How mother and child co-(re)construct non-conventional productions in spontaneous interaction

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Abstract
Following a usage-based approach of language acquisition, the goal of this article is to make a detailed analysis of other and self-repairs targeting a French child’s non-conventional productions between 1;09 and 4;0. The study’s hypotheses were that (1) the mother would start by offering repairs and later in development use strategies to lead the child towards self-repair; (2) she would focus on repairing different linguistic levels at different stages of the child’s development; (3) she would favor the flow of communication over formal correction; (4) the child would progressively detect mismatches between her input and her output and self-repair her own productions. The results showed that the mother frequently intervened at first by offering direct and indirect repairs but progressively elicited the child’s own repairs through repair initiations. Repairs were thus often co-constructed through multiple turns before being fully initiated by the child. The mother and child’s repairs targeted different linguistic levels according to the child’s development and to her age.

Keywords
Acquisition, child language, French, interaction, repairs

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Children learn language through exposure. During their daily exchanges with the adults around them, they have direct access to language through a variety of activities. Their linguistic, interactional and social skills blossom in their close-knit collaboration with adults in everyday interactions. Through these, adults contribute their interpretations of young children’s behavior and verbal productions.

Children replicate their first verbal productions from adult input, but they make variations and transformations. In order to become full-fledged speakers, not only do children have to understand and learn linguistic constructions, manipulate and ‘internalize’ them (Vygotsky, 1978), but they must also master their specific forms and uses as best as they can to produce more conventional adult target forms like those found in their linguistic environment. During the language acquisition process, children learn how to coordinate their output with the input, how to identify mismatches, and how to monitor their own speech (Clark & Hecht, 1983).

As children use many non-conventional forms, in the Western cultures studied in the literature, parents are constantly trying to make sure they understand their children’s communicative intentions through reformulations. They thus offer conventional versions of children’s productions, which serve as repairs that are either embedded in the flow of conversation or explicitly corrective. This repeated process is key to the development of children’s own ability to monitor and repair their own productions. As underlined by Veneziano (1997), when we analyze adults’ productions in relation to their children’s speech, we can improve our understanding of how adults contribute to children’s language development. Following functional and usage-based approaches to language acquisition (e.g. Tomasello, 2003), the analysis of other and self-repair sequences therefore provides an opportunity to examine adults’ essential role in the process of language acquisition (Clark & Chouinard, 2000).

For this study, we conducted a detailed analysis of a monolingual French little girl interacting with her mother in the home environment between the ages of 1 year 9 months and 4 years. We analyzed how mother and child co-reconstructed the child’s non-conventional forms through repairs, to capture how the mother’s responses might help the child to learn adult forms and self-repair.

**State of the art**

**Repairs in adult interactions**

In the theoretical framework of conversation analysis, research on repairs is mostly focused on very detailed descriptions of the unfolding of repair sequences and on the strategies speakers use in the course of conversations to solve comprehension or production problems. As shown by Schegloff, Jefferson, and Sacks (1977), repair sequences comprise several phases: (1) an utterance containing the problematic element is produced by a speaker; (2) the problem can be signaled by the speaker or her interlocutor who can initiate a repair; (3) the repair is produced by the speaker (self-repair) or by the interlocutor (other-repair); (4) the interlocutor can indicate that she understands the repair, and the conversation continues. Adults mostly tend to use self-repairs (Schegloff et al., 1977). However other-repairs and other-initiated repairs (Dingemanse & Enfield,
2015) are part of interactional practices used to negotiate mutual understanding. They play an important role at the crossroads of the linguistic system and social interaction. Other and self-repairs are part of the ‘interaction engine’ described by Levinson (2006). They illustrate how interaction is co-constructed and how interlocutors are able to distance themselves from their own production in order to take the other’s perspective, resulting in adequate productions in terms of communication and conventional norms.

This is demonstrated even more tangibly when native speakers (experts) interact with non-natives (novices). Norrick (1991) showed that in native/learner interactions, native speakers can spontaneously reformulate learners’ non-conventional productions. Adult–child interactions are characterized by the same asymmetric status. The issue in this article is to analyze how adults identify communicative problems and socialize children into becoming cooperative speakers (Clark, 2017) able to self-repair their own productions.

Repairs in adult–child interactions

Schegloff et al. (1977, p. 381) suggested that in adult–child interactions, other-repairs might be predominant. However, in his longitudinal data, Forrester (2008) demonstrated that self-repairs were also quite frequent. Children construct social practices shared by their linguistic community quite early, with among these, a preference for self-repair as they become older.

According to Wootton (1997), repairs reveal children’s ability to ensure that comprehension is shared by their interlocutors. In his study, Forrester (2008) also illustrated how the strategy children use to make self-repairs evolves in parallel with their cognitive, interactional and linguistic skills. When she was very young, Ella, the little girl under study, transformed her phonemes in order to repair her utterances. As she grew older, she introduced grammatical alterations and used gaze more and more in order to control the adult’s attention to her verbal productions.

Outside the conversation analysis framework, specialists in language acquisition have mostly studied the role played by parents, as language experts, regarding their children’s linguistic development. The literature has focused on other-repairs and other-initiated repairs. The authors analyze repair sequences as a fundamental process in language acquisition (Bernicot, Salazar-Orvig, & Veneziano, 2006; De Weck, 2000). In adult–child interactions, both participants continually take up each other’s productions. By taking up adult repairs of their own previous utterances, children produce conventional forms from the adult system in their new utterances (Clark, 2006). This process facilitates the acquisition of new words, new constructions and complex utterances (Veneziano, Sinclair, & Berthoud, 1990). Adult reformulations are thus considered as ‘negative evidence’: they indicate a discrepancy between the child’s production and the adult model which enables children to compare their non-conventional productions (which we will call NCPs) to adults’ conventional forms. The notion of lack of ‘negative evidence’ in parents’ input was introduced by Gold (1967) to support the innateness of grammar along with the claim of the ‘poverty of the stimulus’. This was contradicted by Saxton (1997) in ‘the contrast theory of negative evidence’ based on the idea that the discourse structure created in juxtaposing children’s errors and correct adult forms can provide children with
a contrast and help them discard their non-conventional forms. It is thus particularly important from a theoretical perspective to study the actual interactions taking place to demonstrate the ‘scaffolding’ role of the parents’ input. Middle-class Western parents are described in the literature as trying to adjust to their children’s needs and linguistic level using various strategies to simplify, expand and repair their children’s utterances; and they are constantly providing ‘negative evidence’. But adults do not always produce repairs explicitly: ‘embedded’ or ‘indirect repairs’ are also used in adult–child interaction. These enable adults to avoid interrupting the flow of conversation (Chouinard & Clark, 2003; Forrester, 2008) yet still provide the child with the target forms (Hirsh-Pasek, Treiman, & Schneiderman, 1984; Demetras, Post, & Snow, 1986).

