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On the acquisition of accusative and dative clitic pronouns in French-speaking children

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Abstract

Based on the findings from Cardinaletti et al. (2021), this thesis analyses the production of 3rd person singular accusative and dative clitic pronouns in French-speaking children attending a primary school in Geneva. The test used in Cardinaletti et al. was translated into French and used to observe any differences in the production of the two types of clitic pronouns in the two languages.

Previous research on French clitics has mainly focused on direct object clitic pronouns, leading to some hypotheses as to why the rates of target productions are lower than those of subject pronouns (e.g., Tuller et al., 2011), and why they are produced less consistently in French compared to other Romance languages (Varlokosta, 2015). For the specific group of children whose data are reported in this thesis, the production of target sentences is rather low overall, possibly due to the syntactic characteristics of 3rd person clitic pronouns, which require to keep in mind the contextual antecedent of the pronoun.

Our results show that the production of both accusative and dative 3rd person pronouns has not yet reached full competence at the age of 8 years, as expected by Delage et al. (2016), due to marking of phi-features in clitics, retrieval of a clitic form agreeing with the referent in the context, and optionality of clitics in spoken French. According to the data analysed from this test, however, French dative clitic pronouns appear to be much more complex than accusative clitics – despite the fact that dative clitics only encode Case, Person and Number phi-features, while accusative clitics are marked for Case, Person, Number and Gender.

The first chapter of this thesis presents French clitic pronouns and their syntactic properties, along with the main findings from a selection of previous studies on the matter. The second chapter deals with the test, discussing the materials, the participants and the coding for the responses found in the two tasks that were used in the experiment. The third chapter is

dedicated to the results and their statistical analysis, highlighting which factors seem to affect accuracy in the production of direct and indirect object clitic pronouns. The fourth chapter discusses the results from Chapter 3 in comparison to the pre-existing studies presented in section 1.2; the fifth chapter focuses on comparing the results to the data from the corresponding test on Italian clitics by Cardinaletti et al. (2021). Chapter 6 contains the concluding remarks, including study limitations and suggestions for future research on the topic.

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Chapter 1. Introduction on French pronouns

Pronouns in Romance languages and their properties have been investigated in many studies, regarding both children's passive competence (comprehension) and their active competence (production) during the language acquisition process. Researchers have observed that pronouns follow precise rules and restrictions based on their grammatical role and position in a sentence, later leading to a division in *strong*, *weak* and *clitic* pronouns (Cardinaletti & Starke, 1999). All pronouns have distinct forms based on the φ-features of Case, Gender, Number, and Person. All three classes of pronouns can be furtherly divided into subject, direct object, indirect object, and reflexive pronouns depending on their function. French possesses both strong and weak/clitic pronouns, as summarised in the following table. The φ-feature of Gender is only marked on 3rd person pronouns (Kayne, 2000).

Person/ number	Strong pronouns				Weak and clitic pronouns			
	Subject	Direct obj.	Indirect obj.	Reflexives	Subj. cl.	Dir. obj. cl.	Ind. obj. cl.	Refl.
1st p.sg.	moi	moi	à moi	moi même	je	me	me	me
2nd p.sg.	toi	toi	à toi	toi même	tu	te	te	te
3rd p.sg.	lui/elle	lui/elle	à lui/à elle	soi même	il/elle	le/la	lui	se
1st p.pl.	nous	nous	à nous	nous même	nous	nous	nous	nous
2nd p.pl.	vous	vous	à vous	vous même	vous	vous	vous	vous
3rd p.pl.	eux/elles	eux/elles	à eux/à elles	eux/elles même	ils/elles	les	leur	se

Table 1: French pronouns

1st and 2nd person pronouns only realise the φ-feature for Person. They are discourse-dependent and always refer to an animate, [+human] antecedent, as they have deictic properties and replace the speaker and the hearer of a sentence, respectively, which project their spatial and temporal coordinates in the left-periphery of the clause (among others: Giorgi, 2010; 2015). On the other hand, 3rd person pronouns encode Person, Number, Gender, and Case. 3rd person clitics can

refer to both animate and inanimate entities that have been previously introduced in the superordinate clause or the previous context of the sentence and have an anaphoric use.

