INTRODUCTION

The gesture-sign interface in language acquisition

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The aim of this special issue is to present and pursue the challenging discussions about the links between gestures and signs and their theoretical and methodological impact that took place during the GDR ADYLOC workshop (GDR CNRS 3195) on April 4–5 2014 at Sorbonne Nouvelle University in Paris. The ADYLOC research group (led by Maya Hickmann and financed by the CNRS between 2009 and 2015) assembled a large number of French specialists around the topic Languages, Oral Language and Cognition: Acquisition and Dysfunction. This setting favored high quality scientific exchanges that brought about new questions, opened new fields and lead to a number of collective research projects.

1. Issues at stake

The terminology, definitions and classification used to analyze gestures still raise problems (Boutet et al., 2016; Guidetti, Fibigerova, & Colletta, 2014; Morgenstern & Beaupoil, 2015). In order to go beyond the standpoint derived from Kendon’s continuum (so named by McNeill in 1992, and reviewed in 2006), i.e. – Gesticulation >> Language-like gestures >> Pantomime >> Emblems >> Sign languages – we considered that studying the gesture-sign interface from the perspective of language acquisition would have a greater heuristic value. It has now become obsolete to present the development of communication from gesture to word (Volterra & Erting, 1990) as such development is now considered entirely multimodal in nature, and from its start (see Guidetti & Colletta, 2012; Morgenstern, 2014, among others). It involves not only gestures, which are the focus of this special issue, but also gaze, and facial expressions, both emotional and non-emotional (Guidetti, 2010). Because we now take non-verbal modalities into account, the emergence of language does not represent a “communicative revolution” (Bernicot, 2000). In this framework, gesture can be defined as a “visible bodily action that is considered to be a part of a person’s willful expression” (Kendon, 2000: xix), whether it is
produced with or without speech. It is even considered by some authors as part of language as it is necessary “to broaden our concept of language” (McNeill, 1992: 2).

Deafness provides a complex and atypical context for language acquisition (see Sallandre & Blondel, 2010), but parallels and overlaps are observed between the entrance of deaf children into the visual-gestural modality when they produce their first signs, and the first gestures of hearing children as well as their subsequent use of co-verbal gestures. This view of language acquisition is of course in line with functionalist models in which the scaffolding role of the social environment is crucial (Bruner, 1990; Tomasello, 2003, 2008).

Another important issue concerns the motor and cognitive constraints in language acquisition for both deaf and hearing children. How is language acquisition affected when children can only have access to the visual-gestural modality? What do we learn about hearing children’s gestures when we analyze deaf children’s gestures? How do linguistic productions develop in the visual-gestural modality? Is there continuity or discontinuity between gestures and signs in language acquisition? When we observe the entrance of deaf signing children into communication, we are led to revisit the gesture-sign interface, especially where gestures and signs become undistinguishable, as is the case for pointing or negation gestures.

All children of the world learn to speak or sign and make gestures. We can observe differences but also similarities between the gestures produced by hearing children before the emergence of the lexicon and remaining in use after entering the period called “linguistic”, and the gestures and signs produced by deaf children. Since a majority of deaf children are born in hearing families, how does the formal continuum—gesture >> homesign >> sign—enable us to better understand the gesture-sign interface in language acquisition? Are there differences / similarities in the forms and functions of the elements in each of these three categories? Do signers also use gestures when they sign (Emmorey, 1999)? What are the functions of those gestures and how do they complement signs?

The various papers of this special issue tackle these questions, allowing us to better capture the relations between language and cognition during language development (Goldin-Meadow, 2014).

In the language acquisition of hearing children, a number of studies have shown that gestures, and pointing in particular (Goldin-Meadow, 2014), are predictive of first nouns but not of first verbs. Is this also the case for young deaf children who use a sign language (Morgenstern et al., 2010)? Hearing children rarely combine gestures, but they become able to combine a gesture and a word very early in the course of their second year. The first gesture–word combinations contain information that would later be provided in the lexicon. What happens with deaf children who learn a sign language and deaf children raised by hearing parents who use homesigns?
Another issue at stake centers around iconicity, which plays a role in both oral and sign languages (Perniss & Vigliocco, 2014). The authors consider “iconicity as providing scaffolding for the cognitive system to connect communicative form with experience of the world, for the three core areas of language studies: phylogeny, ontogenesis and language processing” (p. 2). In language development, iconicity could reduce referential ambiguity, which would then facilitate children’s learning of words and signs. Are the stakes the same for deaf children and hearing children who use gestures and signs? Ortega, Sümer, and Özyürek (2014) have noted that gestures and signs that represent actions are the first to appear in the development of both deaf and hearing children, and that the type of iconicity plays a significant role. The link between language development and motor experience could explain those observations. Could that be generalized to all languages? This depends of course on what kind of iconicity they are referring to and to what gestures and signs it applies. It is a major feature of gestures called “iconic” (but that are still representational), which appear in hearing children’s development before they enter the “linguistic” period but after pointing and conventional gestures, as Cartmill and colleagues remind us (this volume). It is also the core feature of sign language (Cuxac, 2000). Cartmill and colleagues also remind us that iconicity is not an ‘all or nothing’ property. The iconic features of a conventional gesture could be difficult to make out after some time has passed. It is also important to remember that gestures are also constrained by the physiological limitations of the hands, as observed by Blondel and colleagues (in this volume).

