A functional approach to self-points and self-reference in a deaf signing child and the (dis)continuity issue in child language

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Based on her observation of two deaf children acquiring American Sign Language (ASL) who stopped pointing to persons at around 12 months and then produced reversal errors, Petitto (1987) argued that the discontinuous development of gestures and signs gives support to the hypothesis that language does not arise from general cognitive processes. However, since then, a large amount of studies on hearing children have suggested that early pointing was strongly related to later language abilities. In this paper, we follow up on these socio-cognitive approaches, with a dataset comparable to Petitto’s. We study the development of pointing and self-reference in a deaf child acquiring French Sign Language (LSF). We focus on self-reference rather than self-points, and suggest that, despite the apparent discontinuity in the production of self-points, there is continuity in the establishment of self-reference. In our data, the child produces self-points early on. She then uses predicates without overt subject before entering more complex syntax by combining predicates and self-points. The deaf signing child constructs self-reference similarly to speaking children and uses specific forms provided by her linguistic environment according to her cognitive, social and linguistic development.

**Keywords:** pointing, continuity, self-reference, language acquisition, French Sign Language

1. Introduction

The relationship between general cognition and language has been debated for several decades, and first language development is one of the most relevant areas of investigation to decipher this puzzle. More specifically, the (dis)continuity between children’s early productions (such as babbling or communicative gestures) and their first words or signs has been studied to argue in favour of or against
the specificity of language development, separate from other cognitive abilities. Proponents of an innate language faculty have in particular suggested that discontinuous behaviours within the same modality (the vocal modality for hearing and speaking children, or the gestural modality for deaf and signing children) strongly support their hypothesis.

In a prominent paper published in 1987, Petitto studied the productions of two deaf children acquiring American Sign Language (ASL), focusing on a form produced very early on by children which is part of the linguistic system of ASL users: pointing. Based on her observation that early points to self and others stopped being produced at 12 or 15 months and appeared again with reversal errors (uses of points to addressee when referring to self) at 20 months, Petitto argued that later pointing ‘signs’ to persons are not built upon early pointing ‘gestures’. According to her viewpoint, there is a clear difference between the two, the former being considered as linguistic units that could be assimilated to personal pronouns. The general cognitive processes involved in the development of gestures would thus not be responsible for the development of language.

In usage-based approaches to language acquisition (cf. Budwig, 1995; Tomasello, 2003), the study of a form is situated within a more general approach of the child’s interactive experience and competence, and takes into account the semantic and pragmatic dimensions of the child’s language use, as well as parental input. Pointing is thus studied not only as the production of a form (extended index targeting a location) but as the association of the form with a semantic and pragmatic function in dialogue (such as reference to self in opposition with another), within a system of tools that children can use to express similar functions. In this view, early and late pointing produced by signing children are not considered to be of a different nature (Hoiting & Slobin, 2007; Hoiting, 2009; Morgenstern, Caët, Collombel-Leroy, Limousin, & Blondel, 2010): pointing is presented as part of the child’s linguistic system, which certainly becomes more and more complex but which is grounded in early communication. This perspective is in line with Kendon’s (2004) and McNeill’s (2008) approach to gestural and vocal productions as being part of one single language system, and it also applies to hearing children’s gestural and vocal productions (cf. Capirci & Volterra, 2008; Clark, 1978). It is the perspective we adopt in this paper, looking at similar longitudinal signing data as Petitto’s, and going a step further than previous analyses we conducted on this dataset (Morgenstern et al., 2010; Morgenstern, Caët, & Limousin, 2016).

In this paper, we study the development of pointing in the productions of a deaf child with deaf-signing parents acquiring French Sign Language (LSF). Adopting a usage-based approach, we focus on self-points and address the (dis)continuity issue by examining the development of these forms within the child’s emerging system of self-reference. In LSF, self-reference can in fact be expressed
with self-points but it can also be expressed within the morphology of directional verbs or retrieved thanks to other features such as location of the signs, gaze, torso position, as well as the discursive or extra-linguistic contexts. We thus tackle the (dis)continuity issue between early and late points to persons in deaf signing children in an original way, shifting the focus from the study of a form (points oriented towards the self) to the study of the semantic and pragmatic function that these points may convey (referring to self, to one’s actions, projects, emotions or desires in relation with others). We argue that such a functional perspective may bring new insights into discontinuous behaviours in language development and on the (dis)continuity issue between what are called the ‘prelinguistic’ and the ‘linguistic’ stages. These two terms however often carry different meanings in different studies and should be used with caution. In fact, the word prelinguistic can be understood in two different ways: (1) Early points can be considered ‘prelinguistic’ when they are produced before the emergence of first lexical words/signs – this is the meaning commonly found in psychology studies. (2) Early points can be considered ‘prelinguistic’ because they do not carry the linguistic properties of later linguistic signs (in the Saussurian sense, be they spoken or signed) – this is the meaning found in Petitto’s work, where prelinguistic means that they are not linguistic. In (speaking) child language studies, both meanings have often been seen as close to each other: productions that precede first words have long been considered non-linguistic, but studies on co-verbal gestures and on sign languages have questioned the terminology we use. Points that are produced in the ‘prelinguistic’ period (before the emergence of the first lexical words/signs) could thus also be considered ‘linguistic’ if they carried features comparable to those of later points and other linguistic units.