It is, however, quite difficult to demonstrate the short-term effects of these strategies since (1) children tend to use fixed forms and be rather inflexible in their manipulation of language; (2) they might not have an opportunity to use or repeat those forms in the immediate context. Yet, Chouinard and Clark (2003) suggest that the comparison of children’s utterances with the immediate turns produced by adults enables children to identify the conventional forms they should have used. When children are able to notice the discrepancy between their output and the input, they can then integrate the ‘correct’ forms and use them again later. This process implies that from the very beginning, children incorporate what adults say, which in turn requires specific social, cognitive and linguistic skills.

Indeed, very young children may not use the exact target forms and produce phonological, semantic or morpho-syntactic deviations. However, their vocal productions are very often complemented by gestures, dialogic context, extra-linguistic context and shared knowledge. They are not always aware of the comprehension problems their vocal non-conventional forms may lead to. Adults may indicate that the child should clarify those forms through requesting such clarification in dialogue (Clark & Chouinard, 2000; Morgenstern & Sekali, 1999). Thanks to adults’ solicitations (repair initiations), children may provide both more relevant content and more adequate forms. Such an exchange requires a theory of mind and metacognitive skills: children must take into account the fact that adults have not understood and be able to alter their production in order to facilitate comprehension (Clark, 2003; Morgenstern & Sekali, 1999). Repair initiations could be considered as a form of ‘contingent query sequence’ that children learn to respond to very early in development (Gallagher, 1981). But repairs in mother–child interactions could also be used simply because the forms produced are not conventional. Children can gradually manage this type of sequence on their own and they become aware of what can hamper their interlocutor’s comprehension (Forrester, 2008) or is unacceptable in adult language.

The literature highlights various processes that take place in adult–child interaction when there is a discrepancy between a child’s verbal production and a production in conventional adult language. These processes could be categorized as direct other-repairs and indirect (or embedded) other-repairs where the adult provides the actual repairs, as opposed to repair initiations and self-repairs where the child takes on an active role in the repair process. Studies indicate prelinguistic reliance on gestural repairs and demonstrate that the ability to self-repair verbal communicative breakdowns develops at the same time as intentional communication and perspective taking do (Alexander, Wetherby, & Prizant, 1997).

In previous work on French longitudinal data, Morgenstern, Leroy-Collombel, and Caët (2013) analyzed repairs in three French longitudinal follow-ups. According to the
initial data, most repairs were other-repairs whereas in the later and final data, children’s self-repairs dominated. The authors conducted more detailed analyses on the data of the most linguistically precocious child, Madeleine, and showed that her mother’s choice of repair processes adjusted to her child’s language development.

In this study we used a different French corpus, chosen because of the numerous non-conventional productions produced by the child. We focused on the mother’s role and on how the child progressively repaired her own forms, involving both socio-pragmatic and linguistic skills. Following our previous studies, our hypotheses were that (1) the mother would start out by offering her own repairs and, later in development, she would use strategies to lead the child towards self-repair; (2) she would focus on repairing different linguistic levels at different stages of the child’s development; (3) she would favor communication flow over formal correction; (4) the child would progressively self-repair her own NCPs.

**Method**

This exploratory study is based on Anaé’s longitudinal data collected in the framework of the CoLaJE ANR project financed by the French National Research Agency (http://colaje.scicog.fr; Morgenstern, 2009; Morgenstern & Parisse, 2012). Anaé is a French little girl in a middle-class family living in a village near Paris. She was filmed at home in spontaneous interaction with her mother and sometimes her two elder brothers, for one hour per month from 18 months to 7 years old. The data were collected by a linguist (the third author, called the observer) whom Anaé knew well. The observer usually spent several hours in the house before and after each filming to play and interact with her outside her role as camera-woman. The data were transcribed by two separate transcribers using CLAN software (MacWhinney, 2000). The transcriptions were coded in EXCEL tables aligned with the videos with programming created by Christophe Parisse.

In previous research on repairs, the authors restricted the analyses to productions that were repaired or for which a repair was elicited in order to make the study feasible in terms of coding time. In this study, we chose to focus on a single case study in finer detail in order to analyze the mother’s role. We coded all the child’s utterances in the six sessions selected for this study (at ages 1;09, 2;03, 2;09, 3;04, 3;10 and 4;00); this represented six hours of recording and 3340 utterances. All the child’s NCPs were coded according to their linguistic level even when they were not repaired, as were the immediate subsequent productions in dialogue: the mother’s repairs, the child’s uptakes, the success of the mother’s initiations of repairs and the child’s self-repairs. Despite our interest in non-verbal communication and previous observations on gestural repairs (Alexander et al., 1997), we focused on speech for this study but used all interactional cues to interpret the child’s productions in context. Figure 1 presents the categories we coded for each NCP (non-conventional production).

Table 1 presents the form of each NCP according to their linguistic level.

Table 2 describes our coding categories illustrated with examples.

The coding was designed and conducted by the authors of the study who worked together throughout the coding process and were therefore able to discuss their interpretations and systematize the coding scheme. More specifically, the coding was conducted in three stages:
1. The three authors created a coding grid and applied it together to session 1;09.
2. Two authors coded 2;03 and 2;09 separately and the inter-rater reliability was measured immediately. The result was 96.3%. All differences concerned whether there was an NCP, and its nature (most of the time coding differences concerned when NCPs were ‘incorrect’ at several levels at the same time and one of the levels was omitted by a coder). These differences were resolved by a discussion that included the third author.
3. The three authors decided to continue the coding of the other sessions together so that they would all know the data perfectly and be able to discuss the linguistic issues raised by the process as a group.

The coding was explained in a common coding guide for subsequent analyses on other children.

