

Nonmanual behaviors in interrogatives in LSQ (Quebec Sign Language)

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1. Research on interrogatives in sign languages other than LSQ

Descriptions and analyses of interrogatives exist in the literature for a number of sign languages other than LSQ. The sources we are aware of are presented in Table I.

AUTHOR	DATE	LANGUAGE	YES-NO QUESTIONS		WH QUESTIONS	
			eyebrows	head	eyebrows	head
Fant	1977	ASL	RE or FE	↓	RE or FE	↓
Liddell	1978	ASL	RE	↓		
Cokely et al.	1980	ASL	RE or FE	↓	RE or FE	↗ ↖
Humphries et al.	1980	ASL	RE	⌞	FE	⌞
Liddell	1980	ASL	RE	⌞		
Woll	1981	BSL	RE	⌞	FE	⌞
Baker-Shenk	1983	ASL	RE	↓	FE	
Moody	1983	LSF	RE or FE	↓	FE or RE	↓ or ↑
Wilbur	1987	ASL	RE	⌞		
Coerts	1990	SLN	RE	⌞	FE	↗ or ↑
Fève-Tagger	1991	LSF	RE or FE	↓	FE or RE	↓ or ↑
Coerts	1992	SLN	RE	⌞	FE	↗ or ↑

Table I : The nonmanual component in questions in various sign languages.

These sources agree unanimously that nonmanual behaviours are crucial in interrogative structures and that the parameters involved are of three types:

movement or position of the head, marked position of the eyebrows and, in addition, direction and continuity of eye gaze. Studies on interrogatives in sign languages, taken as a whole, turn out to be relatively homogeneous with regard to their description of head movements in yes-no questions. What we consistently find is a forward tilt or movement of the head (\downarrow ou \uparrow). This is not, however, the case for wh questions, where the type of head movement found varies widely across languages. As for eyebrow position in interrogatives, researchers predominantly note the presence of raised eyebrows (RE) in yes-no questions and furrowed eyebrows (FE) in wh questions in the sign languages described. For ASL and LSF, however, researchers remark that either RE or FE can be found in both types of interrogatives.

We will show that LSQ uses the same parameters as other sign languages in the formation of interrogatives, but that the realization of these parameters is in certain cases different from what is found in other sign languages.

2. Methodology

2.1 Corpus

The interrogative structures analysed are drawn from a videotaped corpus of 35 hours of free conversation (LSQ88 corpus). All the signers are profoundly deaf, and LSQ is their primary language and means of communication. Their ages range from 22 to 31 years. Their educational level varies from fourth year of high school to university.

Our videos were made with several cameras (one on each signer and one recording the whole group). However, we do not have any close up facial recordings of the signers. Thus, for this study of nonmanual behaviours, we were unable to take into

consideration signers wearing glasses since the glasses often made it difficult to distinguish or even detect their eyebrow movements. Since we could not discern with certainty the image on which the apex of a movement is attained, we will not discuss the role of the subparts of nonmanual behaviours described, namely the onset, apex and offset of movement.

The present study is based on 100 sentences: 58 yes-no interrogatives and 42 wh interrogatives produced by 4 signers, 2 men and 2 women.

2.2 Transcription

Two Deaf informants (who were not themselves among the signers videotaped) participated in the detailed transcription of each of these sentences. Transcriptions were made down to the level of one tenth of a second.

3. Nonmanual behaviours in interrogative structures

3.1 Eye gaze

Let us first consider two parameters involving eye gaze: direction and the presence or absence of a hold. For 92 of the 100 interrogative structures in our corpus, the signer's eye gaze is directed at the interlocutor at one time or another. Only 8 interrogative structures appear not to conform to this rule. Four of them are rhetorical questions; the others are addressed to a "virtual" or "fictional" interlocutor (either a person not present who has been situated in the signing space, or the camera, treated humorously as an individual).

When a signer produces a rhetorical question, he focuses the attention of his interlocutors by asking a question to which he provides the answer. Since the question is not intended to elicit a response, the signer has no reason to direct his

gaze at any interlocutor. This is consistent with Vogt-Svendsen's (1990) observations for NSL. However, we have observed that eye gaze behaviour is not identical for all rhetorical questions (and, in fact, that it is not necessarily absent). It turns out that of the 11 rhetorical questions in our corpus, 7 are characterized by eye gaze toward the interlocutor either at the beginning or at the end of the sentence or during the whole of the sentence. The interlocutor never misreads the signer's intent and does not attempt to answer the question. In asking a question that he knows that his interlocutor is unable to answer, the signer can direct his gaze at him without danger of being interrupted.

