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The choice of referring expressions in adult-child dialogues: the influence of formal and functional factors

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Abstract

This chapter focuses on the choice of referring expressions in adult-child dialogues, and particularly on the identification of formal and functional conditions promoting the uses of personal and demonstrative pronouns.

The study is based on a video-recorded corpus of 22 parent-child dyads. Children are aged from 21 to 27 months and interact with their interlocutor in various activities. Referring expressions were analysed according to their

syntactic function, to the activity dyads were involved in, to the discourse type and their position in the referential chain.

Our results show a strong interaction between formal and functional factors, both in adults and children's discourse, and confirm that the acquisition of the referential value of pronouns originates in the uptake of discourse sequences within the frame of familiar activities.

Keywords

language acquisition, pronouns, activities, discourse types, adult-child interactions

1. Introduction

In this study, we focus on the choice of referring expressions in adult-child dialogues, and in particular on the uses adults and children make of personal and demonstrative pronouns. In children, the acquisition of reference involves, for children, at least two intertwined paths. On the one hand, this acquisition goes along with the development of the formal aspects of their language: the lexical acquisition, the emergence of morphology and in particular the construction of grammatical paradigms, the emergence of syntax and the building of syntactic functions, and more specifically the subject function (Hickman et al., 2015; Serratrice & Allen, 2015). On the

other hand, the acquisition of reference presupposes grasping the discursive and cognitive conditions of use of these forms (Salazar Orvig, de Weck, Hassan & Rialland, 2021). Our theoretical stance being that the child appropriates these forms within the frame of dialogues with adults, the analysis was based on naturally occurring parent-child interactions during various types of activities, and was conducted both on children and adults' productions. Our primary goal was to understand how these formal (morphology, syntax) and functional (discursive and cognitive) factors promote the choice of demonstrative and personal pronouns. Among these factors, following previous studies, we selected the syntactic position of personal and demonstrative pronouns, the position of the referent in the referential chain, the possible influence of the type of shared activities and that of the type of discourse.

Our general hypothesis was that the production of personal and demonstrative pronouns in young children's discourse depends on the intertwining of these factors rather than on a single one, with a possible hierarchy of importance between them. To assess the relevance of this assumption, we first observed the impact of each of the four factors separately, and then we looked at the interactions that may exist between them.

The following section (Section 2) reviews a number of key studies concerning the acquisition of referring expressions and introduces the different issues raised in this paper. In Section 3, we discuss both the data and the method of

analysis we used in this study. Results will be presented in Section 4 and discussed in the final section (Section 5).

2. The acquisition of referring expressions

The development of referring expressions is a major challenge for the child learning a language. At the interface of multiple areas of language development, this issue raises questions about the acquisition of forms and meanings, but also on the use of these forms, and the way their values are built in discourse, in the course of interaction. For instance, studies on young children's uses of referring expressions adopted a cognitive approach of reference. In line with Ariel's (1990) or Gundel's (Gundel, Hedberg & Zacharski, 1993) approaches¹, these studies focused on the impact of accessibility or givenness on the choice of referring expressions. According to these authors (Ariel, 1990; Gundel et al., 1993), this choice depends on the discourse model, i.e. the speaker's representation of the cognitive accessibility of the referent to the addressee: referents in focus entail weak forms such as zero anaphora or clitic pronouns whereas less accessible referents entail the use of strong forms (lexical forms, strong pronouns). Young children's uses

¹ Even though Ariel's and Gundel's approaches are often assimilated to each other, they correspond to two contrasted perspectives. Ariel focuses on the conditions of the retrieval of the antecedents of a referring expression (Ariel, 1990) whereas Gundel (2010; Gundel et al., 1993) theorises the values associated with the various referring expressions and their implications.

in dialogue clearly follow this trend (Allen, Hughes & Skarabela, 2015; Clancy, 2008; da Silva-Genest, Salazar Orvig, Heurdier & Marcos 2021; Marcos, Salazar Orvig, da Silva-Genest & Heurdier, 2021, among others). However, the cognitive development of toddlers cannot account for competent uses. Whereas these studies aim to explain how referring expressions are acquired and which other factors may explain children's choices, they do not take into account the same factors. Some of them highlight the pragmatic-syntactic interface, some mainly look at the discourse-pragmatic explanations, and others account for the uses of referring expressions through broader situational factors. These various studies are discussed in the two following sections.

2.1 The syntactic and referential factors involved in the use of referring expressions

A quick glance at the field of the development of reference reveals a complex landscape. On the one hand, most studies on experimental settings, mainly dealing with narratives, tend to show that children master reference in discourse and more specifically anaphora, only by the age of 9 (Hickmann & Hendricks, 1999; Hickmann, 2003; Kern & Raffara, 2012). On the other hand, studies on young children's uses of referring expressions in naturally occurring dialogues show their early sensitivity to accessibility and previous mention of a referent in discourse (see *i.a.* Allen *et al.*, 2015; Salazar Orvig,

Marcos, Morgenstern, Hassan, Leber-Marin & Parès, 2010; da Silva-Genest, et al., 2021). Moreover, this early referential skill does not appear as a new function for previously acquired forms. On the contrary, both pre-syntactic² and adult-like weak forms are first used in the context of accessible referents whereas strong forms (lexical forms, stressed pronouns, dislocated and topicalized constructions) are definitely more frequent for less accessible, new referents.

Some issues have been raised about this early competence. One of the most challenging concerns the referential dimension of early uses of personal pronouns. In fact, these uses seem to be the result of several factors: clitic pronouns are mostly used for animate referents, in subject position, which in turn is the preferential position for the topic (Chafe, 1976). Some authors therefore tend to consider that factors such as syntactic function and referent animacy override the referential status of the encoded entity (*i.a.* Hickmann, Schimke and Colonna, 2015). Adult-like uses of referring expressions at these early stages would be the result of the coalescence of these factors rather than demonstrating an early referential competence. A study on French-speaking toddlers (da Silva-Genest *et al.*, 2021) showed that the *syntactic* function (or topic position) of referring expressions was a main factor in the choice of nouns and personal pronouns. Nevertheless, subject function never overrode

² *Pre-syntactic forms*, also called *Filler syllables* or *transitional forms* are pre-nominal or pre-verbal syllables, which are considered in the literature as precursors of grammatical morphemes (*i.a.* determiners, pronouns, auxiliaries) both in pre-nominal and pre-verbal positions (see for instance Peters, 2001; Veneziano, 2003).

the referential factors. Moreover, the coalescence of factors has been mostly shown in studies on narrative (or narrative like) tasks where the status of characters strongly determines both syntactic function and topicality. In these tasks, the development of reference is intertwined with the appropriation of a specific discourse type that entails its own norms of usage of referring expressions.