**Analysis of the child’s productions**

As linguists, we find it important to analyze the repair processes involved in adult–child interactions in the context of the child’s overall linguistic development.
Main characteristics of Anaé’s language development

Anaé’s data were chosen because they were open access, have been analyzed at a variety of linguistic levels and the child was described as making a wide variety of NCPs (Morgenstern & Parisse, 2017). Our synthesis of the available literature on Anaé’s data enabled us to distinguish four periods in her interactive multimodal development.

**Period 1 up to 1;11 (the bases of multimodal interaction).** Her communication was multimodal (one gesture per utterance on average) with a lot of pointing and gestures of negation. She used many ‘communicators’ in isolation (adverbs such as encore, voilà, non …) and lexical items (Parisse, Morgenstern, & Pontonx, 2013). Her phonology was quite unstable. She relied on her mother to initiate speech turns and even to answer questions. She therefore seemed to set the bases for dialogic communication without feeling fully responsible for her own interactive role, relying very often on her mother’s collaboration.

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**Table 1.** Form of the NCP according to the linguistic level.

<table>
<thead>
<tr>
<th>Linguistic level</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phonology</td>
<td>The adult target is produced with deletions, phonological substitutions, and sometimes both.</td>
<td>[eve] instead of [œ] enlever / ‘to take off’ (at 1;09)</td>
</tr>
<tr>
<td>Semantics</td>
<td>The child does not use the relevant word and either overextends a word or uses the wrong word.</td>
<td>‘bouche’ / ‘mouth’ for bec / ‘beak’ where a human body part is extended to birds (at 3;04) ‘c’est quoi?’ / ‘what’s that?’ for c’est qui? / ‘who is it?’ At 2;03, Anaé mixes up objects and humans. ‘allez les chats, rentrez dehors!’ / ‘let’s go cats, come back in outside!’ Anaé incorrectly combines rentrez / ‘to go back in’, and dehors / ‘outside’. She does not align the adverb with the meaning of the verb (at 3;10).</td>
</tr>
<tr>
<td>Morphology</td>
<td>This category is used for errors of gender, number, person, tense …</td>
<td>‘ça c’est un animaux féroce’ / ‘that’s a ferocious animals’ with the misuse of the plural (at 4;00)</td>
</tr>
<tr>
<td>Syntax</td>
<td>This category includes non-conventional word order or omissions.</td>
<td>‘est belle’ / ‘is beautiful’ with the omission of the subject (at 1;09)</td>
</tr>
<tr>
<td>Pragmatics</td>
<td>The child fails to use the polite constructions expected by the adult or does not take into account the fact that the adult does not have common ground.</td>
<td>Anaé tells the observer ‘j’ai regardé le film avec Agathe’ / ‘I watched the movie with Agathe’ without having previously introduced the situation, thus the use of the definite determiner le (le film) was inappropriate (at 4;00).</td>
</tr>
<tr>
<td>Truth-value</td>
<td>Anaé mislabels the object she is referring to.</td>
<td>Anaé produces the word ‘éléphant’ / ‘elephant’ to refer to the picture of a rhinoceros even though she knows both terms (at 3;04).</td>
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</tbody>
</table>
**Table 2. Coding the co-construction of language: terminology and examples.**

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCP: non-conventional</td>
<td>Child’s production does not match the conventional adult form on one or</td>
<td>Omission of one or several units:</td>
</tr>
<tr>
<td>production</td>
<td>more linguistic levels (see Table 1).</td>
<td>ANAE: <em>veux regarder chat</em> (want to look at cat) (1;09).</td>
</tr>
<tr>
<td>Intervention</td>
<td>After an NCP by the child, either adult or child could intervene so that</td>
<td>See repair and <em>initiation</em> in this table.</td>
</tr>
<tr>
<td></td>
<td>the NCP is repaired or signaled.</td>
<td></td>
</tr>
<tr>
<td>Repair</td>
<td>We considered a repair to be any uptake of an NCP in the following turn</td>
<td>See different types of repairs in this table.</td>
</tr>
<tr>
<td></td>
<td>provided with the conventional form.</td>
<td></td>
</tr>
<tr>
<td>Self-repair</td>
<td>Repair made by the child herself (without her mother’s intervention).</td>
<td>MOTHER: <em>parce que le grand ours il lui a donné son bateau</em> (because</td>
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<tr>
<td></td>
<td></td>
<td>the big bear gave him his boat)</td>
</tr>
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<td></td>
<td></td>
<td>ANAE: <em>il lui a prêté</em> (he lend it to him)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MOTHER: <em>d’accord</em> (ok)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ANAE: <em>prêté</em> (lent)</td>
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<tr>
<td></td>
<td></td>
<td>(3;10).</td>
</tr>
<tr>
<td>Other-repair</td>
<td>Repair made by the mother.</td>
<td>See <em>direct and indirect (other-)repairs</em></td>
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<tr>
<td>Direct (other-) repair</td>
<td>Explicit correction.</td>
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<td></td>
<td></td>
<td>ANAE: <em>ça c’est un petit chevaux</em> (that’s a little horses.)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MOTHER: <em>un petit cheVAL</em> (a little horSE) (4;00).</td>
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<td></td>
<td></td>
<td>Verbalization of the nature of the corrective feedback using a negation:</td>
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<td></td>
<td></td>
<td>ANAE: <em>c(r)ebe</em> (crab) pointing at a scorpion on a book</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MOTHER: <em>c’est pas tout-à-fait un crabe, c’est un scorpion</em> (it’s not</td>
</tr>
<tr>
<td></td>
<td></td>
<td>exactly a crab, it’s a scorpion) (2;03).</td>
</tr>
<tr>
<td>Indirect (other-) repair</td>
<td>The mother provides the child with the conventional form without explicitly</td>
<td>ANAE: <em>comment e@fs s’appelle ?</em> (‘what’s u name?’)</td>
</tr>
<tr>
<td></td>
<td>marking any intent to correct her in the flow of the conversation.</td>
<td>MOTHER: <em>il s’appelle Zozio</em> (his name is Zozio) using the correct</td>
</tr>
<tr>
<td></td>
<td>(The equivalent of ‘embedded’ corrections in Chouinard &amp; Clark, 2003 and</td>
<td>pronoun where the child had used a filler syllable (2;09).</td>
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<tr>
<td></td>
<td>Clark &amp; de Marnéeffe, 2012.)</td>
<td></td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
<td>Example</td>
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</tbody>
</table>
| Initiations                 | The mother does not repair the NCP but signals the existence of a problem. | Signaling uncertainty:  
ANAE: moustique (mosquito) pointing at an insect in a book  
MOTHER: tu crois ? (you think so?) because it is in fact a bumble bee (3;04).  
Triggering a repair:  
ANAE: [ago] to designate a ladybird  
MOTHER: coc… (lady…) so that her daughter could continue with ‘-cinelle’, coccinelle means ladybird. [ago] is a reduction of escargot (snail) (1;09). |
| Uptake of a repair          | The child corrects the element repaired by the mother in the following turn, even if other elements in her utterance are still not perfect. | ANAE: téléphant (nelephant)  
MOTHER: l'éléphant (the elephant)  
ANAE: l'éléphant (the elephant) (2;03). |
| Success of an initiation     | The child corrects the element signaled by the mother in the following turn, even if other elements in her utterance might still not be perfect. | ANAE: si on fait un cadeau comme ça (if we make a present like that)  
MOTHER: c'est pas un cadeau regarde bien qu'est-ce que c'est ? (it’s not a present. Look at it. What is it?)  
ANAE: train (train)  
MOTHER: un train (a train) (2;09). |
| Unsuccessful adult intervention (no uptake or unsuccessful initiation) | When the initiations or the repairs are not successful, we distinguish the cases when the child simply talks about something else, without taking up her mother’s turn, and when she continues to use her NCP or even actively refuses the repair. | NCP persistence:  
ANAE: oh le petit chinge maman le petit chinge  
MOTHER: oui le petit singe  
ANAE: le chinge  
Anaé says ‘chinge’ to refer to a monkey (singe in French) and even though the mother uses the target adult term several times, Anaé continues to use her own form during the whole session (2;03). |