Psychologists and linguists have a common goal, to shed light on our understanding of the relationship between the ‘prelinguistic’ and the ‘linguistic’ periods, between early and late productions and a common starting point (pointing), but they ask different questions: the former often ask how early points can be predictive of (and thus related to) later language competence; the latter ask whether early and late productions share common linguistic features. Our approach is different from, but complementary to, studies in psychology that show how children’s language competence can be related to some of their early gestural productions and how pointing could be considered as a key component in children’s social, linguistic and cognitive development (cf. Colonnesi, Stams, Koster, & Noom, 2010; Tomasello, Carpenter, & Liszkowski, 2007). In this study, we investigate the relationship between early and late self-points looking at their form, but also their semantic and pragmatic functions in interaction, as well as the combinations they appear in. In line with the topic of this thematic issue, we focus specifically on the gesture/sign interface in a signing child: we investigate the development of one
form associated with its functions, and ask what it can tell us about the relationship between children’s early and late productions.

1.1 From ‘prelinguistic’ to ‘linguistic’ productions: The (dis)continuity issue in first language acquisition

Different perspectives have been adopted on (dis)continuity between what is commonly called the ‘prelinguistic’ and the ‘linguistic’ periods, depending on the linguistic level under investigation. In this section, we will review two trends of research: research conducted on the transition from vocal or manual babbling to words or signs, mainly focusing on articulatory and phonological aspects; and research focusing on the transition from gestures to words or signs, mainly focusing on referential and morpho-syntactic aspects.

1.1.1 From babbling to words and signs

Before the recent development of psycholinguistic studies on gestures and the relationship between gesture and language, the (dis)continuity issue was hotly debated within the vocal modality. After Jakobson (1968) suggested that the babbling stage and the first-word stage were unrelated, subsequent studies have shown that some characteristics of children’s vocal babbles could be observed in their first words (cf. Oller, Wieman, Doyle, & Ross, 1976) and that babbling was different according to the language being acquired (cf. Boysson-Bardies & Vihman, 1991). The continuity hypothesis was also supported by the observation that babbling does not stop when the first words are produced (Robb, Bauer, & Tyler, 1994). As the debate on the transition from vocal babbling to spoken words was ending, the discussion developed for deaf children raised in a signing environment, thus shifting from the vocal modality to the gestural modality. Petitto and Marentette (1991) and Cheek, Cormier, Repp, and Meier (2001) observed that deaf children start babbling with their hands and that some frequent features of children’s babbling were also frequently observed in their first signs. Cheek et al. (2001) also observed that babbling, communicative gestures and signs could be used simultaneously by some children. Studies on the transition from babbling to words or signs thus suggest that there is a formal continuity between children’s prelinguistic’ and ‘linguistic’ productions.

1.1.2 From gestures to words or signs

The relationship between children’s productions in the ‘prelinguistic’ and ‘linguistic’ periods was also studied by investigating the relationship between children’s ‘gestures’ and children’s first words or signs. As is the case for the term ‘prelinguistic’, it should be noted that the word *gesture* can be interpreted in two ways.
In some cases, ‘gesture’ refers to non-vocal productions (the difference can then be described in terms of modes of communication: audio-oral vs. visuo-gestural). In other cases, ‘gesture’ refers to non-linguistic units and can be observed in the productions of both speaking and signing people, next to linguistic productions (words or signs). Both meanings have long been overlapping, but studies on co-verbal gestures (cf. Kendon, 2004; McNeill, 2008) and studies on sign languages (cf. Cormier, Schembri & Woll, 2013) have clearly distinguished these two interpretations.

Pointing is probably the most studied gesture (the non-vocal mode of expression) in child language research. In their meta-analysis of the relationship between pointing and language development, Colonnesi, Stams, Koster, & Noom (2010) showed that these were strongly and longitudinally correlated. Igualada, Bosch, and Prieto (2015) showed that word-point combinations at 12 months were correlated with children’s vocabulary at 18 months and the work done by Goldin-Meadow and her colleagues (Goldin-Meadow & Butcher, 2003; Iverson & Goldin-Meadow, 2005) suggests a tight relationship between gestures and words on two linguistic levels: the lexical level (items represented in children’s gestures are immediately after observed in their spoken vocabulary) and the syntactic level (gesture-word combinations immediately precede word-word combinations).