Of the 92 interrogatives in which the signer's eye gaze is directed at his interlocutor, 82 are characterized by continuous eye gaze either during the whole sentence or for several tenths of a second at the beginning and at the end of the sentence. However, in 10 of the sentences, the signer looks at his interlocutor only at the beginning or the end of the sentence, but not both. Three of these questions are rhetorical questions, one is a reported question and the other six are all found within sequences of questions. We note that there is no ambiguity for the interlocutor if the signer asks two questions consecutively (the second often clarifying the first) and if he only looks at the interlocutor at the beginning of the first question and at the end of the second.

These observations lead us to discount the parameters of direction and continuity of eye gaze as nonmanual markers specific to questions, and instead to treat them, like Baker (1977) and Coerts (1992), as turn-taking regulators.

3.2 Head movement and head and eyebrow position

An interrogative may constitute a true request for information: in other words, the signer expects a response from the interlocutor and the interlocutor understands this

to be the case. An interrogative may simply take the superficial form of a request for information (as in the case of rhetorical questions, reported questions, and questions directed to oneself). Dubuisson et al. (1991) show that in LSQ movements of the head are obligatory regardless of whether or not the interrogative corresponds to a true request for information, and that these head movements allow one to distinguish between *wh* and yes-no questions. In effect, yes-no questions systematically show a forward movement or tilt of the head (\downarrow or \uparrow), while *wh* questions systematically show a backward movement or tilt of the head (\nwarrow or \nearrow).

In LSQ the movement of the head (together with the hold of the final position) is the canonical question marker; only when the hold of this final position is blocked for independent reasons may it be replaced by a similar hold of a marked eyebrow position. The beginning of the question is generally signalled by the onset of a movement of the head. However if, due to independent constraints, the head movement begins only *after* the first sign, the beginning of the question is signalled by the presence of a marked eyebrow position.

A movement of the head may begin from a neutral position of the head in which case the final hold corresponds to a backward tilt or retracted position in the case of *wh* questions, and to a forward tilt or advanced position in the case of yes-no questions. A movement may equally begin from a non-neutral position of the head. Thus, if the initial position is a forward head tilt, the final position that is held is neutral position in the case of a yes-no question.

Figure 2 recapitulates the nonmanual behaviours involved in the production of questions.