*a@fs indicates that the child pronounced the phoneme [e] and that we coded it as a filler, i.e. as a preverbal vowel used instead of a pronoun.
Period 2 from 1;11 to 3;03 (development of speech). This period was key for her linguistic development. The various phonological positions were progressively stabilized. The system in general was stable at 2;07. At the morphological level, studies of the expression of gender with ‘errors’ such as *le fieur* (the flower, masculine instead of feminine) or *un poule* and on the expression of possession (Leroy-Collombel & Morgenstern, 2012) indicate that the child acquired morpho-syntactic markers with an analytic rather than a synthetic strategy. Her morpho-syntax remained creative for a very long time: *elles sontoient* for *elles étaient* (they were) using the wrong root for the irregular verb *être* (to be) at 3;10; *parce qu’il a pas envie les animaux* (because he not want the animals – meaning ‘the animals do not want’) at 2;09. Even though until 2;10 Anaé did not participate very much in the co-construction of narratives initiated by her mother, after 3;0 she proposed narrative sequences herself using the past tense (Leroy-Collombel, 2013). She progressively used more conventional forms of self-reference (Caët & Morgenstern, 2015). The percentage of her gestures over words decreased and her verbal productions became longer at the end of the period (mean length of utterance [MLU] around 3); she started using determiners, prepositions, connectives, adjectives and pronouns. Most narratives and explanations were co-constructed with her mother.

Period 3 from 3;4 to 3;10 (development of complex speech). Her verbal system became much more complete with the use of the simple past/imperfect and the inflectional future. She started using compound sentences, noun phrases and predications were extended, some co-verbal gestures then complemented her speech, seeming to indicate her greater mastery of verbal productions. She initiated narratives herself and made finer descriptions. She no longer used the third person to designate herself. She expressed her own positioning more often and provided justifications and explanations.

Period 4 after 3;10 (diversification of complex multimodal communication). Anaé used new lexemes and her narratives were more detailed. She still produced morpho-syntactic errors with infrequent forms in narratives at 4;0 as in *le lapin s’assiya par terre* instead of *s’assey* (‘the rabbit sitted – for sat – on the floor’ when she was pretending to read), but her productions became much more elaborate. She produced the subjunctive and the conditional, made hypotheses and was quite creative in her production of fictive discourse. Her co-verbal gestures became much richer and she developed reported speech accompanied by gestures and postures to embody various characters in her story telling.

Following this synthesis, our hypothesis was that Anaé’s NCPs evolved according to her linguistic development and the diversification of her interactional and multimodal skills. For this new study, her NCPs were therefore analyzed in detail in the longitudinal context of interactions with her mother, in line with her progressive mastery of linguistic forms and uses.

The child’s non-conventional productions

In the six sessions we coded, a total of 1464 (44%) out of Anaé’s 3340 productions were non-conventional. Table 3 indicates the number of Anaé’s utterances coded as non-conventional, according to age.
The older Anaé got, the more conventional her productions became. This was confirmed by a correlation\(^3\) (percentage non-conventional production \(\times\) age): \(F(4) = 11.921, p = .026\). As indicated in Table 3, up to 3;10 the child’s NCPs decreased with age: we find 84% non-conventional utterances at 1;09 and 26% at 3;10. An increase seemed to take place at 4;00. The child’s productions were therefore more in compliance with the adult target up to 3;10 but when her language became much more complex, she started making more morphological and syntactic NCPs, as described in the next section.

| Table 3. Distribution of Anaé’s non-conventional versus conventional utterances by age. |
|---------------------------------|------|------|------|------|------|------|------|
|                                 | 1;09 | 2;03 | 2;09 | 3;04 | 3;10 | 4;00 | Total |
| No. of NCPs                     | 421  | 281  | 174  | 184  | 132  | 272  | 1464  |
| No. of CPs                      | 79   | 213  | 238  | 537  | 377  | 432  | 1876  |
| Total                           | 500  | 494  | 412  | 721  | 509  | 704  | 3340  |
| % NCPs                          | 84%  | 57%  | 42%  | 26%  | 26%  | 39%  | 44%   |

| Table 4. Distribution of the child’s non-conventional utterances according to the linguistic level. |
|---------------------------------|------|------|------|------|------|------|------|
|                                 | 1;09 | 2;03 | 2;09 | 3;04 | 3;10 | 4;00 | All   |
| Phonology                       | 278  | 171  | 82   | 76   | 7    | 52   | 666   |
| Syntax                          | 116  | 73   | 45   | 50   | 36   | 67   | 387   |
| Morphology                      | 14   | 10   | 25   | 15   | 32   | 70   | 166   |
| Semantics                       | 2    | 4    | 2    | 11   | 39   | 39   | 97    |
| Pragmatics                      | 5    | 15   | 7    | 19   | 7    | 32   | 85    |
| Truth-value                     | 6    | 8    | 13   | 13   | 11   | 12   | 63    |
| Total                           | 421  | 281  | 174  | 184  | 132  | 272  | 1464  |

The older Anaé got, the more conventional her productions became. This was confirmed by a correlation\(^3\) (percentage non-conventional production \(\times\) age): \(F(4) = 11.921, p = .026\). As indicated in Table 3, up to 3;10 the child’s NCPs decreased with age: we find 84% non-conventional utterances at 1;09 and 26% at 3;10. An increase seemed to take place at 4;00. The child’s productions were therefore more in compliance with the adult target up to 3;10 but when her language became much more complex, she started making more morphological and syntactic NCPs, as described in the next section.