In sign language acquisition, the analysis of the transition from ‘gestures’ to ‘signs’ in children’s productions is more challenging since these units are produced in the same modality. The formal distinction between gestures and signs is difficult to make and is questioned both in the field of child sign language acquisition and in the analysis of adult productions (cf. Kendon, 2004; Kita, 2003). As Limousin (2010: 67) underlines, representational gestures produced by deaf children share formal and functional characteristics with structures of personal transfer observed in sign languages (cf. Cuxac, 1993) and are thus difficult to distinguish from ‘signs’. Deictic gestures observed in the productions of hearing children and hearing adults are also productively used in sign languages. Thus, if we are to make a distinction between gestures and signs in terms of language development, we must rely on other aspects than their form.

Petitto (1987) suggested that a distinction between ‘gestures’ and ‘signs’, and by extension between ‘prelinguistic’ and ‘linguistic’ productions, could be made based on two observations. First, the two children she analysed stopped pointing to people (including themselves) between 12 months and 18 months of age for one of the children and between 15 months and 18 months for the other. During this period however, they did not stop pointing at objects or places and other aspects of language were developing normally. For both children, the total number of single signs (pointing excluded) increased; for one child, the number of sign combinations (pointing excluded) remained low but it increased for the other
child; the number of different signs and different combinations also increased; the mean length of signed utterances containing one or more signs (pointing excluded) increased. After this period, when pointing to persons stopped while other aspects of language (including pointing to objects and places) continued to develop, pointing to persons appeared again but with reversal errors, meaning that the children would point to their addressee when intending to refer to themselves. This happened between 22 and 26 months for one of the children and between 21 and 24 months for the other child. One of the children produced consistent errors whereas the other child reversed pointing inconsistently. These observations enabled Petitto to conclude that points produced after 18 months had a different status from early ones, and had become linguistic units, equivalent to personal pronouns in vocal languages. In her view, later points were not mapped onto previous ones; she proposed that the observations made indicated a clear reorganisation of the child’s knowledge and a discontinuity between early general knowledge and later linguistic knowledge (Petitto, 1987: 5).

Interestingly, Blondel and Tuller (2008), who studied the productions of a hearing child acquiring both French Sign language (Langues des Signes Française, LSF) and French, also suggested that there is a transition period around 18–20 months of age. At that age, the child starts pointing to absent referents and pointing (including pointing to self) is combined with other predicative signs. Other studies have been conducted on the development of pointing gestures in the productions of deaf children acquiring a sign language. Hatzopoulou (2011) observed a deaf child acquiring Greek Sign Language. In her data, the child starts pointing at objects (but not at people) at 12 months, and at people, including himself, at 14 months. At 16 months, the boy points less to people, but he continues pointing to objects and also points to locations. He uses people’s names, and when pointing to himself (which is rare), he uses an open handshape. At 20 months, the boys points to people again more frequently, with no reversal error. Hatzopoulou suggested that her data did not support the discontinuity hypothesis of language acquisition, especially because no error was observed when the child started pointing at people again.

Pizzuto (1990) distinguishes deictic ‘gestures’ and deictic ‘signs’ according to whether they are produced in combination with other signs. Within her classification, pointing directed to persons is a deictic sign. In her data, the child starts pointing at persons at 20 months. These points are only directed to self. Pointing to the addressee and to other persons appear at 24 months and 25 months respectively. In this dataset, there is no disappearing or significant decrease of pointing to self. The late appearance of self-points in Pizzuto’s data enables her to conclude that self-points have a special status in the child’s linguistic system compared to other pointing gestures or pointing signs.
Cheek et al. (2001) also distinguish pointing to self and pointing to other persons. They argue that pointing to other persons cannot be distinguished from what they call “prelinguistic pointing gestures”. Thus, they classify pointing to other persons as “prelinguistic gestures”. Points to self on the other hand are classified as signs.

Little data is available, and different observations have been made on the emergence and development of pointing to persons as well as pointing reversals, underlying the necessity to analyse more data and situate these observations in a more global perspective of children’s language development and personal reference system. Some researchers suggest that self-points in particular have a specific status. In the following section, we thus focus on the use of self-points in LSF.

### 1.2 Self-pointing and reference to self in LSF

In LSF, self-points are used by the signer to refer to himself or, in case of personal transfer, to the character that he is embodying (cf. Cuxac, 2003). They can take the shape of an index-finger point or of a hand point. In some cases, reference to self does not have to be explicit, and signers may not use self-points even when they talk about their own actions or desires. Different linguistic contexts can be distinguished:

- When the predicate is composed of a directional verb (such as the sign for GIVE or ASK in LSF), the signer can be identified as the subject or as the object thanks to the direction or the orientation of the dynamic sign. When such verbs are being used, no distinct point is directed to the signer, but the ‘point in space’ included in the morphology of the verb marks this referential function. Self-points and directional verbs are not mutually exclusive however.
- When no spatial locus is designated to identify the signer as the referent (with a self-point or within the morphology of the verb), other parameters may come into play, such as the location of the sign according to the signer’s body, body posture or gaze, which can carry utterance modality and thus provide information on the identity of the verb’s argument. Other aspects may also play a part at the discourse level (if the signer has already been identified as the subject in previous utterances for instance) or in the context of the interaction (if the signer is performing the action he mentions).