When they are clitic, reflexive pronouns have the same syntactic constraints as the other clitics, but their antecedent is the grammatical subject of the sentence. Similarly to 1st and 2nd person pronouns, they only encode Person and play a different role in the sentence, as they do not constitute a verbal argument, but express a valency reduction of reflexive verbs that require reflexive pronouns.

The different identification of the antecedent leads to an asymmetry in the correct production of these pronouns, with a less proficient use of 3rd person object clitics during language acquisition (Varlokosta et al., 2015) and up to 8 years of age (Delage et al., 2016).

Clitic pronouns are unstressed monosyllabic words that follow a set of syntactic rules, as first presented by Kayne (1975). They never occur in isolation (1.a) or in coordination with other elements (1.b), they cannot undergo adverbial modification (1.c) or be contrastively focused (1.d), and they must syntactically move to a projection higher than the one in which they originally merge (1.e). On the other hand, the syntactic projections of strong pronouns are the same as their corresponding full noun phrases (NPs) or determiner phrases (DPs), and they can occupy the same positions in a sentence. They can appear alone (2.a), bear stress (2.b), remain in their original merging position (2.c) and be coordinated (2.d).

(1.a) -Qu'est-ce que tu as mangé?   -***La**.
       -'What did you eat?'   -*It.3FM.SG

(1.b) *Je mange **le**   et **la**.   /   *Je **le**   mange et   la poire.
       *I   eat   it.3MS.SG and it.3FM.SG /   *I   it.3MS.SG eat   and the pear

(1.c) *Il vraiment **le**   mange.
       *He really   it.3MS.SG eat.3SG

(1.d)   ***LE**   j'ai   mangé [, pas la poire].

       *IT.3MS.SG I have eaten [,   not the pear]

(1.e)   *Je mange **la**.   >   Je **la**   mange.[1]

       *I   eat   it.3FM.SG   >   I   it.3FM.SG   eat

(2.a)   - Qui as-tu vu?   - Marie. / **Elle**.

       - 'Who did you see?'   - 'Marie.' / 'Her.'

(2.b)   **MOI**, j'ai   mangé la poire.

       ME,   I have eaten the pear

(2.c)   Elle voulait donner une poire **à lui**.

       She wanted to give a   pear to him

(2.d)   **Elles   et celles**   d'à côté   sont grandes.

       They.FM and those.FM next door are   tall

An extensive amount of research on direct object clitics, concerning both their comprehension and production, exists for many languages (e.g., for Spanish: Castilla & Pérez-Leroux, 2010; for Romanian: Avram et al., 2015; for Catalan: Gavarró & Fortón, 2014). Their acquisition seems to lag compared to that of other pronouns (among others, Clark, 1985; Hamann et al., 1996; Jakubowicz et al., 1997). This has been observed in typically developing monolingual children, children with specific language impairments (or SLI), and bilingual or plurilingual children (e.g., White, 1996; Hamann et al., 2003; Grüter, 2005; Hamann & Belletti, 2006; Schmitz & Müller, 2008).

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[1] Object movement is furtherly presented in the following section, more specifically in examples (11) and (13.b).

1.1 The syntax of object clitic pronouns

Clitic pronouns in Romance languages appear in a pre- or post-verbal position based on verb finiteness. This is well displayed in Italian: they precede finite VPs (3.a) and follow non-finite verbs and imperatives (3.b).

(3.a)　[Io] **la** vedo　/　　**la** vedrò　　　　/　　**l'** ho vista

　　　　[I] her see　/　　her see.FUT　　　/　　her have seen

　　　　'I see her'　/　　'I will see her'　　/　　'I've seen her'

(3.b)　veder**la**　　/　　vedendo**la**　/　　vista**la**　　/　　vedi**la**

　　　　see.INF.her　/　　seeing.her　/　　seen.her　　/　　see.IMP.her

However, French clitics seem to behave differently, as they precede both finite and infinitive verbs (4.a) but follow imperatives (4.b).

