

Non-manual component of a sign language and co-verbal gesture of a spoken language

A descriptive account of Body and Head Movements

INTRODUCTION

Co-verbal gesture components have been described as playing a role on the organisation of linguistic information in languages and specifically on expression of motion events (eg. Kita and Ozzyürek, 2003), discourse saliency (Colletta & Millet, 2002) or perspective shift (Kendon, 2004). Non-manual behaviour in Sign Languages (SL) has been described as playing a role at all levels of grammar and as being multifunctional, such that each marker can express several grammatical functions and the same grammatical function can be realized by different non-manual markers (Herrmann and Steinbach, 2011).

This comparative description of short elicited productions (depiction task) of nine deaf signers (3 different SL) and three French speakers, lead us to explore the two main following questions:

- 1) Is there typological variation in Sign Languages (ASL, LSF and LSQ)?
- 2) Is there similarities of gestural uses (forms and functions of Body and Head movements) between signed and spoken system (co-verbal gestures in French)?

Theoretical insight on HM and BM

Gesture system

- In studies on the gesture system, BM and HM have been described as deictic elements in communication (Kendon 2004)
- Torso rotation has been identified as facilitating the activation of a cognitive mapping process, when accompanying the terms "left" or "right" (Kita 2003)
- Lateral tilts have been described as gesture markers to isolate discourse units (Colletta and Millet 2002) or to reinforce relations between units (such as comparison, opposition, dependence (Calbris 1999))

ASL

- HT and BS function as a whole to introduce a NP in discourse (Shepard-Kegl 1985)



Pictures from Neidle et al. (2000)

When produced simultaneously with the verb (VP), HT and BM work together to mark subject agreement (Bahán 1993)

LSF

- Any kind of BM can indicate a syntactic boundary (Cuxac 2000)
- Lateral tilt marks coordination (Jousson 1995)
- BM (not specified) marks role shift (Bras et al. 2004)
- HM encompasses co-referential cohesion (Cuxac 2004)

LSQ

- Torso movements are distinguished by three positions: lean forward (marking the saliency of a NP or a discourse unit, Parisot 2003; Rinfret 2009), torso lateral tilt (involved in argument marking at the structural level) and rotation (involved in role shift at the pragmatic level, Dubuisson et al. 1999)



Forward lean (Always with eye gaze directed on signer addressed)
Lateral tilt (Always with eye gaze directed toward character addressed)
Rotation (Always with eye gaze directed toward character addressed)

- Head movements are neither an agreement marker nor a strategy of spatial association

Considering that...

...Non Manual Markers play a role at all grammatical levels and are multifunctional (e.g. Each NMM can express several different grammatical functions and each grammatical function can be realised by several different NMM (Herrmann and Steinbach, 2011)).
...the BM described in literature on SL grammar (tilt, lean or rotation) have been associated with different functions: focus (Wilbur and Patschko, 1998; Van der Kooij et al., 2006), subject agreement (Parisot, 2003) and role-shift (Erberg-Pedersen, 1995; Poulin and Miller, 1995; Quer, 2008) amongst others.
...even if specific functions are attributed to different HM, it is not always clear whether these HM are produced in association with corresponding BM (e.g. HM and BM for subject agreement (Bahán, 1998) or topic (Sze, 2011)).

Through this comparative description, we explore the notion of discrete units for body (BM) and head movement (HM). More precisely, we present a comparison of:

- The distribution (frequency and dependency) of different movement types;
- The ways of structuring information are encoded by these specific movements

METHOD

Participants

9 deaf signers : 3 ASL (Montreal), 3 LSF (Paris) et 3 LSQ (Montreal)
3 hearing speakers : 3 French (Montreal)

Information annotated

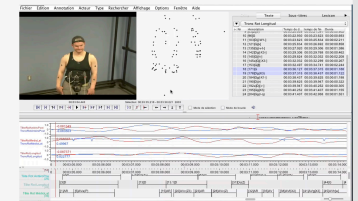
Categories of information	Kind of information annotated	Information annotated
Form	Body part	Head/Body Scope
		tilt/lean/rotation Temporal correspondence with manual/oral material Kind of manual/oral material (SNSV/P/+P)
Dependency	Formal and referential interaction	Head or Body Head and Body
Structure	Spatial association	Referential locus
	Syntactic	Dependency marking Proposition type marking Structural dependency marking Structural coordination marking
	Discourse	Perspective shift
	Pragmatic	Information structure

Elicitation task

Viewing of 4 silent clips in which at least two characters interact in different situations (in an interview, in a waiting room, during a card game and while an artist is at work)

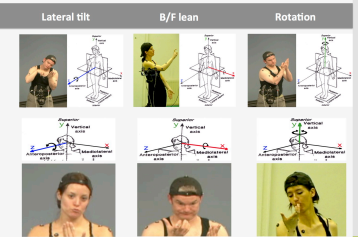
Participants were asked to describe the story (1 narrative per participants) to a deaf interviewer and were filmed using a digital camera, a system of biomechanical movement tracking (Cortex) and eye tracking (FaceLab).