2.2 Using referring expressions as a situated activity

Divergences in results between studies on experimental settings and on naturally occurring dialogues can probably be attributed to the fact that referring is a communicative act, which is grounded in dialogue and social interactions. According to cognitive approaches to reference, the choice of a referring expression is determined by the way the speaker projects the interlocutor's knowledge and perceptions. However, this conception of reference overlooks the fact that young children actually experience and produce referring expressions in the context of dialogues. Decontextualized monologues (provided they exist) are late achievements. Children's utterances have therefore to be considered under the lenses of their contingent relation to the adult's contributions.

Throughout dialogue, children answer questions, add information and comment on the current focus of attention. In that way, their contributions are indirectly scaffolded by the adults's participation. In addition, adult-child

dialogues are partly organized into “formats” (Bruner, 1975, 1983), characterized by recurrent patterns in which the child experiences the reciprocation of participants’ roles. Through these sequences, in which adults adjust their speech to the child’s cognitive and linguistic level, the referential properties of the linguistic expressions are supported by the adult’s discourse. Dialogues however are not decontextualized events. They are embedded in socio-discursive contexts, such as activities, speech genres and register (Bakhtin, 1986; Biber & Conrad, 2009; Bronckart, 1996; François, 1984; Levinson, 1979). Before going further, it appears necessary to clarify the concepts of “activity” and “speech genre” to which we will refer all along this chapter. According to an interactionist tradition (Vygotsky, 1978; Wertsch, 1991), activities are “structures of cooperation/collaboration that organize the interaction of individuals with their environment” (Bronckart, 2004:100, our translation); they can involve language to varying extents and at different levels. Therefore, activities can be characterized through their goals, the participants’ statuses, the relation between discourse and experience, and their more or less routinized nature, among other features. If activity pertains to the mode of interaction, speech genre applies to the discursive dimension. Stemming from the bakhtinian definition of “relatively stable types of [...] utterances” (Bakhtin, 1979/1986: 60), characterized by three interrelated aspects (thematic content, style, and compositional structure) we consider that speech genres depend in turn on the social conditions of the activity sphere in

which they are produced. Their definition is also akin with Wittgenstein's (1953) notion of language games. However, the use of speech genre is not consistent across authors and theoretical schools. In some cases “speech genre” may apply both to textual productions (e.g. newspaper articles, pedagogical texts, political discourse, novels, poetry, etc.) and to types of discursive activities corresponding to the elementary components of discourse (such as narration, argumentation, explanation etc.) (*cf.* Kerbrat-Orecchioni and Traverso, 2004) whereas this elementary level can also be referred to as types of discourse (Adam, 2011). Activities and discourse types frame the use of language. More specifically, speech or textual genre (the type of text or discourse), register and modality (written vs. oral) determine the preferential uses of referring expressions such as the frequency of pronouns vs. nouns, the choice of pronouns (*i.e.* 1st, 2nd vs. 3rd person) or the nature and density of referential chains (Fox, 1987; Ariel, 2008; and for French, Schnedecker, 2021, 2018; *inter alia*). The influence of these socio-discursive factors on formal – syntactic, lexical – and pragmatic aspects of verbal production have been evidenced in adults and children (Altinkamis, Kern & Sofu, 2014; Gee & Savasir, 1985; Heurdier, 2018; Kern & Chenu, 2010). Previous studies from our research group showed that both activities and types of discourse (genres) impact the choice of referring expressions in young children (Salazar Orvig, Marcos, Heurdier & da Silva, 2018; de Weck, Hassan, Heurdier, Klein & Salagnac, 2021; Vinel, Salazar Orvig, de Weck,

Nashawati & Rahmati, 2021). The first study showed that the impact of these two factors differs according to the type of form: weak, clitic forms were more strongly influenced by speech genres (with personal pronouns more frequent in descriptions and clitic demonstratives in labelling), whereas strong forms were influenced by activities (with strong demonstratives being more frequent in games with toys and nouns in everyday activities). De Weck and co-workers (2021) and Vinel *et al.* (2021) further investigated the weight of activities and speech genres in relation with the position in the referential chain (first mention vs. second mention) in two age groups, toddlers and 5-7 year olds. Both studies confirmed that activities and speech genres interact with the position in the referential chain to account for the frequency of personal pronouns. When considering only activities based on pictorial materials (iconic and shared book-reading) and the use of demonstratives (both clitic and strong demonstrative pronouns) speech genre (labelling) overrode the position in the referential chain. However, these studies do not fully account for the complexity of children's uses of referring expressions. For instance, they did not investigate if the subject function overrides the joint impact of referential (e.g. type of referent, position in the referential chain) and socio-discursive (e.g. activity, speech genre) factors.

On the other hand, studies comparing children and adults' uses (for instance, Marcos *et al.*, 2021) have shown that both present similar patterns for the use of referring expressions. This similarity could account for the children's early

skills, at least partially. However, to the best of our knowledge, the interaction between referential, syntactic and socio-discursive factors has still not been addressed for adults. Thus, we do not have the full picture of the way children experience reference in their early dialogues.

On these bases, the present study aims to answer the general question of the conditions of production of personal and demonstrative pronouns, both in children and adults' discourse. More specifically, we address the following research questions: what part do the syntactic function and the position in the referential chain play on the distribution of these pronouns, and what part is played by the discourse types and the activities? If these factors appear to play a significant role in the use of personal and demonstrative pronouns, how do they interact with each other?