Self-points are often said to carry pragmatic functions (cf. Morgenstern et al., 2010), but systematic studies on spontaneous conversations still need to be conducted to understand the syntactic and pragmatic role of self-points in LSF.
1.3 Aim of this study

As studies on the transition from vocal babbling to spoken words suggest, the (dis)continuity between children’s ‘prelinguistic’ and ‘linguistic’ productions is not a recent issue. However, most studies, in particular sign language studies, have addressed this issue by focusing on forms. This is true of studies investigating the transition from manual babbling to signs, but it is somehow also true of studies investigating the transition from early points to later points. Although these studies consider the form (the signifier) in association with its signified or its referent, they focus on the isolated Saussurean “sign”. In this paper, we suggest that if we take another perspective, starting from the signified instead of the signifier, or better, starting from the semantic or pragmatic function that this form may fulfil (referring to one’s actions or desires), we can grasp new information that helps us understand apparent discontinuous behaviours in the forms children produce.

This study therefore addresses the (dis)continuity issue by investigating the development of pointing and in particular self-point within the child’s general self-reference system. We focus on the very specific case of LSF in which self-pointing is a frequent form of self-reference. We studied the spontaneous productions of a deaf-signing child of deaf-signing parents acquiring LSF, between 8 and 36 months. We compared the child’s pointing to persons (self, addressee and other persons) to other points, and we studied the development of self-point in relation with the acquisition of other predicative signs that are used by the child to refer to herself, and in relation with her parents’ references to themselves and to their child as addressee. By making detailed analyses of this data, we hope to bring additional resources to discuss the transition from the so called ‘prelinguistic’ to ‘linguistic’ competence in child development.

2. Method

Our analyses are based on a corpus composed of 13 hours of video data of a deaf signing child (Charlotte) acquiring LSF in interaction with her deaf signing parents. Charlotte was recorded by the second author, who is a deaf researcher and who conducted her PhD on the development of personal reference in Charlotte’s data (Limousin, 2010). Although this is a small dataset, it is to our knowledge the only longitudinal data available for the study of the development of a deaf monolingual child acquiring LSF. For this paper, one hour of spontaneous interaction was analysed in detail every two months, between 8 and 36 months of age. The second and third authors established the coding criteria together. The second author
annotated the data using the ELAN\(^1\) software (Sloetjes & Wittenburg, 2008). Ambiguous cases were discussed until their coding met a consensus among the three authors. Most discussions bear on the distinction between index-touching and index-pointing as well as on the distinction between actions (such as grasping) and proto-signs or signs (cf. for instance Example (1) below, further discussed in Morgenstern et al., 2016). All three authors equally contributed to the analysis and the interpretation of the data. Two analyses are presented here:

- In the first analysis, we looked at the quantitative development of pointing in Charlotte’s data. All finger- or hand-points associated with a semantic or pragmatic function (whatever this semantic or pragmatic function might be) were included in this first analysis. We then coded whether these points were directed towards objects, present persons, absent persons or locations. Focusing on pointing to persons, we coded whether the child was pointing to herself, her addressee, herself and her addressee, or other persons. This first analysis leads us to discuss our findings in light of the studies reviewed above, on the (dis)continuous development of pointing.

- In the second analysis, we focused on self-points and self-reference. In addition to self-points, all predicative utterances where reference to self as subject could be retrieved thanks to directionality, location, non-manual markers such as gaze or posture, or thanks to the context, were also coded. Signs referring to the subject’s actions, activities, states, events (the equivalent of verbs in French or English) or properties (the equivalent of adjectives in French or English) were used to identify predicates and predicative utterances. We discuss our observations in light of other studies providing insights into other aspects of children’s sign language development.

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3. **Analysis 1: pointing in Charlotte’s data**

We first conducted a quantitative analysis of the development of pointing in Charlotte’s data, looking both at the frequency of points and at their referents.

3.1 **Quantitative analyses**

Between 8 and 36 months, we observed a total of 1152 points. The frequency of these pointing actions varies but it increases overall. At 8 months, Charlotte

produces 0.1 point per minute. Between 10 and 18 months, she produces 0.9 point per minute on average. Between 20 and 36 months, she then produces 2.0 points per minute on average.