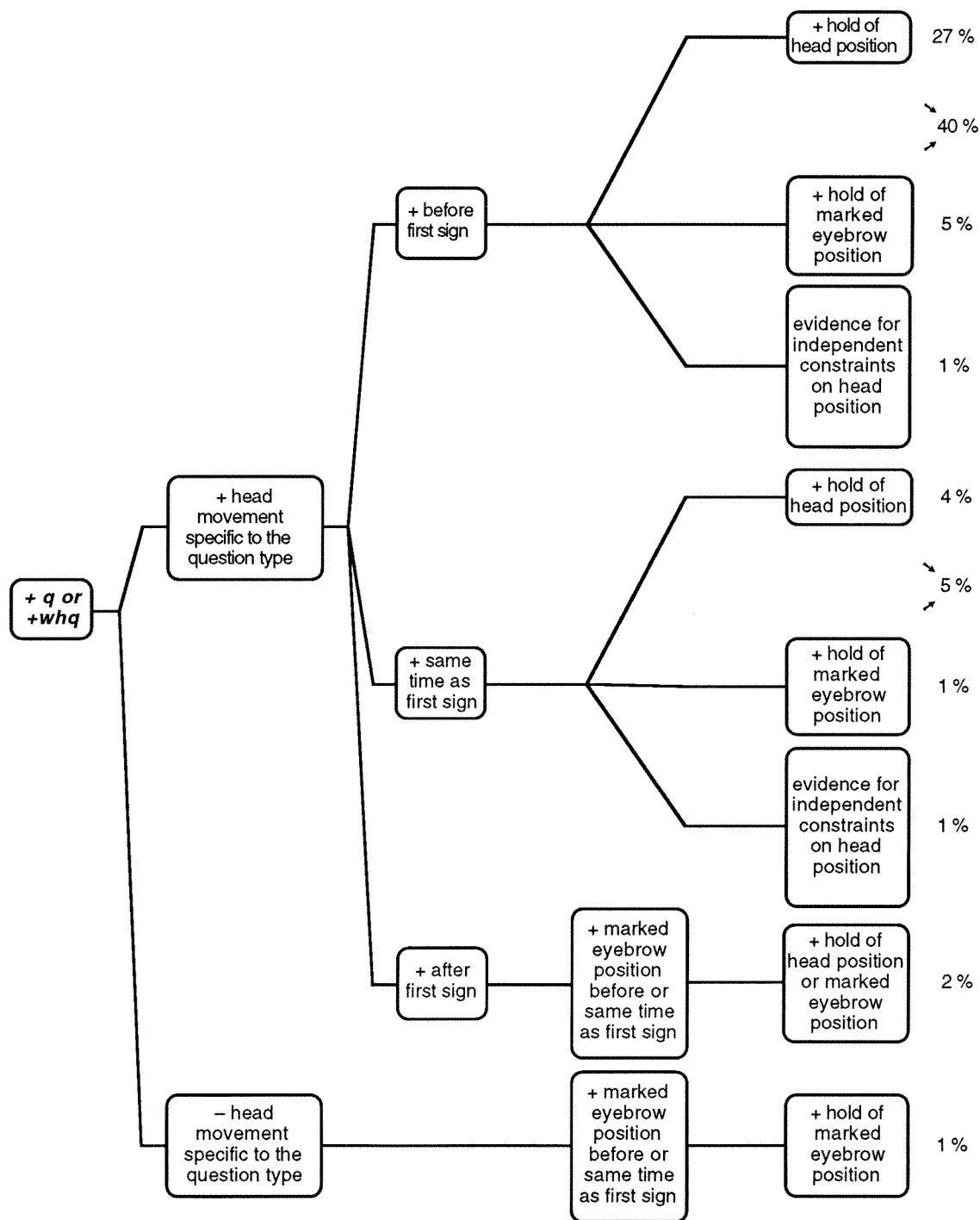


Figure 2: Nonmanual behaviors in the production of questions

When we observe a head movement specific to the type of question before the first sign (one or two tenths of a second), we also observe a hold of the head position **or** a

hold of a marked eyebrow position **or** evidence for independent constraints on head position. We observe the same thing if the specific head movement appears simultaneously with the first sign. But if the specific head movement takes place after the first sign, there must be a marked eyebrow position ^{prior to} ~~before~~ or simultaneous with the first sign and this position or the head position must be held. It is possible for a question not to contain any specific head movement but only if there is an independent constraint that rules out this head movement. In this case we observe a marked eyebrow position occurring ^{prior to} ~~before~~ or simultaneous with the first sign and that the eyebrow position is maintained.

Apart from the fact that various combinations of parameters are possible in the production of questions, Figure 2 shows that certain of these combinations are more frequent than others. A head movement characteristic of the particular type of interrogative is present in 99% of the cases. This movement occurs within two tenths of a second before, or at the same time as, the first sign in 97% of the cases. The (movement-final) head position is held in 76% of the cases. We find that a head movement preceding the first sign is more common (73% of the sentences) than a movement occurring at the same time as the first sign (11%). In 45% of the cases, we find redundancy between a hold of the head position and a hold of the eyebrow position.

The question illustrated in (3) corresponds to this last case.

(3)
$$\frac{\text{INDEX}_3 \text{ STUDY INDEX}_3 \text{ UNIVERSITY}}{q}$$

Does he study at university?

In this sentence we note a forward head tilt occurring before the first sign. The movement-final head position is held until the end of the question. Furthermore,

the eyebrows are raised simultaneously with the head movement and remain raised until the end of the sentence.

The question in (4) shows that an interrupted hold of the head position due to independent factors is nevertheless interpreted as well-formed in the context of the question.

- (4) $\frac{\text{whq}}{\text{WHO ATTRACT WHO}}$
Who is it I'm attracted to?

We observe in this sentence a backward head tilt preceding the sign WHO, but the movement-final head position is not held. On the contrary, we see that the head and the body both move forward simultaneously when the sign ATTRACT is made. The movement of the head to signal an interrogative is thus constrained by the forward head movement that forms part of the sign. At the end of the sign ATTRACT, both the head and the body move backward into neutral position, and this position is maintained during the second sign WHO. There is no marked eyebrow position in this question.

Of the 100 interrogative structures analysed, 13 either are unclear in status or do not conform to the parameters outlined in figure 2.