(4.a)　je **la** mange　　/　　*manger-**la**　　　>　　**la**　　　manger

　　　　I it.3FM.SG eat　/　　*eat.INF-it.3FM.SG　>　　it.3FM.SG eat.INF

(4.b)　mange-**la**!

　　　　eat.IMP-it.3FM.SG

The syntactic representation of clitic pronouns has been investigated for many years, through different approaches and employing different structures. According to the so-called 'Movement Approach' (Kayne, 1975, 1991; Belletti, 1999), clitic pronouns originate as a determiner head (DP) inside the verbal phrase (VP) host before raising to a higher head. Belletti (1999) suggested that the D° head of clitics derives from a full DP that is subsequently truncated, leaving only the φ-features intact and expressed through the clitic itself.

　　　Cardinaletti & Starke (1999) proposed the first distinction between the three different types of pronouns based on their syntactic structure, classifying them as strong, weak and clitic pronouns. Déchaine & Wiltschko (2002) furthered this claim by proposing that not all pronouns

originate from a DP head, leading to the representation of three progressively truncated structures: pro-DP (5.a), pro-φP (5.b) and pro-NP (5.c). More specifically, they hypothesised that French clitics project a pro-φP (5.b) based on their argumental and predicative uses (replacing the grammatical object and a nominal predicate, respectively).

(5.a)
```
        DP
       /  \
      D    \
            φP
           /  \
          φ    NP
               |
               N
```

(5.b)
```
      φP
     /  \
    φ    NP
          |
          N
```

(5.c)
```
    NP
    |
    N
```
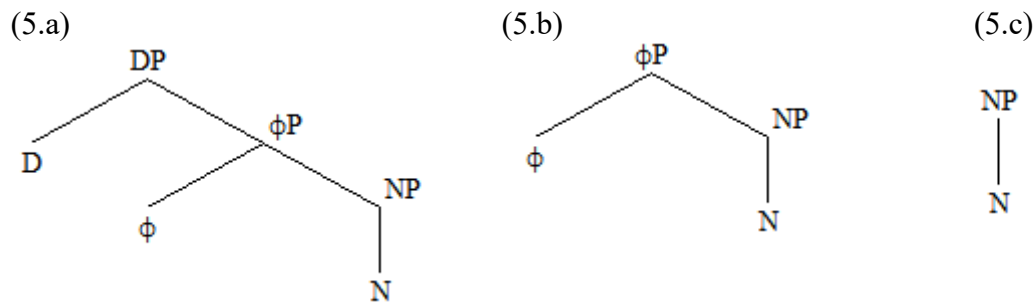
Déchaine & Wiltschko (2002) argued that the pro-φP structure for 3rd person clitics in French freely allows for Gender inflection, necessary when the pronoun is used as an argument, but can lack such marking in predicative position. DP pronominals, instead, can only be used in argumental contexts. They observed that this interpretation is compatible with the morphological homophony between French clitics and articles: definite articles in French – and in other Romance languages – can have a determiner (6.a) and a generic/construal use (6.b), and a φP structure would account for this additional interpretation, as the absence of an external DP layer allows for a generic interpretation (7).

(6)   *Jean aime **le** vin.*
        Jean likes the wine
a.   = 'Jean likes the wine' (i.e., a specific wine contextually implied)
b.   = 'Jean likes wine' (as a type of drink)

(7.a)   [$_D$ Ø [$_\varphi$ le [$_{NP}$ vin]]]   = *the* wine
(7.b)   [$_\varphi$ le [$_{NP}$ vin]] = wine (generic)

Déchaine & Wiltshcko supported this claim with the fact that in other languages (e.g., English) that do not account for a generic/construal interpretation, articles and pronouns have a DP structure and have an inherently definite-only interpretation (a sentence like 6.a with the meaning

of 6.b would be ungrammatical in English). The interpretation of clitics – and their corresponding determiners – as φP led Déchaine & Wiltschko to an additional division of syntactic representation of French pro-φP: strong pronouns project a φP-head with an internal NP constituent (8.a), weak pronouns project a phrasal φP (8.b) and clitics an even smaller φ (8.c).