After quantifying all pointing actions, we looked at the referents of the child’s points. Charlotte points a lot to objects as she produces 0.83 points to objects per minute on average. Overall, points to objects represent 58% of all points ($N = 663$). Between 8 and 18 months, the frequency of points to objects per minute is stable (0.54 points to objects/min between 8 and 18 months). It tends to increase from 20 months on (1.07 points to objects/min between 20 and 36 months). Pointing to persons starts as early as 8 months, with 5 points produced in one hour (0.08 points to persons/min). At that early age, it represents 71% of all pointing actions. Between 10 and 18 months, the frequency of points to persons increases (0.22 points to persons/min on average) but because the frequency of points to objects increases significantly, the proportion of points to persons decreases and remains low (23% on average between 10 and 18 months). Between 20 and 36 months, the frequency and the proportion of points to persons then increase significantly: Charlotte produces 0.86 points to persons per minute on average, and points to persons represent 43% of all points in that age range. Pointing to locations is observed from 12 months on but is infrequent overall. Pointing to absent persons is observed only once, at 18 months. This data suggests that there is a transition in Charlotte’s productions at around 20 months. At 20 months, Charlotte starts pointing more and after 20 months, the proportion of her points to persons increases.

Figure 1 further illustrates the distribution of points to self, addressee, self and other, and other persons produced between 8 and 36 months. Pointing to self and addressee emerges as early as 8 months. However, it remains rare as Charlotte produces 0.03 points to self per minute and 0.05 points to addressee per minute. At that age, these points represent 29% ($N = 2$) and 43% ($N = 3$) respectively of all pointing actions ($N = 7$). At 10 months, the frequency of both self-points and points to addressee increases (0.23 points to self/min and 0.12 points to addressee/min). At 12 months, no self-point is produced by Charlotte in the one-hour recording. Points to addressee however continue to be produced (0.07 points to addressee/min). Between 14 and 18 months, on average, 0.14 points per minute are directed to the addressee but only 0.03 points per minute are directed to self. At 20 months old, the frequency of self-points start increasing again: Charlotte produces 0.23 self-points per minute. The proportion of self-points progressively increases and even reaches 47% ($N = 33$) of all points at 30 months. Pointing to both self and other (‘we’/’both of us’) emerges at 24 months but is infrequent (0.02 points/min, less than 5% of all points each month).
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3.2 Discussion of analysis 1

In Charlotte’s data, pointing emerges at 8 months of age. This is similar to what Blondel and Tuller (2008) observed in their data of a hearing bilingual bimodal child acquiring LSF and French, and to Petitto’s observations (1987). When she starts pointing, Charlotte points both at persons and objects. In other datasets, deaf children acquiring sign languages either point at objects only (cf. Hatzopoulou, 2011; Pizzuto, 1990) or both at objects and persons (cf. Petitto, 1987). At 10 months, as the frequency of points increases, the proportion of pointing to persons compared to objects decreases, from more than 70% to less than 30%. Between 10 and 18 months, pointing to persons does not disappear, contrary to what was observed by Petitto (1987) and similarly to Hatzopoulou’s data (2011), but its proportion remains below 30% of all pointing up to 18 months. Hatzopoulou also observed that pointing to persons decreases in her data, whereas pointing to objects increases. In Charlotte’s data, this phenomenon is observed right after the emergence of pointing, and although the proportion of pointing to persons decreases, their overall frequency tends to increase.

The phenomenon observed in this dataset is thus different from what was observed in Petitto’ study (1987), where children stopped pointing to persons for several months, up to 18 months. It is also less striking than the significant decrease observed by Hatzopoulou (2011). However, as in these datasets, there

Figure 1. Frequency of points to self, addressee, self and other, and other persons per minute in Charlotte’s data
seems to be a transition at 20 months in Charlotte’s data: at that age, the frequency of points doubles and the proportion of points to persons starts to increase and becomes even higher than other kinds of pointing at 27 and 30 months (more than 50%). It is also at that age that the children Petitto studied started pointing again. From 18 months on, the boy studied by Hatzopoulou (2011) also started pointing more frequently to persons, and Blondel and Tuller (2008) mentioned qualitative changes in Illana’s pointing between 18 and 20 months in parallel with other changes in her language development. At 20 months, the children studied by Pizzuto (1990) also started pointing to themselves and soon after to their addressees and other persons.

Based on this quantitative analysis of pointing to persons, Charlotte’s data could thus not be described as being discontinuous, but we hypothesised a transitional period between 18 and 20 months in her pointing behaviour.