3. Studying the acquisition of pronouns: data and method of analysis

After a brief presentation of our data (see 3.1), we describe our coding method (see 3.2) and the statistical analyses we used (see 3.3).

3.1 A corpus of adult-child interactions

Our study is based on cross-sectional data of 22 adult-child dyads interacting during shared activities. These data were video recorded by an observer³ and transcribed using the software CLAN (MacWhinney, 2000). Children were aged from 21 to 27 months (mean age: 25.27 months; s.d.: 2.32) and their mean length of utterances (MLU) ranged from 1.36 to 2.96.⁴ They interacted most of the time with one of their parents (mother or father) and marginally with the observer or a sibling. All children were monolingual, with the exception of one child occasionally interacting with his mother in Spanish. The average duration of the recordings was 16 minutes and during this period of time, the dyads were mostly involved in only one activity but some of them (8) changed activity during the recording (for instance, playing with a symbolic game after having a snack).

3.2 Coding

All the referring expressions produced by adults and children were coded except for non-referential uses and first and second person pronouns, referring to the interaction's participants. We then focused on two key

³ The data were collected before the establishment of ethics committees. They have therefore not been subject to ethical approval, but the participants' consent was obtained before each recording.

⁴ In line with what had already been pointed out in some of our previous studies (see for instance da Silva-Genest *et al.*, 2021), MLU did not appear to play a significant role in the use of all referring expressions. This is probably due to the fact that both age and MLU gaps are too slight to lead to real differences in children's acquisition steps. Thus, although we first took this MLU factor into account in the statistical models used for this study, it will not be included in the analyses and results presented in this chapter.

pronouns in the development of referring expressions: strong demonstrative pronouns such as “ça” (‘this’ or ‘that’) or “celui-ci” (‘this one’) and clitic personal pronouns as in “on *les* range” (‘we put them away’) or “*elle* est là” (‘she’s there’)⁵. In order to highlight demonstrative and personal pronouns’ specific features, we compared them to nouns.

The coding of the different factors considered as likely to influence the use of referring expressions, *i. e.* syntactic function, position in the referential chain, activity and discourse type, is described in the paragraphs below.

For the syntactic function, two categories were distinguished: subject and non-subject. Among non-subject forms, we included expressions with an object function, adverbial phrases of utterances with a verbal predicate, or utterances without any verb and consisting for instance of single nominal phrases/ The latter are particularly common in children’s first productions.

For the position of the referent in the dialogue, two categories were distinguished: first mention and subsequent mentions (either thematic progression or reactivation of the referent).

The activities were divided into four different categories: everyday activities (snack, conversation, activity without any specific playing material), reading activities, playing activities (construction or symbolic games), and non-narrative activities with iconic material (*i.a.* jigsaw, memory game, lotto).

⁵ In order to better grasp the conditions of choice of pronouns, we did not consider their occurrences in constructions such as dislocations (“ça c’est” ‘that is’), cleft structures (“c’est un animal qui [...]” ‘it’s an animal that [...]’) and frozen phrases (“il y a” ‘there is’).

Coding discourse types is a methodological challenge when dealing with naturally occurring dialogues. If monological productions in pre-determined tasks (when a narrative, an explanation, a description, an argumentation is elicited) may be in fact heterogeneous, including secondary genres (see Labov 1972, François 1984), in non-directed natural dialogues participants may switch genres in the same way they switch topics. This is why we opted for a radical methodological choice (Salazar Orvig et al. 2018; Vinel et al. 2021) and conducted the analysis at the elementary level of utterances and not of macro-sequences. This choice allowed us to reach a satisfactory level of inter-coder agreement.

The discourse types in which the referential expressions appeared were therefore analysed utterance-by-utterance according to a coding grid which was elaborated by our research team. This grid was inspired by studies on discourse types (Adam (1987) for adult language and François (1984) for child discourse). The categories were adapted to the specific features of dialogues involving very young children. For instance, possible “narrative” utterances were divided into two categories according to whether the action was visible to the child (as in a book) or was displaced in time. Or, because it is a prevailing use of language in young children (Dore, 1975; Ninio and Snow, 1996), labelling was distinguished from other descriptive utterances. Seven categories were therefore considered:

- state descriptions that included descriptions of situations and objects, as in “oui elle est dans la maison” (‘yes she is in the house’);
- action or event descriptions in the present, as in “*il cherche sa maman*” (‘he’s looking for his mom’);
- action or event descriptions in the past, as in “elle est partie?” (‘has she gone?’);
- projections, for actions or events to be carried out, as in “Valérie elle est partie mais elle va revenir tout à l’heure” (‘Valérie is gone but she’ll be back later’);
- labelling utterances, as in “c’est quoi?” (‘what is that?’) or “ça c’est les pommes” (‘that’s apples’);
- explanations, justifications and arguments, as in “alors oui l’éléphant il est coupé parce que c’est un dessin chéri” (‘then yes the elephant is cut because it’s a drawing sweetie’);
- and others in which we included metalinguistic utterances, as in “ah ça veut dire une serviette comme ça” (‘ah it means a napkin like this’), evaluations or value judgements as in “il est bon ton jus d’orange ?” (‘do you like your orange juice? is it good?’); and regulative utterances (“on se met pas dos à la caméra”, ‘you don’t stand with your back to the camera’). To make it easier to present, these subcategories were gathered into this single “Others” category even though they were first coded separately.

Ten researchers were in charge of the coding. All the different aspects of this coding were checked by measuring inter-coder agreement⁶, except for the activities, which were already identified at the transcription stage.

3.3 Statistics

The first step was to take each factor separately and look at the distribution of personal and demonstrative pronouns in comparison with the other referring expressions. In other words, we explored how target forms were distributed according to the syntactic function, the position of the referent in the dialogue, the activity and the discourse type.

The second step was to take these factors jointly for each interlocutor. Their effects were assessed using mixed-effect binomial logistic regression fitted using the `glmer` function of `lme4` R-package (Bates, Mächler, Bolker & Walker, 2015). These statistical models allowed us to test the different assumptions made when previously observing the distribution of pronouns for each factor⁷. Finally, to assess the relative weight of these effects and the interactions between them, we used binary partitioning trees drawn with the `ctree` function included in the “party” R package (Hothorn & Zeileis, 2015).