**Distribution of non-conventional utterances according to linguistic levels**

Anaé’s utterances were non-conventional at various linguistic levels. We looked at the distribution of the utterances according to the following six levels: phonology, syntax, morphology, semantics, pragmatics and truth-value (Table 4).

The distribution of non-conventional productions evolved in the course of the child’s linguistic development. At 1;09, the child had not yet mastered the phonology of her language and her **phonological** NCPs represented more than 66% of the total. The rate regularly decreased until 3;10 down to 5.3% but increased again at 4;0 when new lexemes were used and went up to 19%. Indeed, at 4;0, her utterances became more complex and her lexicon much richer and Anaé started making more NCPs at the phonological level again (52 NCPs at 4;00 whereas there were only 7 at 3;10). In contrast, the proportion of **syntactic** errors remained stable, with an average of 26.5%. We note an increase of NCPs at the **morphological** level. They represented 3% of the NCPs at the beginning of the data, and increased irregularly up to 26% at 4;0. The NCPs at the **semantic** level progressively emerged with a true explosion at 3;10. Similarly, as far as the **truth-value**
is concerned, after their first occurrences at 1;09 and 2;03, the number of NCPs was stabilized around 12 per session. Relatively to the other types, the truth-value level of NCPs represented 7% with an important decrease at 4;00. The percentage of the **pragmatic** type of NCPs was very irregular (from 1.2% to 11.8%), which could be explained by the tight relation between pragmatics and context. Most cases were situations in which the child did not comply with the politeness rules expected from her mother.

Thus, the child’s NCPs were closely related to the complexity of her linguistic development at all linguistic levels. The overall number of conventional productions increased in the one-hour recordings. Our aim in the next analysis was to identify potential cooperative strategies between the mother and the child that guided the child towards conventional productions so that she would be better understood and conform to the adult system. We therefore targeted the mother’s reactions to her child’s NCPs, her feedback and the child’s own active role in the repair process.

**Analysis of the non-conventional productions in dialogue**

When her child produced NCPs, Anaé’s mother made different responses: she either ignored the NCP (absence of repair), signaled the ‘problem’ (initiation of a repair), or provided indirect or direct repairs. The child also provided repairs herself. In Figure 2, we present the proportion of NCPs that the mother or the child ‘treated’ (T) through signaling, repairing or self-repairing, compared to those they did not (NT).

The proportion of treated NCPs decreases from 44% at 1;09, to 23% at 3;10 with a small rise at 4;00 (close to 25%).

Before we examine how, when and with what linguistic forms the mother intervened, let us consider the type of NCPs that were neither signaled nor repaired, but were the most frequent in the data. The explanations are summarized below:

- The mother was in fact distracted by something else (one of her other children for example) and was not focused on Anaé.
- The mother did not have the same requirements regarding her child’s language development and adjusted her reactions. What was accepted at 1;09 was no longer acceptable at 4;00. Several ‘errors’ were perceived as being amusing (when taking into account the child’s age) and were not corrected. For example, at 4;00, Anaé used *à leur maison* (at their house) instead of *chez eux* (at home) and her mother provided the conventional form. The construction was not corrected when she was 2 years old as its meaning is transparent.
- When the child used several non-conventional forms or structures in the same utterance, her mother often only corrected some of them. For example, at 2;09, Anaé said *peux l'enlever?* (can take it off?) without the second person pronoun, however the mother only corrected the lack of politeness formula (*s’il-te-plait* / please).
- NCPs were often corrected or signaled with no effect: the child repeated her NCP and the mother did not pursue her corrective feedback probably so as not to hamper the continuation of the dialogue.
- Very generally, Anaé’s mother was concerned with dialogic continuity. She did not try to make too many repairs when communication with her daughter could be at risk.
Thus, Anaé’s mother did not signal or correct all her child’s NCPs. But when she did intervene, why and how did she do so? What actually triggered a repair? The mother’s treatment of her daughter’s productions, the actual devices she used, evolved over time. In the next sections, we analyze how repair processes diversify with the child’s age, her cognitive and linguistic development, her capacity to make self-repairs and according to the linguistic level of the NCPs.

**Analyses of the various repair processes**

Table 5 presents a categorization of the processes involved in the treatment of NCPs. From 1;09 to 3;04, indirect repairs were favored as they represented 40% to 67% of all interventions after an NCP. At 3;04, initiations became predominant. The rate of self-repairs increased regularly after 2;09.

We now examine in detail each type of repair process.

The proportion of *direct repairs* varied from one session to the next and oscillated between 25% at 1;09 and 18% at 4;0 with an off-peak period at 2;09 down to 8%.

Direct repairs represent the correction process *par excellence*. They transform the status of the child’s NCP into an ‘incorrect’ production. Interestingly enough, direct repairs were used as early as 1;09 but only when the child’s processing of the repair might have seemed feasible to the mother and when the aim was to facilitate comprehension and improve verbal expression. We found a number of direct repairs in book-reading situations in which mother and child were actively designating referents. The discourse object was obvious thanks to the illustrations and the mother was able to focus on form without hampering communication. Direct repairs were also more frequent when the child repeated a term the adult had just produced. When an utterance included several NCPs, most of the time, only one NCP was directly repaired, one linguistic feature at a time; the other features were sometimes repaired indirectly and incidentally or not at all.