(8.a) (8.b) (8.c)

φP φP φ

φ NP φ

N
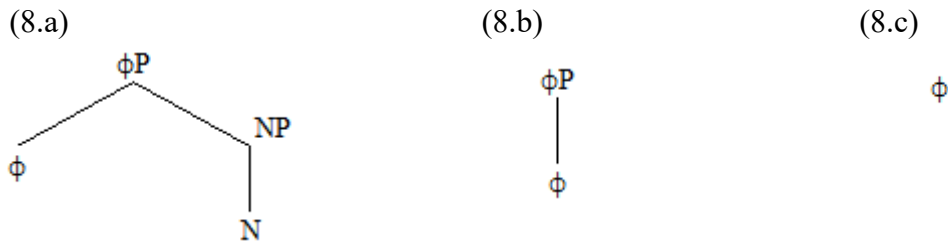
On a broader syntactic level, both the subject and direct object of a sentence originate as internal arguments of the VP and move to other positions. In the case of subject pronouns, since they function as the grammatical subject of the sentence, they move from the SpecVP projection in which they originate to SpecIP (inflection phrase) (9).

(9)

IP

Subject I'

I VP

Subject V'

V

To better inspect this movement, the IP layer can be expanded into its components; among others, Agreement (AgrP), Tense (TP), As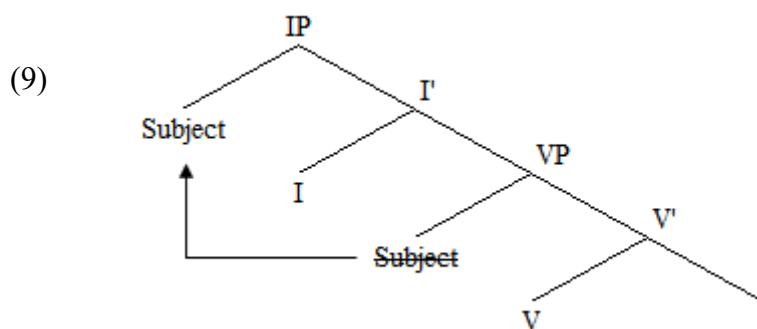pect (AspP). The subject in SpecVP first raises to SpecTP, i.e., the head that values the finiteness of the verb and houses the auxiliary or the inflectional morphemes depending on the Person and Number features of the subject. Wexler (1999) suggested adding a second raising movement of the subject from SpecTP to SpecAgrP, following the 'Checking Constraint'. This constraint states that both AgrP and TP have a D-feature that must be checked and eliminated against the features of the subject DP, which is what happens when the subject raises through the specifiers of both heads (10).

(10)
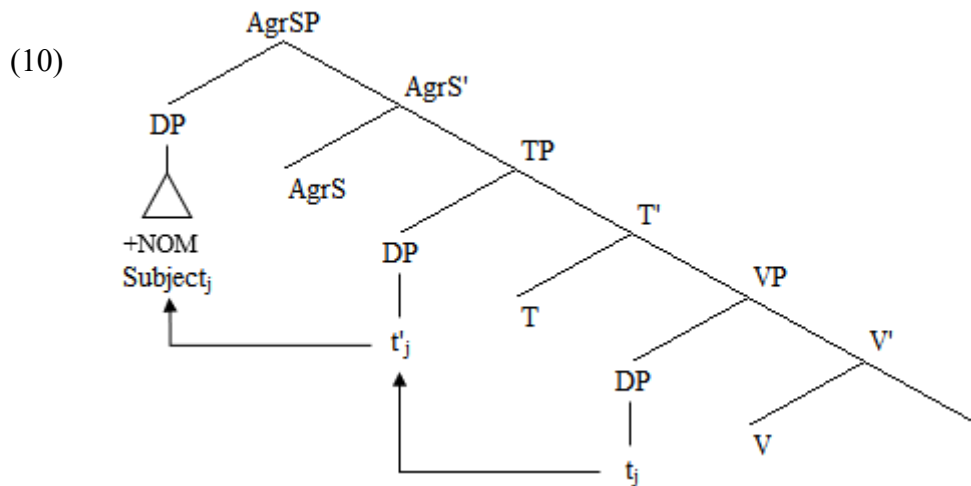
Among the φ-features of clitics, as proposed by Chomsky (1995), there is the Case feature, which is checked in an AgrP head. Belletti (1999) suggests that there are actually two distinct AgrP heads that check for different Case features, with AgrSP for Nominative marking (i.e., subject), and AgrOP that marks for Accusative (i.e., direct object) (11).