⁶ Inter-coder agreement was based on 10% of each dyad’s utterances and measured for the categories of referring expressions (95.91%; Cohen’s kappa $k=0.95$), the syntactic functions (91.72%; Cohen’s kappa $k=0.88$), the position of the referent in the referential chain (87.24%; Cohen’s kappa $k=0.843$) and the discourse types (83.69%; Cohen’s kappa $k=0.80$).

⁷ For reasons of brevity, the results of these models are not presented in this paper but the reader may find them following this link: <https://sharedocs.humanum.fr/wl/?id=RZDHW8Zufaeg2P332txh6ccioZqJVfby>

4. Results: factors at play in the acquisition of pronouns

4.1 General distribution of referring expressions

First of all, we observed the general distribution of referring expressions. As previously mentioned, we focused on demonstrative and personal pronouns, as opposed to nouns. In order to make the tables easier to read, all the other expressions were merged into one line “All other forms”⁸. The data are distributed as follows (see Table 1).

	Child	Adult
Personal pronouns	9.41% (189)	20.94% (901)
Demonstrative pronouns	10.36% (208)	5.51% (237)
Nouns	34.16% (686)	32.65% (1405)
All other forms	46.07% (925)	40.90% (1760)
Total	100.00% (2008)	100.00% (4303)

Table 1 - General distribution of referring expressions

If we leave aside the “All other forms” category, which gathers various forms of referring expressions, we can see that nouns are clearly prevalent, in both children (34.16%) and adults’ (32.65%) productions. In adults’ data, the next most frequent forms are personal pronouns, which account for the fifth part of the referring expressions (20.91%). They are less frequent in children’s data (only 9.41% of the forms), but this lower proportion may be explained

⁸ Were included in this “All other forms” label the frozen structure “c’est”, dislocations, pre-syntactic forms of pronouns and all other forms of pronouns (*i.a.* relative, indefinite, numeral, adverbial).

in particular by the presence of grammatical proto-morphemes (19.57% out of 46.07% of “All other forms ”), which could be considered as good pronouns candidates.

4.2 The syntactic function

As far as syntactic function is concerned, the results in Table 2 confirm previous findings regarding personal pronouns. Personal pronouns preferentially appear in subject position, both in child (84.13%) and adult’s discourse (61.11%).

	Subject	Non-subject
Child	42.38% (851)	57.62% (1157)
Personal pronouns	84.13% (159)	15.87% (30)
Demonstrative pronouns	17.31% (36)	82.69% (172)
Nouns	7.58% (52)	92.42% (634)
All other forms	65.30% (604)	34.70% (321)
Adult	44.91% (1932)	55.09% (2370)
Personal pronouns	61.11% (550)	38.89% (350)
Demonstrative pronouns	48.95% (116)	51.05% (121)
Nouns	5.90% (83)	94.09% (1322)
All other forms	67.22% (1183)	32.78% (577)

Table 2 - Distribution of referring expressions according to the syntactic position

However, we can note that differences between subject and non-subject positions are less pronounced in adult’s productions, due to - among other

possible explanations - the greater proportion of object pronouns in adults' discourse (see FAT26 in the following example of Cécile⁹).

(1) [Cécile, 1;11]

FAT25: *ben le monsieur il est où?*
'well where is the man?'

CEC24: xxx

FAT26: *tu le vois? il est là.*
'you see him? he's there.'

FAT27: *il est là.*
'he's there.'

CEC25: [le asi syʁ lə fotœj] (*i*)*l est assis sur le fauteuil.*
'he sits on the chair.'

As compared to the distribution observed with personal pronouns in children's discourse, proportions are reversed with demonstrative pronouns. They mainly appear in non-subject position (82.69%). Looking at the distribution in adults' discourse, we observe that they are produced in similar proportions in subject and non-subject positions (48.95% in subject position and 51.05% in non-subject position). It is also worth noting that nouns are almost always produced in non-subject position, whether we look at children (92.42%) or adults' data (94.09%).

⁹ Example captions indicate the name of the child, his/her age (years; months). The first three letters of the child's first name are given in uppercase (*e.g.* LIS for Lisa), MOT stands for mother, FAT for father. The children's utterances are transcribed phonetically (between square brackets []), the interpretation in French is given in italics. For both the adults and the children an approximate English translation is given in the next line. '/' stands for a pause, { } braces indicate an uncertain interpretation and 'xxx' is used to represent unintelligible productions. The interrogative sign ('?') codes a question and '!' codes an exclamative utterance. Indications about gestures and the situation are between angle brackets (<>) and in italics.

4.3 The position of the referent in the referential chain

Personal pronouns are predominantly produced in subsequent mentions of the referent, both in child (93.58%) and adult's discourse (94.98%). These results corroborate those found in previous literature.

	First mention	Subsequent mentions
Child	23.13% (460)	76.87% (1529)
Personal pronouns	6.42% (12)	93.58% (175)
Demonstrative pronouns	39.9% (81)	60.1% (122)
Nouns	26.51% (180)	73.49% (499)
All other forms	20.33% (187)	79.67% (733)
Adult	22.67% (970)	77.33% (3309)
Personal pronouns	5.02% (45)	94.98% (851)
Demonstrative pronouns	32.46% (74)	67.54% (154)
Nouns	34.33% (481)	65.67% (920)
All other forms	21.09% (370)	78.91% (1384)

Table 3 - Distribution of referring expressions according to the position of the referent in the referential chain

Demonstrative pronouns present a different profile. They can appear in subsequent mentions as well as in first mentions and here again, both in child and adult's productions. Example 2 offers a good illustration of the dialogical patterns in which demonstrative pronouns are used, successively as a first mention and as subsequent mentions.