At 4;00, all direct repairs involved either the completion of the informational content or a comprehension problem. One exception concerned the specific item *les chevals* instead of *les chevaux* (the horses), which the mother had tried to correct for several sessions with little success.

![Figure 2. Proportion of NCPs treated (T) or non-treated (NT) by the mother or the child.](image-url)
Indirect repairs following an NCP consist of offering an adult target form in the interaction following the child’s NCP, but this is fully integrated in the dialogue with no specific signaling that the feedback aims at correcting the child’s production. The mother’s actual intention to correct the child is not always easy to evaluate. Input with the target form is thus made salient and can trigger the child’s awareness of the contrast between the two forms. This type of repair predominated in the input. The process favors content over form but the child is presented with the conventional form without any conversational disruption. Indeed, indirect formal repairs often concur with the mother’s agreement on the content of what was said:

Example 1 (2;03)

```
2378 *CHI: est mignonne !
(is cute)
2379 %npho: e mi mɔ̃n
2380 *MOT: elle est mignonne ouais [=! laughs] !
(she is cute, yeah)
```

Table 5. Distribution of the types of processes used in each session.

<table>
<thead>
<tr>
<th></th>
<th>1:09</th>
<th>2:03</th>
<th>2:09</th>
<th>3:04</th>
<th>3:10</th>
<th>4:00</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct repairs</td>
<td>25%</td>
<td>21%</td>
<td>8%</td>
<td>28%</td>
<td>17%</td>
<td>18%</td>
<td>21%</td>
</tr>
<tr>
<td>Indirect repairs</td>
<td>67%</td>
<td>56%</td>
<td>62%</td>
<td>40%</td>
<td>20%</td>
<td>10%</td>
<td>51%</td>
</tr>
<tr>
<td>Repair initiations</td>
<td>7%</td>
<td>14%</td>
<td>31%</td>
<td>26%</td>
<td>47%</td>
<td>48%</td>
<td>21%</td>
</tr>
<tr>
<td>Self-repairs</td>
<td>1%</td>
<td>8%</td>
<td>0%</td>
<td>6%</td>
<td>17%</td>
<td>24%</td>
<td>7%</td>
</tr>
<tr>
<td>Total occurrences</td>
<td>184</td>
<td>98</td>
<td>52</td>
<td>47</td>
<td>30</td>
<td>67</td>
<td>478</td>
</tr>
</tbody>
</table>

We might have expected direct repairs to increase and indirect repairs to decrease over the course of the sessions, in parallel with the child’s language development. The mother might have become more demanding and increased her direct repairs. This has indeed been observed by Morgenstern et al. (2013) when they analyzed the productions of Madeleine’s mother. But we observe individual differences in mothers’ strategies. In Anaé’s data, indirect repairs became proportionally less numerous than direct repairs only at age 4:00.

We thus note that as the child grew up, explicit teaching and learning sometimes took place, as the following example illustrates:

Example 2 (4:00)

```
248  *MOT: oui c’est à toi mais qu’est-ce-que c’est comme playmobil ?
(yes it’s yours but what kind of playmobil figure is this?)
249  %sit: CHI looks at the figures
250  *CHI: c’est [/] c’est le docteur des animaux .
(it’s, it’s the doctor for animals) NCP phono
251  %pho: se se lə dəkətəs də zənimo + sem (register)
```
The mother took advantage of the situation to enrich the child’s vocabulary. The strategy was locally successful since the child repeated the word produced by the mother, vétérinaire (veterinarian). Along the way, the mother had indirectly taken up the phonological problem in doketeur and had repaired the child’s label, which was the aim of the whole sequence. Indirect repairs did not decrease in favor of direct repairs, but in favor of repair initiations, thus giving the child an opportunity to repair her own NCPs.

Repair initiations enabled the mother to signal a problem in the child’s utterance with different strategies summarized here:

- She produced interrogative interjections such as hum ?
- She specified that the term used was not the one expected, by requesting a clarification or a reformulation as in un quoi ? (a what?).
- She clearly indicated that the child’s utterance was not correct using a negative statement, for example by saying ’no’ without providing the expected target.
- She used a priming strategy by providing the first syllable or part of the target word and then expecting the child to finish the word (see example 2).

The number of initiations increased from 7% of all types of repair processes when the child was 1;09 to around 50% when the child was 4;0 (confirmed by a correlation – performed by the lm package of R – (initiations × age): $F(4) = 36.16, p = .003$). These initiations were quite successful. In all sessions, the proportion of initiations with an impact (resulting in self-repairs – or attempts – done by the child) were at least equal to the initiations with no impact. Among the latter, some were followed by direct or indirect repairs that led to the correct production.

Example 3 (3;04)

2096 *MOT: ah et là qu’est+ce+que c’est ?
(ooh and what’s this?)

2097 *CHI: une moustique .
NCP morpho (gender + truth-value)
The child responded to the mother’s initiations as she focused on the child’s NCPs. We could therefore consider sequences such as this example as repairs that are co-constructed in dialogue: thanks to the mother’s initiations, the child took on an active part.

**Self-repairs** increased, but irregularly, with time (from 1% of all repair processes at 1;09 to 24% at 4;0), indicating that the child had internalized the adult’s treatment of her NCPs, identified mismatches and could monitor her productions.

Our detailed analyses of the various processes used by mother and child to repair the child’s non-conventional productions show that Anaé’s mother adjusted her treatment to context and to interactive factors. She favored communication over form most of the time by using indirect repairs. However, when communication was not in jeopardy, and the child was considered capable of integrating direct repairs, she provided explicit formal corrections. At the beginning of our recordings, the child was repeatedly exposed to conventional forms after an NCP and could thus internalize the repair process. Indeed, we found that indirect repairs providing the adult model were favored until 3;04, whereas repair initiations took over at 3;10. The potential relation between the decrease of indirect repairs and the increase of initiations was found to be significant using a MANOVA (indirect × initiation × age), $F(3) = 26.26, p = .012$.

The mother’s repair initiations, including what we call ‘cooperative repair sequences’, led the child to actively repair her own NCPs. If we group initiations and direct repairs, which are processes that *explicitly* signal non-conventional productions to the child and could lead her to self-repair her productions, they were dominant as of 3;04 (53%) and even more so at 3;10 (63%) and 4;0 (66%). The increase in explicit correction is statistically significant, $F(4) = 69.2, p = .001$. This increase is also parallel to the major increase in self-repairs (24% at 4;0) and the decrease in implicit correction, $F(4) = 116.02, p = .0004$ (only 10% indirect repairs at 4;0). Explicit corrections were first made by the mother alone through direct repairs (these increase to 28% at 3;04 then decrease to 18%) and became collaborative through initiations (up to 48% at 4;0).