Six of them are followed by another question, as shown in (5)

- (5) $\frac{\text{(q)}}{\text{INDEX}_2 \text{ CONTINUE INDEX}_2} / \frac{\text{q}}{\text{FINISH-NEG FINISH SIGN}}$
Are you still going on? Have you finished talking about signs or haven't you?

In the first of these two sentences, we observe a forward head tilt occurring before the first sign, but the movement-final position is not maintained and no marked

eyebrow position is observed. The signer does not pause between the two questions. The second question seems to be used to clarify the first; the second question is marked by a forward head tilt occurring before the first sign and held throughout the question.

Another question that does not conform to the parameters of Figure 2 is illustrated in (6)

(6) $\frac{\text{INDEX}_2 \text{ ABLE INDEX}_2 \text{ DANCE TOPLESS}}{(q)}$

You, you can dance topless?

This sentence does indeed have a forward head movement occurring before the onset of the first sign, but the head position is not maintained and there is no marked eyebrow position. There are two possible explanations: either we can say that it is not a true question and the signer, by omitting one of the parameters, wishes to avoid the interlocutor's taking this as one (in fact, the signer does not pause and continues signing without interruption after the question); or we can say that the head moves upward because of the sign DANCE-TOPLESS and the expected eyebrow position is absent because the signer is laughing.

There are two questions whose status is unclear with regard to the parameters in Figure 2 since we are unable to determine with any certainty whether the eyebrows are raised given that the signer's head tilts farther forward than is normally the case. Both of these are rhetorical questions.

Despite their form, four of the anomalous interrogative structures do not function as questions at all. These are illustrated in (7)

(7) $\frac{\text{"HEY" TALK WHAT}}{!} / \frac{\text{TALK WHAT}}{!} / \frac{\text{TALK WHAT NEXT}}{!} / \frac{\text{WHAT TALK WHAT INDEX}_{2-3}}{!}$

What are you talking about! What are you talking about! What are you going to talk about next! What are you talking about, you two!

In these four sentences, we observe a backward head tilt, but this movement occurs neither before the first sign nor at the same time, and furthermore, the backward tilt is not maintained during the sequence. We would thus expect to find a marked eyebrow position as well as a hold of such a position, which is not the case. It is worth noting that the signer does not stop to allow his interlocutors to answer and that neither of them tries to answer at any point. When we look at these sentences in their proper context, we see that they are not in fact requests for information and that the signer is not in fact interested in finding out what his interlocutors are talking about. These sentences are, rather, exclamatory in value and express the signer's disagreement.

3.3 Type of eyebrow position

We have seen that studies on sign languages other than LSQ agree that eyebrows are generally raised in yes-no questions and furrowed in wh questions. The facts for LSQ differ from the literature on this point. Firstly, many questions in our corpus have no marked eyebrow position (38% of yes-no questions and 31% of wh questions). Furthermore, both marked positions are to be found in both types of question, indifferently. Of the yes-no questions, 41% have RE and 21% have FE. Thirty-one per cent of the wh questions have RE and 38% have FE. Even more surprisingly, we find a change from one marked eyebrow position to another (i.e. RE to FE or vice versa) within three of the questions in our corpus.

We believe that the presence of a non-neutral eyebrow position is one of the parameters that characterize the formation of questions in LSQ. However, the particular marked position adopted has the function of marking the signer's attitude

and is thus paralinguistic. When the signer is requesting information and has no expectations with regard to the content of the answer to the question, the eyebrows are raised. When the signer does not understand something that has just been signed, is surprised, or disagrees with what has been said, the eyebrows are furrowed. A change of eyebrow position within a question indicates a change in the signer's attitude.

4. Conclusion

We have shown that the direction and persistence of eye gaze vary according to the status of the interrogative as a request for information. If there is a true request for information, eye gaze is directed at the interlocutor and maintained. If there is no true request for information, the signer's eye gaze is directed at the interlocutor only if it is unlikely that this will be taken as giving him the floor. The direction and persistence of eye gaze have the function of turn-taking regulators.

We have also shown that the canonical markers of a question are a head movement specific to the question type, occurring before (or, occasionally, on) the first sign and the hold, during the question, of a head position. In those cases where the head movement does not occur, due to independent reasons, it can be replaced by a marked eyebrow position. Where the head position is not held, again due to independent reasons, it can be replaced by a hold of a marked eyebrow position.

Finally, we have shown that the specific position adopted by the eyebrows represents the attitude of the signer and is thus a paralinguistic and not linguistic marker.

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