(2) [Clément, 2;3]

MOT1: *puis là c'est une poule.*

- CLE1: ‘and here it’s a hen.’
 [se pu] *c’est pou(le)?*
 ‘it’s hen?’
- MOT2: *ben oui. t(u) avais pas r(e)connu?*
 ‘yes. you did not recognize?’
- CLE2: [se xxx] *c’est xxx?*
 ‘it’s xxx?’
 <takes a jigsaw piece and points it at different places>
- CLE3: [sa] *ça?*
 ‘this?’
 <showing a new piece of the jigsaw>
- MOT4: *ah.*
- CLE4: [sa] *ça?*
 ‘this?’
 <still showing the same piece of the jigsaw>
- MOT5: *ça qu’est-ce que ça peut bien être?*
 ‘this what could it be?’

The child, Clément, and his mother are playing with a jigsaw. In CLE3, the child points at a new piece and produces “ça”. The demonstrative pronoun is thus used to refer to a non-previously mentioned discourse object. Then, the child repeats the demonstrative pronoun in CLE4 to refer to the same jigsaw piece, and the same form is used again in the following utterance of the mother (“ça qu’est-ce que ça peut bien être?”).

4.4 The types of activities

Regarding the types of activity, we can see (see Table 4) that playing seem to be a more prevalent context for the child to produce personal pronouns (49.21% of personal pronouns vs. 34.21% in the average distribution of forms), unlike everyday activities for instance (31.75% vs. 44.42%).

	Everyday	Reading	Playing	Iconic
Child	44.42% (892)	6.18% (124)	34.21% (687)	15.19% (305)
Personal pronouns	31.75% (60)	5.82% (11)	49.21% (93)	13.23% (25)
Dem. pronouns	47.12% (98)	4.33% (9)	32.21% (67)	16.35% (34)
Nouns	50.87% (349)	8.60% (59)	28.86% (198)	11.66% (80)
All other forms	41.62% (385)	4.86% (45)	35.57% (329)	17.95% (166)
Adult	43.64% (1878)	12.41% (534)	30.56% (1315)	13.39% (576)
Personal pronouns	38.29% (345)	14.76% (133)	36.07% (325)	10.88% (98)
Dem. pronouns	32.07% (76)	4.22% (10)	40.93% (97)	22.78% (54)
Nouns	47.47% (667)	15.3% (215)	25.98% (365)	11.25% (54)
All other forms	4.89% (790)	10.00% (176)	30.00% (528)	15.11% (266)

Table 4 - Distribution of referring expressions according to the activity

Example 3 illustrates this use of personal pronouns in playing activities, and in this case, in the context of manipulating small characters.

(3) [Cécile, 1;11]

CEC50: [pøtətʁ bonəm i i vø vātʁe] *peut-être bonhomme i(l) i(l) veut rentrer.*

‘maybe little man he he wants to come in.’

CEC51: [pøti bonəm køkɛ] *petit bonhomme coquin.*

‘mischievous little man.’

CEC52: [se tʁo dyʁ pʁɛ vātʁe] *c’est trop dur pour rentrer.*

‘it’s too difficult to come in.’

MOT40: *c’est trop dur?*

‘it’s too difficult?’

CEC53: [i va syʁ lə tʁaktœʁ] *i(l) va sur le tracteur.*

‘he goes on the tractor.’

CEC54: [ʒaʁiv pa] *j’arrive pas.*

‘I can’t.’

MOT41: *t’arrives pas? alors je vais mettre le bonhomme dedans.*

‘you can’t? then I’ll put the little man inside.’

CEC55: [i døʁ] *i(l) dort.*

‘he sleeps.’

The same configuration is observed in adults' data (36.07% of personal pronouns vs. 30.56% in the average distribution for playing activities and 38.29% vs. 43.64% in everyday activities), apart from the reading activity, which is, as we could assume, a good predictor of the production of personal pronouns in adult's discourse but not in child's discourse.

On the other hand, the distributional patterns of demonstrative pronouns are quite comparable to the average distribution of forms among the different activities, which means that no clear prediction is possible for children's uses of demonstrative pronouns. But in adults' data we observe that demonstrative forms are preferentially produced in playing activities (40.93% of demonstrative pronouns vs. 30.56% in the average distribution) and activities with iconic material (22.78% vs. 13.39%).

4.5 The discourse types

To study the possible influence of discourse types, and as specified in section 3.2 *Coding*, we defined seven types of utterances: state descriptions, action or event descriptions in the present, action or event descriptions in the past, projections, labelling utterances, explanations, justifications and arguments and all the other discourse types (*i.a.*, metalinguistic utterances, utterances with a phatic function) were merged into the "Others" category. The results are presented in Table 5.

	State desc.	Action/ Event desc. (pres.)	Action/ Event desc. (past)	Proj.	Label.	Exp., Just., Arg.	Others
Child	43.96% (866)	8.53% (168)	7.06% (139)	16.65% (328)	12.39% (244)	3.2% (63)	8.22% (162)
Pers. pronouns	43.39% (82)	21.69% (41)	6.35% (12)	13.23% (25)	3.70% (7)	7.41% (14)	4.23% (8)
Dem. pronouns	48.53% (99)	12.75% (26)	0.98% (2)	15.68% (32)	14.71% (30)	0.49% (1)	6.86% (14)
Nouns	47.66% (316)	5.88% (39)	8.3% (55)	22.32% (148)	4.98% (33)	3.32% (22)	7.54% (50)
All other forms	40.37% (369)	6.78% (62)	7.66% (70)	13.46% (123)	19.04% (174)	2.84% (26)	9.85% (90)
Adult	28.03% (1202)	8.00% (343)	8.35% (358)	22.38% (960)	12.17% (522)	9.05% (388)	12.03% (516)
Pers. pronouns	21.91% (197)	15.13% (136)	12.35% (111)	29.48% (265)	1.33% (12)	11.9% (107)	7.9% (71)
Dem. pronouns	25.42% (60)	12.29% (29)	1.27% (3)	20.76% (49)	12.29% (29)	10.17% (24)	17.8% (42)
Nouns	29.51% (412)	6.59% (92)	9.17% (128)	30.52% (426)	2.72% (38)	10.53% (147)	10.96% (153)
All other forms	30.32% (533)	4.89% (86)	6.60% (116)	12.51% (220)	25.20% (443)	6.26% (110)	14.22% (250)

Table 5 - Distribution of referring expressions according to the type of discourse

These figures show that in children's discourse, personal pronouns are preferentially produced in action or event descriptions in the present (21.69% of personal pronouns vs. 8.53% of average proportion). As illustrated in Example 4, in adults' discourse, action or event descriptions in the present are also a preferential context for personal pronouns (15.13% of personal pronouns vs. 8.00% of average proportion), as well as action or event

descriptions in the past (12.35% vs. 8.35%). Contrary to what is observed in children's data, projections seem to be in adults' data more likely to favour the production of personal pronouns (29.48% of personal pronouns vs. 22.38% of average proportion).