Anaé’s mother was thus very productive in terms of scaffolding strategies and first regularly offered her child target forms in her own productions during period 1 and 2 (as described in the earlier section), similarly to Madeleine’s mother, studied by Morgenstern et al. (2013). As Anaé grew older, she was able to reformulate her own utterances, first thanks to her mother’s initiations (during period 3), then directly without any local help from her mother (during period 4).
The various processes were used differently according to the linguistic level of the NCP. The next section focuses on those differences. The results can only be considered as possible trends as the numbers of occurrences per linguistic level do not allow us to conduct statistical analyses.

**Treatment of non-conventional productions according to their linguistic level**

As we have shown previously, children’s NCPs at the phonological level decreased steadily. The use of repairs evolved according to the child’s age. Table 6 shows that at 1;09, nearly 40% of the child’s phonological NCPs were followed by indirect repairs (three fourths) and direct repairs (one fourth). The child very rarely took up the mother’s phonological repairs (9%). However, close to 60% of the initiations were at least partially successful, especially during the first sessions. The child took the mother’s initiations into account and tried to improve her productions even if she did not dispose of all the linguistic means to produce complete and correct utterances. Phonological deviations were much less frequent at the end of the recordings (278 occurrences at 1;9 and 7 at 3;10). At 4;0, only 27% of the NCPs were still repaired, 64% of the time by the mother (repairs and initiations), and the remainder by the child.

**Table 6.** Treatment of phonological NCPs according to age.

<table>
<thead>
<tr>
<th></th>
<th>1;09</th>
<th>2;03</th>
<th>2;09</th>
<th>3;04</th>
<th>3;10</th>
<th>4;00</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct repairs</td>
<td>29</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>42</td>
</tr>
<tr>
<td>Indirect repairs</td>
<td>80</td>
<td>38</td>
<td>17</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>143</td>
</tr>
<tr>
<td>Repair initiations</td>
<td>8</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>0</td>
<td>5</td>
<td>26</td>
</tr>
<tr>
<td>Self-repairs</td>
<td>1</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Non-treated</td>
<td>160</td>
<td>112</td>
<td>59</td>
<td>67</td>
<td>4</td>
<td>38</td>
<td>440</td>
</tr>
</tbody>
</table>

*At the syntactic level*, the number of NCPs was quite stable in proportion to the total number of NCPs (26.5%). However, the mother made fewer and fewer direct repairs (Table 7). We observe an increase of successful initiations and self-repairs: the child therefore also took her mother’s interventions into account.

**Table 7.** Treatment of syntactic NCPs according to age.

<table>
<thead>
<tr>
<th></th>
<th>1;09</th>
<th>2;03</th>
<th>2;09</th>
<th>3;04</th>
<th>3;10</th>
<th>4;00</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct repairs</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Indirect repairs</td>
<td>31</td>
<td>13</td>
<td>7</td>
<td>10</td>
<td>1</td>
<td>2</td>
<td>64</td>
</tr>
<tr>
<td>Repair initiations</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Self-repairs</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Non-treated</td>
<td>71</td>
<td>56</td>
<td>38</td>
<td>37</td>
<td>34</td>
<td>60</td>
<td>296</td>
</tr>
</tbody>
</table>

As the child’s language became more proficient, her non-conventional productions at the level of morphology increased both in proportion and in absolute numbers. Her
mother repaired less and less, but more directly (Table 8). At the beginning of the data, at 1;09, 64% of the child’s morphological NCPs (9 out of 14) were repaired and then, only indirectly. In the following sessions, the number of direct repairs increased to two thirds of the mother’s repairs at 3;04. At 4;0 there were as many other-repairs as self-repairs. The number of NCPs increased in parallel with Anaé’s attempts at complex morphology described in the section on the main features of her language development (from 14 at 1;09 to 70 at 4;00).

Table 8. Treatment of morphological NCPs according to age.

<table>
<thead>
<tr>
<th>Age</th>
<th>1;09</th>
<th>2;03</th>
<th>2;09</th>
<th>3;04</th>
<th>3;10</th>
<th>4;00</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct repairs</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect repairs</td>
<td>9</td>
<td>3</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>Repair initiations</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Self-repairs</td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Non-treated</td>
<td>5</td>
<td>4</td>
<td>16</td>
<td>11</td>
<td>31</td>
<td>66</td>
<td>133</td>
</tr>
</tbody>
</table>

The semantic NCPs greatly increased as of 3;04 (2 at 1;09, 11 at 3;04) and particularly during the last two sessions (39 each). Relative to the other NCPs, their proportion greatly increased from session to session, but decreased when the child was 4;0. However, Table 9 shows that, if at 1;09 the two occurrences of semantic NCPs were repaired by the mother (one directly and the other indirectly), in the following session, only 1 out of 4 was repaired (indirectly) and at 4;0, only 8 out of 39 were treated by the mother. The child self-repaired only 5% of her semantic NCPs. As the child’s language became richer, her mother gave her the possibility to explore new semantic domains without trying to hamper her attempts very often.

Table 9. Treatment of semantic NCPs according to age.

<table>
<thead>
<tr>
<th>Age</th>
<th>1;09</th>
<th>2;03</th>
<th>2;09</th>
<th>3;04</th>
<th>3;10</th>
<th>4;00</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct repairs</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Indirect repairs</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Repair initiations</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Self-repairs</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Non-treated</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>8</td>
<td>29</td>
<td>27</td>
<td>69</td>
</tr>
</tbody>
</table>

Pragmatic NCPs developed with time (in an uneven manner) reaching 11.8% of all NCPs at 4 years old (32 out of 272). They were frequently repaired from the beginning of the data (Table 10): 80% at 1;09 but 56% at 4;0, mostly with initiations. Those repairs were quite efficient: though only 18% of the direct and indirect repairs were taken up, the child’s uptakes were very successful and complete. When the child was able to take the repairs into account, she produced the exact adult target. This is even more marked as far as initiations are concerned since 54% of them result in the child’s producing the conventional forms.
The NCPs in the truth-value type represented 1–8%. Table 11 shows that the proportion was quite stable between 2;09 and 4:0. It was the most frequently repaired type of NCP (57 out of 63). The repairs were mostly conducted directly at first, but then they were simply initiated by the mother. The mother’s strategies were quite efficient as 45% of her repairs were taken up by the child. Thirty per cent of initiations led to the child’s ‘correct’ production but a large proportion, 45%, were refused, in many cases, quite firmly. This highlights how Anaé and her mother each had their own representation of the referential relation between objects and what they were called in French. For example, at 4;00, Anaé was absolutely convinced that the fox in the storybook was a wolf because of its enormous teeth, despite the explanation given by her mother and her brother (in the picture, the animal was orange and foxes also have big teeth).