Looking more closely at her pointing to persons, we observed that the proportion of pointing to the addressee remained stable across the recordings (around 19% of all points). Pointing to self on the other hand disappeared from our data at 12 months, and these actions represent less than 3% of all pointing between 14 and 18 months. At the same time, pointing to other persons emerges. Thus, although we did not observe discontinuous behaviour in terms of pointing to persons as a global category, there is some discontinuity in the production of self-points. These observations are different from the results in Hatzopoulou (2011): during the period when the boy in her study points less to persons, he continues to use self-pointing, though infrequently. Hatzopoulou’s data and our data present opposite patterns, but the fact that in both studies self-points show a singular development compared to other kinds of pointing suggests that self-points may have a specific status. This was also suggested by Pizzuto (1990) and by Cheek et al.’s (2001) classification of pointing gestures/signs, where self-points were considered as signs, whereas other points were classified as gestures. Do self-points have a particular status compared to points to other persons because of their linguistic/grammatical properties? Do they have a special status because they are used to refer to a peculiar referent, i.e. the self? Asymmetries in the development of first and second person pronouns in the productions of children acquiring vocal languages tend to suggest that referring to self is different from referring to others. In French for instance, first and second person pronouns present different developmental patterns in child language: they emerge at different ages, they are produced in different proportions and they do not present the same error patterns (cf. Caët & Morgenstern, 2015). Different hypotheses have been proposed in order to explain the peculiar status of first-person pronouns in spoken language acquisition, either because they have a specific status within the pronominal system (cf. Benveniste, 1966; Clark, 1978; Morgenstern, 2006), or because they require the development
of specific cognitive processes (cf. Bates, 1990; Dale & Crain-Thoreson, 1993; Ricard, Girouard, & Gouin Décarie, 1999). Self-points may also present a specific development as they are used to designate the self.

During this period, there are no pointing reversals in Charlotte’s data. There are no pointing reversals either when the frequency of Charlotte’s self-points start increasing again at 20 months. The absence of pointing reversals was also noted by Pizzuto (1990), Hatzopoulou (2011) and Blondel and Tuller (2008).

Two arguments in favour of a discontinuity between early pointing gestures and later pointing gestures/signs were proposed by Petitto (1987): (1) pointing to persons disappeared from children’s productions for several months, whereas other pointing continued to be produced and increased; (2) when they used pointing to persons again at 20 months, children produced pointing reversals. None of these observations clearly appeared in our data. However, we did observe that pointing to self was particularly infrequent before 18 months, and that the proportions of both pointing to self and (as a consequence) pointing to persons tended to increase from 20 months on. This suggests, as was already observed in previous research (Morgenstern, 1997), that self-points have a specific status compared to other kinds of pointing. In the following analysis, we investigate the relationship between these variations in self-points and the development of self-reference in Charlotte’s productions.


In analysis 1, self-points showed a discontinuous development: they represent a high proportion of pointing to persons at 8 and 10 months, which then almost disappear between 12 and 18 months compared to other pointing, and their frequency as well as their proportion start increasing again at 20 months. Though these observations could be interpreted in terms of a transformation of their linguistic status, based on extensive studies of self-reference in vocal languages (Caët, 2012, 2013; Caët & Morgenstern, 2015; Morgenstern, 2006), we suggest that new insights may emerge from considering not only the form (a point directed to the child’s chest), but also its function in the child’s system (referring to self), its integration in her signed utterances in the context of her syntactic development, her whole linguistic system during this transitional period, as well as the input she gets from her parents.
4.1 Qualitative and quantitative analyses

As shown in Example (1), early self-points are produced in combination with other pointing, as well as with grasping gestures (a 5-handshape, opening and closing successively) that could be analysed as ‘proto-signs’ for the sign meaning WANT (cf. Limousin & Blondel, 2010).

(1) Charlotte – 10 months
The mother is holding the small jar and a spoon.
Mother: GOOD
Charlotte:  
Charlotte holds out her right hand, points to the jar with her left hand and produces a 5-handshape movement with her right hand.
Charlotte:  
Charlotte holds out both her hands towards the jar and then touches it.
Charlotte:  
At 12 months, in our recordings, Charlotte stops pointing at herself. She starts pointing at herself again at 14 months, but rather infrequently up to 18 months. This period corresponds to the emerging use of bare predicates in reference to
self. Figure 2 illustrates the development of predicates with no subject self-point, predicates with subject self-point and self-points other than subject.

The analysis of self-pointing within the system of self-reference shows that around 12 months, when Charlotte stops pointing at herself, she is acquiring new linguistic tools to refer to herself, including predicates. In particular, she starts using the sign for WANT, in contexts comparable to those when she used to point to herself at 8 and 10 months and makes requests. At that time, she produces short utterances, mostly composed of one sign, or successive pointing as in (1). In Example (2), we see how Charlotte uses the sign for WANT to express her desire and asks her mother to open the box she is holding.

(2) Charlotte – 12 months

Charlotte is in front of a closed plastic box of crayons. She signs what we could gloss as WANT and then repeats the sign, opening and closing her two hands repeatedly in front of the box.

