trousers. You are **ANNOYED** and utter (1):*

(1) a. Chotto nani shiteru-no?!
b. HEY (you) what do-Prog-Qs(urprise) (forma sospensiva)
c. Hey what are you doing

Scenario 2

*You know that your sister should do her homework, but you see that she is reading a romance novel. You are **ANNOYED** and utter (2):*

(2) a. *Chotto nani shiteruno (/ yonderu-no) ?!*
b. HEY (you) what do Prog-Qs (/read-Prog-Qs)
c. Hey what are you doing/reading?

Scenario 3

*Your wife is on a diet, but you enter the kitchen and see her eating a big slice of chocolate cake. You are **ANNOYED** and utter (3):*

(3) a. *chotto nani shiteruno (/ tabeteruno) ?!*
b. HEY (you) what do-Prog-Qs(/eat-Prog-Qs)
c. What are you doing here?

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Scenario 4

*You know that John has to clean his room, but you see him lying on his bed listening to music. You are **ANNOYED** and say (4):*

(4) a. *chotto nani shiteruno?!*
b. *HEY (you) what do Prog-Q*
c. *Hey what are you doing?*

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TASK 1

Scenario 1

*You know that your friend John is allergic to cats, one day you see him with a big cat in his arms. You are **SURPRISED** and utter (1):*

(1) a. Kundey (ne) koy-angialleyluki-isscianh-ass-se?

b. By the way(you) cat-allergy have-Neg-Past-Q?

c. *But weren't you allergic to cats?*

Scenario 2

*Your friend Mary calls you on the phone and tells you that she has a wonderful new red dress to wear at tonight's party. When you meet her at the party, you see that she has a blue gown, you are **SURPRISED** and say (2):*

(2) a. Kundey (ne oulpampatios) ppalkansayk an-i-ess-se?

b. By the way (you tonightparty dress) red color Neg-Cop-Past-Q?

c. But was not it red?

Scenario 3

*You know that your brother reads only detective stories. One day you see him reading "War and Peace". You are **SURPRISED** and utter (3):*

(3) a. *Kundey (ne) chwure-sosel-man ilkce ah-ass-se?*

b. By the way(you) detective-stories-only read-Neg-Past-Q?

c. *But weren't you reading just detective stories?*

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Scenario 4

*You know that John is going to marry Luisa soon, but one day, while you are walking around with a friend, you see him with another woman. You are **SURPRISED** and say to your friend (4):*

(4) a. Kundey John-un Luisa-hako sakwikoisscianh-ass-se?

b. By the way John-Top Luisa-with relationship have Neg-Past-Q?

c. *But didn't John have a relationship with Luisa?*

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TASK 2

Scenario 1

*You see your brother wearing his best trousers kneeling in the dirt in the garden. You think that he will ruin his trousers. You are **ANNOYED** and utter (1):*

(1) a. *YA (ne) mwe-hako- iss-se?*

b. HEY (you) what-do-Prog-Q?

c. Hey what are you doing?!

Scenario 2

*You know that your sister should do her homework, but you see that she is reading a romance novel. You are **ANNOYED** and utter (2):*

(2) a. *YA (ne) mwe-hako- iss-se?*

b. HEY (you) what-do-Prog-Q

c. Hey what are you doing?!

Scenario 3

*Your wife is on a diet, but you enter the kitchen and see her eating a big slice of chocolate cake. You are **ANNOYED** and utter (3):*

Example (3) a. *(ne) yekieyse mwe-hako-iss-se?*

b. (you) here what do Prog-Q

c. What are you doing here?!

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Scenario 4

*You know that John has to clean his room, but you see him lying on his bed listening to music. You are **ANNOYED** and say (4):*

(4) a. *YA (ne) mwe -hako-iss-se?*

b. HEY (you) what-do-Prog-Q

c. Hey what are you doing?!

.

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TASK 1

Scenario 1

*You know that your friend John is allergic to cats, one day you see him with a big cat in his arms. You are **SURPRISED** and utter (1):*

(1) a. Sao cậu lại ôm mèo?
b. Why you should hold cat?
c. "Why are you holding a cat?"

Scenario 2

*Your friend Mary calls you on the phone and tells you that she has a wonderful new red dress to wear at tonight's party. When you meet her at the party, you see that she has a blue gown, you are **SURPRISED** and say (2):*

(2) a. Sao không phải cái váy đỏ à?
b. Why (*negation word*: not) (*classifier*) dress red Q?
c. "Why not the red one?"

* The construction: "Sao không phải cái váy đỏ à?" is highly colloquial; thus commonly used among people with certain intimacy such as close friends, or among those who have relatively the same social status or at the same (or lower) age.

Scenario 3

*You know that your brother reads only spy story. One day you see him reading "War and Peace". You are **SURPRISED** and utter (3):*

Example (3) a. Em đọc "Chiến tranh và hòa bình" á?
b. You read "War and peace" (Q - *question word*)?
c. "Are you reading "War and peace"?"

* *The question word "á" in Vietnamese has an indication of disbelief or surprise*.

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Scenario 4

You know that John is going to marry Luisa soon, but one day, while you are walking around with a friend, you see him with another woman. You are ***SURPRISED*** *and say to your friend (4):*

Example (4)	a. Sao	anh ý	lại	đi	cùng	ai	thế kia?
	b. Why	he	should	go	with	someone	like that?
	c. "Why is he with someone else?"						

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TASK 2

Scenario 1

You see your brother wearing his best trousers kneeling in the dirt in the garden. You think that he will ruin his trousers. You are ANNOYED and utter (1):

(1) a. Sao (em) lại mặc cái quần kia ra vườn?
b. Why (you) should wear (classifier) trousers those in the garden?
c. "Why are you wearing those pants in the garden?"

Scenario 2

*You know that your sister should do her homework, but you see that she is reading a romance novel. You are **ANNOYED** and utter (2):*

(2) a. Sao giờ này (em) lại đọc truyện?
b. Why now (you) should read a novel?
c. "Why are you reading a novel now?"

Scenario 3

*Your boyfriend is on a diet, but you enter the kitchen and see him eating a big slice of chocolate cake. You are **ANNOYED** and utter (3):*

(3) a. Sao anh lại ăn bánh ngọt?
b. Why you should eat cake sweet?
c. "Why are you eating cakes?"

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Scenario 4

*You know that John has to clean his room, but you see him lying on his bed listening to music. You are **ANNOYED** and say (4):*

Example (4) a. Sao (cậu) không dọn phòng đi?

b. Why (you) (*negation word*: not) clean room (*subjunctive word*)?

c. "Why don't you clean the room?"