When we take both repair processes and linguistic level into account, we find that the mother’s repairs were in tune with her child’s linguistic development. The child’s self-repairs depended on her own mastery of the linguistic system and were at first mostly phonological, then syntactic and morphological, and focused only later on semantics and pragmatics.

**Communication fluency versus correction of the form**

The NCPs we coded in this study did not often lead to problems with comprehension, coherence or plausibility. NCPs such as ‘faisez attention’ instead of ‘faites attention’ (be careful), ‘y’avait pus que’ instead of ‘y’avait plus que’ (there was only), or ‘les doudous de eux’ instead of ‘leurs doudous’ (their teddy bears) were not repaired at all when the flow of conversation was privileged over correctness. We hypothesized that comprehension difficulty could trigger many interventions from the mother. We thus systematically coded this
type of NCP in session 4;0. We observed that they were indeed much more frequently repaired and in a direct manner. Thus at 4 years old, 22% of the occurrences that could have induced communicative difficulty were repaired (out of which 80% with direct repairs), against only 2.8% for NCPs that did not lead to communicative problems.

More generally, Anaé’s mother repaired her daughter’s NCPs in a very targeted manner: she focused on the deviations that might hamper comprehension. In choosing whether to repair an NCP or to continue the conversation, she privileged the coherence of the productions and their function in the dialogue.

However, the more the child’s linguistic system developed, the more her mother targeted her ‘imperfect’ forms. At the beginning of the data, since the child’s productions were still very far from the adult target, initiations were mostly linked to phonological problems. They were then used to co-construct repairs for semantic, pragmatic or truth-value problems, especially after 2;09. As far as direct other-repairs were concerned, at 2;09, only the NCPs concerning the truth-value were repaired directly, whereas at 3;04, over 58% of the mother’s direct repairs also concerned other linguistic levels.

In the data, we can thus distinguish four (overlapping) maternal strategies: (1) the mother favored the communication flow in general and especially during period 1 and part of period 2 but used indirect (embedded) repairs; (2) the mother focused more on form and explicitly signaled or repaired non-conventional forms only when communication was not at risk and the child was ready to participate in repairs; (3) the mother focused mostly on meaning and her scaffolding was primarily on semantic and pragmatic problems in the child’s productions; (4) as Anaé grew older, mother and child dialogically co-constructed conventional productions (through repair initiations). Interestingly enough, despite the fact that repair initiations and self-repairs overall increased over time, the strategies differed according to the linguistic level of the NCP. The mother tended to use more direct repairs for phonology, morphology and syntax (formal repairs that occurred during periods 1 and 2 but continued for morphology and syntax during periods 3 and 4), and more strategies that could lead the child towards self-repair (initiations) with semantics, pragmatics and the truth-value type (where meaning and function were mostly at play) with an increase during periods 3 and 4.

**Conclusion**

Throughout the data, Anaé’s mother repaired and produced elicitations to make her child reformulate her own productions. Most of the processes used at first were indirect with constant adjustments to the child’s linguistic development and communication intents. By favoring indirect repairs, the mother provided ‘negative evidence’ and proposed the adult target that could be immediately compared to the child’s non-conventional production in context. This process was then paired with initiations, enabling the mother to signal formal or communication problems. These strategies seemed to help the child to become progressively aware of her NCPs. The more complex the child’s language became, the fewer communication problems seemed to arise. Her mother could thus more directly target the NCPs that she treated as true ‘errors’ and which she repaired more explicitly both in terms of form and meaning. During the last period of the data, the mother intervened when the NCPs concerned semantics, pragmatics and
the truth-value of the association between an object and how it is labeled in adult language. The mother thus played an extremely subtle role. She reacted to her child’s productions in line with her cognitive and linguistic development, but always ensured the continuity of the dialogue between the child and herself.

The child followed her mother’s initiations more and more and repaired her own NCPs (first mostly at the phonological level, then at the other levels); this demonstrates true awareness of the discrepancies between her productions and either conventional adult language or her own communicative intent.

To synthesize, in this study, our analyses showed that our hypotheses were correct: (1) the mother mostly intervened to repair (or to prompt the child’s repair) if the error impeded comprehension; (2) she focused on repairing different sub-components of language at different stages of the child’s development; (3) she transitioned from offering her own repairs to later initiating repairs; (4) the child’s self-repairs increased over development and according to sub-components of language.

It would be extremely fruitful to use the results of this type of study on a typical mother with a typical child for parental guidance programs adapted to children with language pathology or delays, or to enrich teachers’ practices to promote better language learning for young children both in native and foreign languages. In French classrooms, teachers tend to use very explicit methods to make repairs, even though indirect repairs and initiations seem to be much more efficient in spontaneous interactions (Lyster & Ranta, 1997) at least with children from 2 to 5 (‘école maternelle’ in France). There might be a lot to learn from mothers’ non-deliberate strategies to scaffold their children’s linguistic development – indirect repairs or collaborative strategies such as initiations. Methods that do not impede communication but promote children’s progressive awareness of the variations and deviations between their own NCPs and the language they are learning could help them become more active and autonomous language learners.

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Notes

1. Part of this corpus is available under the name Paris Corpus on the Childes website (https://childes.talkbank.org/). The whole data are available at https://www.ortolang.fr
2. Study by Yvan Rose; personal communication.
3. All statistical computations were performed using the *lm* and *anova* functions of R system (v. 3.0.2). *lm* is used to fit linear models. It can be used to carry out regression, single stratum analysis of variance and analysis of covariance. So our statistics will correspond to anova, covariance, or correlation, according to the type of variables used.
References