Transcription and codification with ELAN and MSsynchrono



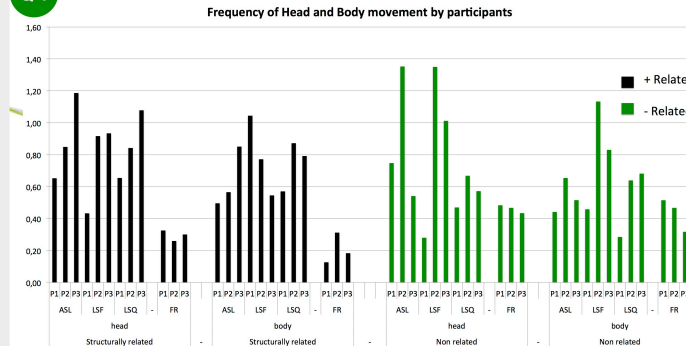
Types of movements

- Idiosyncratic / natural movements of the signer
- Movements in harmony with the movement of certain signs
- Assimilated movements to facilitate the production of specific signs (e.g. postural changes of the head and torso (Mauk and Tyrone, 2008))
- Attitudes & character of the persons assumed in role-shifts

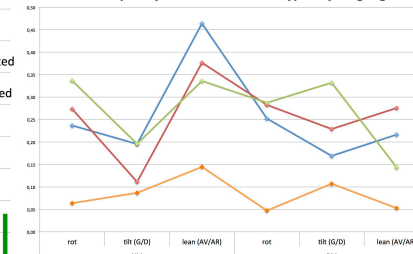


RESULTS

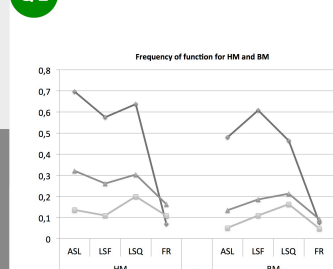
Q1 Do the three SL make distinct use of BM and HM?



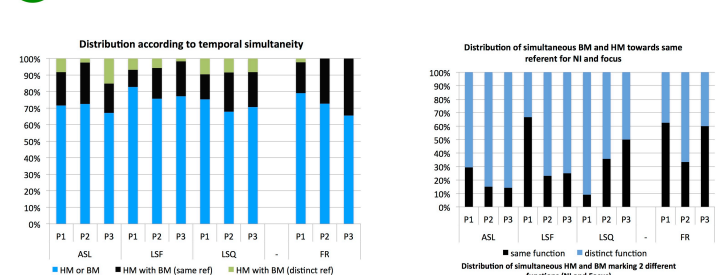
Frequency of HM and BM subtypes by languages



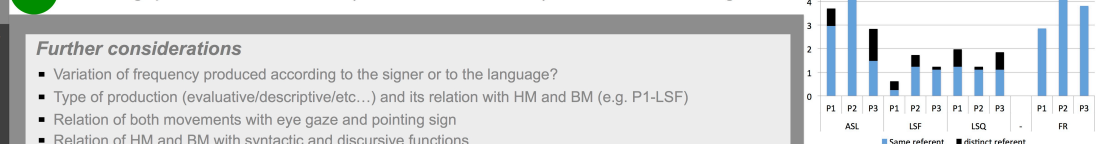
Q2 Do BM and/or HM have specific functions?



Q3 Do BM and HM have differential effects on meaning or are they varieties of a same structural element?



Q4 Do hearing speakers make similar uses (distribution and functions) of BM and HM as deaf signers?



Further considerations

- Variation of frequency produced according to the signer or to the language?
- Type of production (evaluative/descriptive/etc...) and its relation with HM and BM (e.g. P1-LSF)
- Relation of both movements with eye gaze and pointing sign
- Relation of HM and BM with syntactic and discursive functions

Descriptive results

- Q1 In term of frequency, all SL produced more HM than BM (except for P1-LSF)
- ASL and LSQ participants show similar distributional patterns for subtype movements
 - Distribution of + and - structurally related movements are not distinct in number and they vary for all languages. Distribution of - structurally related show greater variation than that of + related
- Q2 HM and BM are involved similarly in the marking of SA, NI and Focus
- For all LS, HM and BM are used to construct spatial associations and to indicate new and focused information, and they are used more frequently for SA than NI or F
 - ASL and LSF have inverse pattern of frequency for HM and BM regarding to function marking
- Q3 HM and BM are produced mainly in isolation, but when they are produced simultaneously, they are used for same referent but with a distinct function (at least for NI and Focus). For NI and Focus, when HM and BM are used for 2 different functions, they are used mainly for the same referent
- Q4 French shows low frequency of simultaneous production of HM and BM for distinct referents
- French also shows lower frequency for all participants and all types of HM and BM
 - Distributional pattern for frequency of subtypes of HM and BM in French are similar to ASL and LSQ
 - Distributional pattern for function marking with HM and BM in French is distinct only for SA
 - Simultaneous BM and HM in French are almost always produced for the same referent, even if the function for these movements are distinct