(4) [Julien, 2;3]

MOT1: *oh qu'est-ce qu'i(l) fait là Tchoupi?*

'oh what is Tchoupi doing there?'

JUL1: [kase] *cassé.*

'broken.'

MOT2: *oui.*

'yes.'

MOT3: *il a cassé son pantalon.*

'he broke his trousers.'

MOT4: *i(l) pleure.*

'he's crying.'

JUL2: [il e kase] *il est cassé.*

'he's broken.'

MOT5: *i(l) s'est fait mal.*

'he hurt himself.'

Demonstrative pronouns tend to be more easily produced by children in three different contexts: action or event descriptions in the present (12.75% vs. 8.53% of average proportion), such as personal pronouns, but also state descriptions (48.53% vs. 43.96%) and, to a lesser extent, labelling utterances (14.71% vs. 12.39%). A slight preference is also observed for action and event descriptions in the present in adults' discourse (12.29% vs. 8.00% of average proportion).

4.6 Weighting each factor and interactions

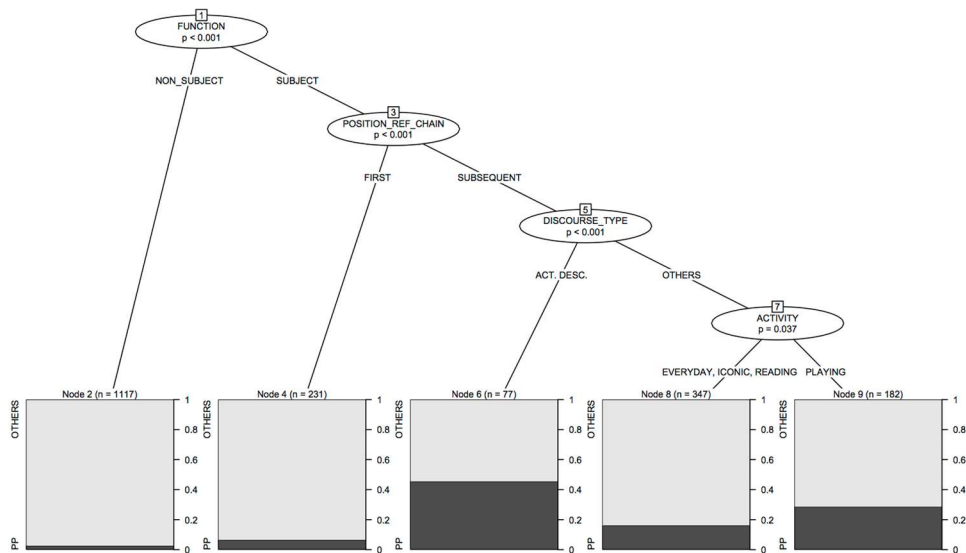
In this section, four partition trees will be presented: the two first ones show the uses of personal pronouns in children's discourse and then in adults' discourse, and the two subsequent ones correspond to the uses of demonstrative pronouns, firstly in children's discourse and then in adults' discourse¹⁰. Only the statistically significant factors appear in the trees, and the more a factor is likely to explain the production of a personal or demonstrative pronoun, the higher it appears in the tree. The lines connecting the factors represent the way they interact with each other, and the different bar charts show the proportions in which personal or demonstrative pronouns are used for each combination of factors.

4.6.1 Personal pronouns

Partition tree 1 shows that in children's discourse, the syntactic function (subject vs. non-subject) appears to be the main factor for personal pronouns. They are almost exclusively produced in subject position. The use of personal pronouns was then impacted by the position in the referential chain (subsequent mention). At a third level, discourse type, and more precisely, action description accounted for a significant proportion of personal