After a while, she runs up to her mother and signs WANT but her mother is involved in her conversation with a friend and does not pay attention.

Charlotte runs back to the box, sits next to it, gazes at her mother and when she finally catches her attention, repeats the sign WANT and points at the box.

She then brings the box to her mother who finally opens it for her.

Between 14 and 18 months, Charlotte either produces self-points or predicates, but she does not combine them to express a subject-predicate relationship (she
uses mostly one manual sign combined with gaze constructions). At 20 months, as she starts combining two or three manual signs, Charlotte also produces her first combination of a self-point and a predicate, as illustrated in (3).

(3) Charlotte – 20 months
Charlotte:

Mother:

POINT-OBJECT

WHAT?  WHERE?
At 20 and 22 months, these combinations remain rare (one token each month, representing less than 8% of all predicates referring to self). At 24 months, their proportion increases prominently (they represent 38% of all predicates referring to self; \( N = 12 \)) and after that age, from 27 months on, most predicates referring to self are produced together with self-points (they represent 95% of all predicates referring to self at 27 months; \( N = 40 \)), explicitly identifying the child as the subject of the utterance.

Interestingly, such transitions are also observed in her parents’ productions (Figure 3). When Charlotte is 20 months and starts using self-points to designate herself as the subject of her utterances, her parents’ point at her slightly more than before to designate her as the subject of their utterance (up to 18 months, her parents point at her 33% of the time on average; from 20 months on, her parents point at her 42% of the time on average). When Charlotte is 24 months and uses self-points to designate herself as the subject of her utterances more frequently (60% of the time), her parents use combinations of self-points and predicates to refer to themselves much more than previously (up to 22 months, her parents point at themselves on average 45% of the time; from 24 months on, her parents point to themselves on average 69% of the time).
If we compare the proportion of predicates with pointing (as compared to predicates with no point or with names) when Charlotte’s parents refer to themselves and when they refer to their child, we observe that they use a higher proportion of points in reference to self than in reference to her (48% and 37% as a mean respectively), especially after she herself starts pointing more and more at herself (Figure 1) and at herself as subject (Figure 2) at 24 months (65% and 42% as a mean respectively, between 24 and 36 months).

4.2 Discussion of analysis 2

Charlotte first uses self-points mostly in isolation or in combination with other points. When the proportion of Charlotte’s self-points decreases (between 12 and 18 months, cf. analysis 1), other linguistic aspects develop. She uses a larger repertoire of lexical signs (cf. Limousin, 2010), including predicates and in particular predicates with a modal meaning such as the signs for WANT. This also seems to be the case in Petitto’s (1987) data: in the period when they stop pointing at persons, the two children in her study start producing more sign tokens as well as more sign types. One of the children (Kate) also starts using the ASL sign WANT soon after she stops pointing to persons. This shift from self-points to the use of predicates makes the child’s utterances semantically richer as well as pragmatically more efficient. Although this cannot entirely explain the disappearance of self-points at 12 months, it underlines the necessity to consider the development of other aspects of the child’s linguistic system, at a time when she may not be able
to express both the predicate and the subject and may therefore focus on new information (just as children who acquire a vocal language, cf. Morgenstern, 2006).

When the number and the proportion of self-points increase again, Charlotte also starts combining more and more signs more generally (cf. Limousin, 2010). This can also be observed in Petitto’s data: for both children, combinations start to increase between 18 and 20 months (end of the interruption of pointing to persons), and their signed utterances reach an average of 3 signs or more. Blondel and Tuller (2008) also suggested that the status of pointing changes at around 20 months in Illana’s data, when they are combined with other signs. Self-points therefore seem to be progressively integrated into syntactically complex utterances. This is also the time when Charlotte’s parents start pointing more at her to designate her as subject. When she starts combining self-points and predicates, Charlotte also expresses requests.

Thus, in our data as well as in other datasets, there appears to be a shift from early self-points produced in isolation to the development of lexical items at a time when children produce one-manual unit utterances, and a shift from one-manual unit utterances to utterances combining two or more manual units when self-points are produced again. Semantically, all these utterances refer to the child, and from a pragmatic point of view, requests appear as a recurring speech act. Across the three stages, only the forms differ, but from one stage to another, the child’s utterances become semantically more subtle and pragmatically more effective. Charlotte points more and more at herself, in particular as subject, just like her parents start pointing more and more at themselves as shown in Figure 3. This finding parallels what Ozçalişkan and Goldin-Meadow (2011) observed in their analysis of children’s and parents’ use of iconic gestures suggesting that parents may either adapt to or be responsible for changes in their children’s productions.