2. Contributions to this volume

In this special issue, the aforementioned questions are tackled from the perspective of comprehension and production in both deaf and hearing children’s language acquisition. The first two papers are written by an Italian team and an American team, whose work on topics of this special issue has been internationally recognized for decades. Volterra et al. tackle the issue of the gesture-sign interface via the continuity between actions/gestures/words and signs. Their paper presents original perspectives on language acquisition coming from a team that pursues a multimodal approach and focuses on both deaf and hearing children. The authors step back from their own research and shed new light on their results. This team also conducts comparative research on other neuro-developmental disorders (e.g. Down syndrome, Williams syndrome), which lends even more weight to their conclusions.

The paper by Cartmill et al. deals with iconicity through the shape of the hand, a grammaticalized parameter in many sign languages. The study compares the
gestures produced by hearing children, observed longitudinally between 14 and 50 months, and homesigns produced by a deaf child born in a hearing family and observed from 34 to 62 months. The authors show that iconic gestures are produced much more often by the deaf child than by the hearing children. The distinction between three types of hand shapes enables them to trace changes in the use of iconic gestures in association with other semiotic resources during the developmental process. The ability to use hand shape as a grammatical marker only appears when the gestural modality is preferred.

Thompson et al. consider the issue of iconicity through an analysis of representational (or iconic, see above)\(^1\) gestures produced by hearing and deaf children in a naming task (applied to pictures created by the Italian team mentioned above). In two distinct studies, the authors show the complexity of the gesture-sign interface emerging when comparing children who were or were not exposed to a gestural model from birth. Thus, deaf children of deaf parents develop much more conventional signing based on action gestures comparable to the first words of the vocabulary produced by hearing children.

The three following papers present subtle analyses of three different gestures/signs: the shrug, self-pointing, and negation gestures. Beaupoil-Hourdel and Debras carefully analyze the development of shrugs in a little British girl, observed longitudinally between 10 months and 4-years-old. They draw a parallel between the development of the various components of the shrug (hand and arm gestures, shoulder movement and facial expressions) and the equivalent process for the various components of signs in deaf children at the same age. Caët et al. focus on the development of self-pointing in a deaf child acquiring French Sign Language, in interaction with her deaf parents. Contrary to previous studies about the development of pointing in American Sign Language, frequently presented in terms of discontinuity, the authors underline the continuity in self-reference observed when predicative units are taken into account instead of focusing only on pointing. Finally, Blondel et al. study the expression of negation up to age three in four children growing up in different linguistic contexts: monolingual (English, French or LSF) or bilingual (LSF-French), primarily unimodal (visual-gestural modality) or bimodal (visual-gestural and audio-vocal). The gesture-sign interface is considered from the point of view of the emergence and development of the multimodal expression of negation, according to whether the target language integrates (LSF) or does not integrate (English, French) gesture in its grammar.

\(^1\) We will not discuss the issue of terminology and the classification of gestures as this has been the focus of a recent paper (Guidetti, Fibigerova, & Colletta, 2014). A close review of the literature shows that the labeling of gestures can vary among authors, and sometimes across papers by the same author or the same research team, which is quite disconcerting.
Overall, the contributions to the special issue probably raise more questions than they answer, as is frequently the case, particularly with regard to the definition of gestures and signs and their structural and functional role in the language acquisition of hearing and deaf children. Our goal has been to extend the general perspective on gestures and signs by taking into account not only hearing children with various linguistic and cultural backgrounds, but also deaf children with deaf parents or with hearing parents. Our aim has been to show that we must view language as a multimodal phenomenon (Morgenstern, 2014; Morgenstern & Beaupoil, 2015; Vigliocco, Perniss, & Vinson, 2014) with both arbitrary and iconic components in order to better capture the gesture-sign interface in language acquisition. This special issue and its diverse set of papers constitute an attempt to connect psychological, linguistic, and anthropological issues that highlight the plurisemiotic resources that characterize child language acquisition as well as the multidisciplinary approach necessary for its study.

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