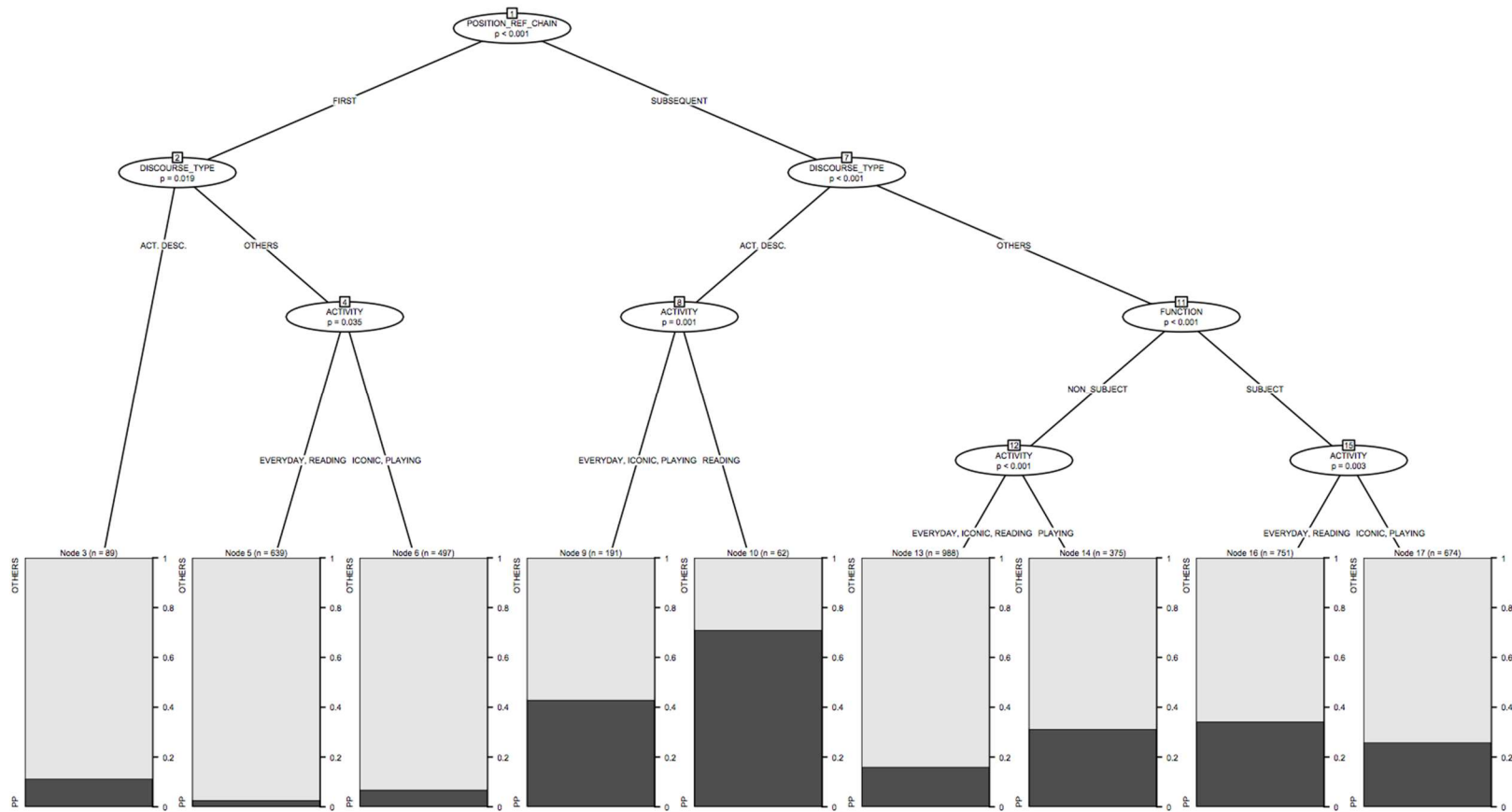
¹⁰ For a more comfortable reading, the reader can find and download these partition trees at the following address
<https://sharedocs.huma-num.fr/wl/?id=2acRrlKrbF2sOy7rivKSz9jZle6jSaRn>

pronouns. Finally, activity appears to be a relevant factor for personal pronouns for the other discourse types.



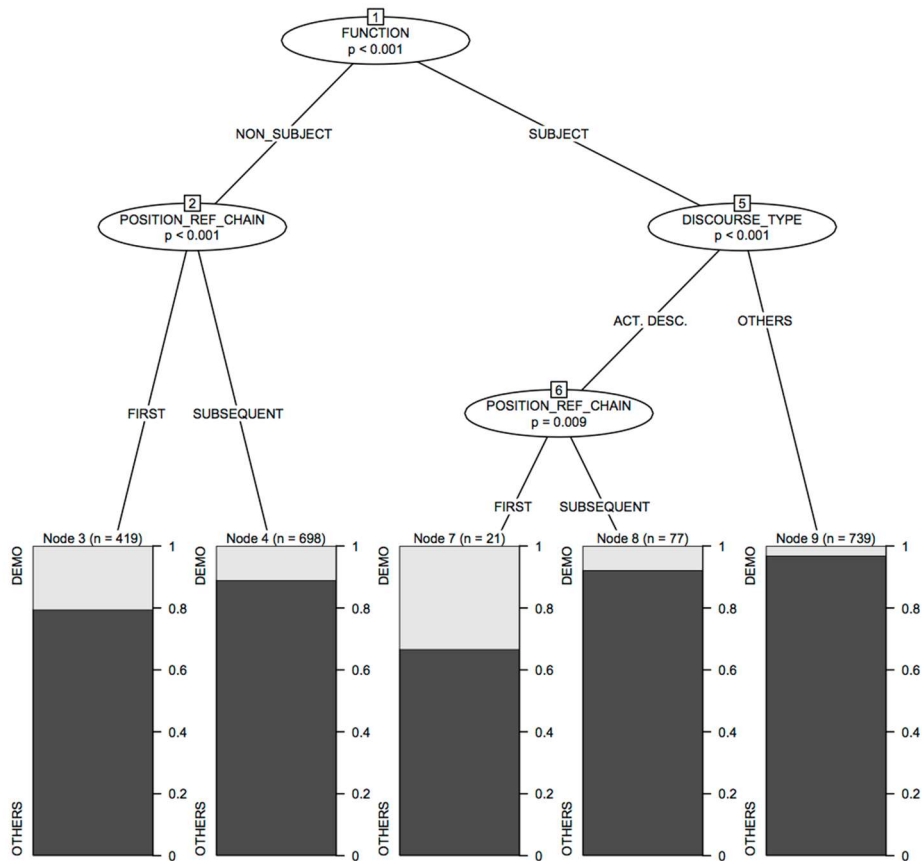
Partition tree 1 - Interaction of factors for personal pronouns in children's discourse

In adults' discourse, the choice of personal pronouns is mainly determined by pragmatic and socio-discursive factors (see Partition tree 2). Most pronouns appear in the context of subsequent mention, action description and joint reading activities. When the discourse type is not a description of action, the syntactic function plays a role depending on activities. When personal pronouns are in a non-subject position, they tend to appear more frequently in playing activities, whereas when they are produced in a subject position, they tend to be slightly more frequent in everyday and joint reading activities.