5. Conclusion

This study aimed at tackling the issue of a (dis)continuity between children’s ‘pre-linguistic’ and ‘linguistic’ productions, by looking at the development of pointing in a deaf child acquiring LSF from her deaf signing parents, but within the broader framework of her full linguistic system. We therefore investigated a comparable dataset as Petitto’s in 1987, but with a usage-based approach to child language development (cf. Budwig, 1995; Tomasello, 2003) and a linguistic perspective on the (dis)continuity issue complementary to the psycholinguistic perspective (cf. Colonnnesi et al., 2010). Pointing is in fact one of the earliest forms produced by children (hearing or deaf) that is interpreted by adults as being referentially communicative. For children acquiring a sign language, this form is also part of the
linguistic system under acquisition. Early points, in particular early points to persons, have sometimes been considered in the literature on the acquisition of sign language as ‘prelinguistic’ gestures (thus not linguistic) and later points as ‘linguistic’ signs. According to Petitto (1987), this distinction is to be made not because of formal differences between early and late points, but because of a discontinuous developmental trend and reversal errors that the children she observed made when pointing again.

In this study, we analysed a unique corpus composed of the productions of Charlotte, a deaf child acquiring LSF from her deaf signing parents. Although we did not observe any reversal errors in Charlotte’s productions, we did notice some discontinuity in the development of self-points, at the same age as when the children Petitto observed stopped pointing. However, taking a functionalist approach and considering what self-points are used for (i.e. referring to self), we compared the development of utterances with self-points with other utterances that we interpreted in context as referring to the child herself, such as predicates with no overt subject. We then observed that the proportion of self-points, that had been used in isolation or only combined with other points, starts decreasing when Charlotte begins to use lexical predicates and in particular predicates that enable her to express the same pragmatic function as her earlier self-points: requests. The decrease of self-pointing thus occurs at a time when the child may focus on the predicate rather than on the theme of her utterances, as she continues to produce short utterances. Only later on, when she is able to combine subject self-points with predicates, does she start using more self-points again. This development follows the same trend as the one observed in the acquisition of vocal languages in which bare predicates precede the use of pronouns with predicates (cf. Caët, 2012, 2013; Morgenstern, 2006).

These observations suggest that studying early productions within children’s general linguistic development and in parallel with other linguistic tools children acquire, the length and complexity of their utterances as well as the specificities of the surrounding input, may bring new insights into the understanding of the relationship between early and late productions. The apparent discontinuous behaviour of self-points does not necessarily indicate a transition from pointing ‘gestures’ to pointing ‘signs’, but it could be the result of a general transformation of the child’s linguistic system, quite similar to what we find in vocal languages: a richer lexicon, longer utterances and the development of pragmatic competence. All these aspects need to be taken into consideration to account for the relationship between language and cognition. The functions of self-pointing are “integrated into the process of conventionalisation of gesture and control of the signing space” (Hoiting, 2009: 84). We thus argue that taking a functional approach (focused on self-reference) rather than a formalist approach (focused on the absence/
A functional approach to self-points and self-reference

presence of points) can bring new insights into children’s language development and may uncover continuities in children’s cognitive, communicative and linguistic development.

Considering Charlotte’s linguistic development as well as information available from other case studies with this functional perspective, we suggest that there is no clear discontinuity between early and late points in signing children’s data, and that we cannot distinguish pointing ‘gestures’ and pointing ‘signs’. As children grow older and go through the progressive phases of motor and cognitive development, their communicative system, grounded in experience, becomes more complex and more effective. More longitudinal data of first sign language acquisition are much needed to further investigate this issue.

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References


**Résumé**

Après avoir observé que les deux enfants sourds de son corpus arrêtaient de pointer autour de 12 mois et produisaient ensuite des renversements pronominaux, Petitto (1987) a suggéré que le développement discontinu des gestes et des signes apportait des arguments de poids en faveur de l’hypothèse selon laquelle le langage se développerait indépendamment des autres aspects de la cognition. Depuis, un grand nombre de travaux portant sur les enfants entendants ont cependant montré un lien fort entre les premiers pointages et leurs compétences langagières futures. Cet article s’inscrit dans la lignée de ces approches socio-cognitives tout en analysant des données comparables à celles de Petitto. Nous étudions le développement du pointage et de la référence à soi chez une enfant sourde acquérant la Langue des Signes Française (LSF). Le changement de perspective que nous adoptons, des pointages à la référence à soi, nous permet de montrer que malgré une apparente discontinuité dans le développement des pointages vers...
soi, il y a continuité dans l’établissement de la référence à soi. Dans notre corpus, l’enfant pro-
duit des pointages vers soi très précocement. Elle utilise ensuite des prédicats sans sujet avant
d’entrer dans une syntaxe plus complexe avec combinaison de prédicats et de pointages. L’enfant
sourde signeuse construit la référence à soi comme les enfants entendants, usant des différentes
formes qui lui sont proposées par sa communauté linguistique en fonction de son développe-
ment socio-cognitif et linguistique.

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