Partition tree 2 - Interaction of factors for personal pronouns in adults' discourse

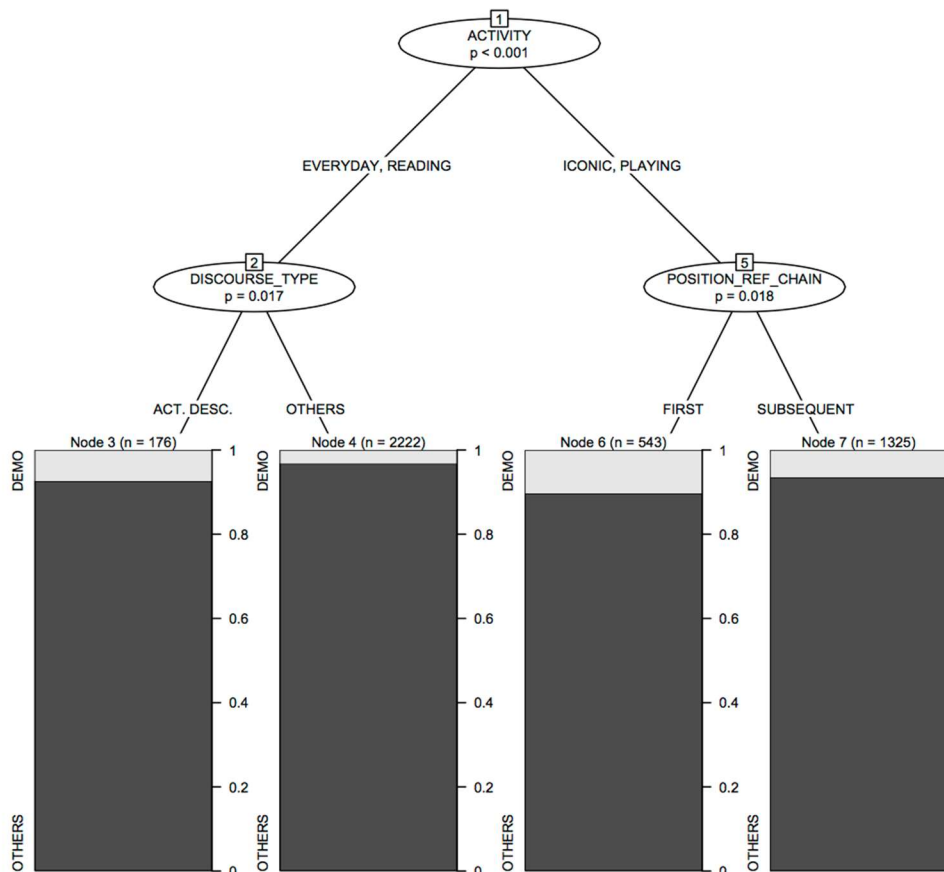
4.5.2 Demonstrative pronouns



Partition tree 3 - Interaction of factors for demonstrative pronouns in children's discourse

As for personal pronouns, the syntactic function is the main factor for demonstrative pronouns, but contrary to what we saw for personal pronouns, demonstrative pronouns are mostly used in non-subject functions, more specifically as the only term in verbless utterances. For these non-subject demonstrative pronouns, syntactic function and position in the referential chain are the only relevant factors, and they more frequently appear in the context of subsequent mention rather than first mention. Subject

demonstrative pronouns were for their part mainly impacted by discourse type, and contrary to personal pronouns, they tend to be much more prevalent in other discourse types than in action description. However, on a third level, action description accounts for a significant proportion of demonstrative subjects when interacting with the position in the referential chain (subsequent mention).



Partition tree 4 - Interaction of factors for demonstrative pronouns in adults' discourse

In adults' discourse, the choice of demonstrative pronouns is determined by the activities. In the context of activities based on iconic material and of playing activities, demonstrative pronouns are more frequently observed for first mentions. In the other activities (joint reading and everyday activities), demonstrative pronouns appear to be slightly more frequent for action descriptions.

5. Discussion and conclusion

This study aimed to show that the acquisition of reference has to be considered in the context of the dialogue in which they are constructed, in relation to the adult's utterances and in the context of the activities currently carried on. Previous research clearly showed that young children tend to use personal and demonstrative pronouns in accordance with the cognitive status of their referents; consequently, various hypotheses have been brought out to account for this early performance. The issue at stake was to know whether children aged 2 do possess the cognitive skills necessary to take into account the interlocutor's knowledge and perception or whether early uses can be explained by the coalescence of syntactic and semantic factors (*i.e.* subject function, animacy) (Hickmann *et al.*, 2015; *inter alia*). Our theoretical stance allows us to go beyond these debates and to assess the joint impact of formal

(syntax) and functional (the position in the referential chain, activity and type of discourse) factors for both the children and their adult interlocutors.

Results confirm that a one-factor explanation would fail to account for the construction of reference in dialogue, and all the more so when we take into account the communicative experience through which children build their pragmatic skills. The results show that, for both adults and children, the use of personal and demonstrative pronouns is determined by the joint influence of various factors. However formal and functional factors are not at play in the same ways and with the same weight for the two types of referring expressions and for adults and children.

Taken together, these results are strong evidence for a multidimensional conception of the choice of referring expressions. For both adults and children, the position of the referent in the dialogue, does not account alone for the use of personal or demonstrative pronouns. Our results show various patterns where activities, discourse types and syntactic function are strongly linked to the preference for personal or demonstrative pronouns. More precisely, we observe that the discourse type categorized as action description is strongly associated with subsequent mentions in the referential chain. This shared preference seems to be the basis for early skills. In fact, at the level of the utterance - which is our coding unit - action description is well-suited to elicit subsequent mentions: once a referent has been introduced, the speaker may add new predications, which in some contexts (such as joint reading,

story telling) are actions. In these contexts, children grasp good exemplars of the use of personal pronouns. On the other hand, demonstrative pronouns are more directly associated with the first mention position, even though this prevalence varies according to activities and discourse types. First mention is usually attuned to the non-subject (therefore non-topic) position. However, results for children show that when the demonstrative is in subject position it will mostly correspond to a first mention.

In the light of these elements, we can suggest some ways to understand how children acquire early referential skills, in line with Bruner's (1975, 1983) and Nelson's (2007) approaches. Children experience the use of personal and demonstrative pronouns in recurrent discursive patterns, during some of their preferred activities. In these dialogical exchanges, their utterances either repeat, or contingently connect to the adult's discourse. By doing so, their first uses of pronouns might not be cognitively adjusted to the referential status of the entity at stake but they experience the use of pronouns in the adequate position by the mere reversal of roles. As Bruner suggests for other formats (and Tomasello (1999, 2003) for the acquisition of syntax), increased and diversified experiences of these uses allow children to grow from local acquisitions to generalization.

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