(11)
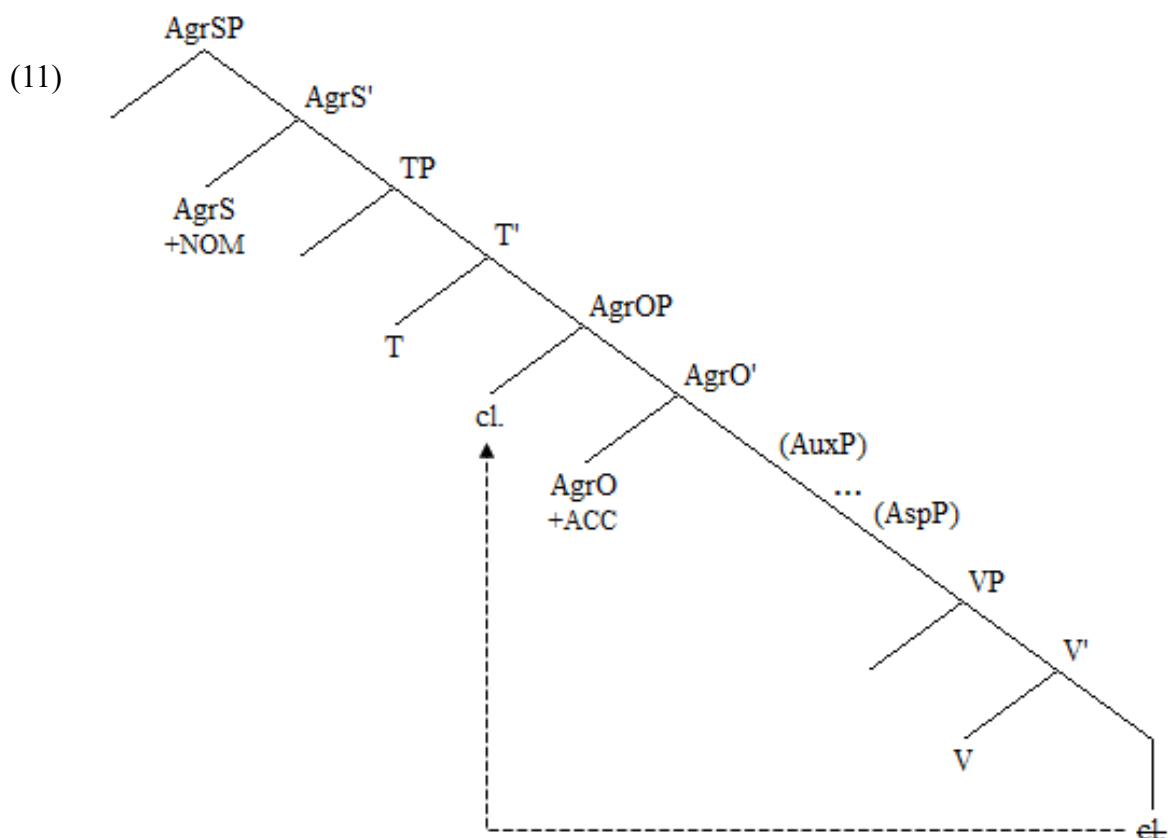
This means that object clitics originate in the complement position inside the VP and then raise to SpecAgrOP as a special pre-verbal position unavailable to the corresponding full DPs and strong pronouns. Zesiger et al. (2010) propose that the higher complexity of object clitics may be linked to the crossing of the raising movements of the subject and object arguments of the sentence (12).

(12)

AgrSP
Subj.
  AgrS'
    AgrS +NOM
    Subj.
    TP
      T'
        T
        AgrOP
          cl.
          AgrO'
            AgrO +ACC
            (AuxP)
            … (AspP)
            VP
              Subject
              V'
                V
                cl.
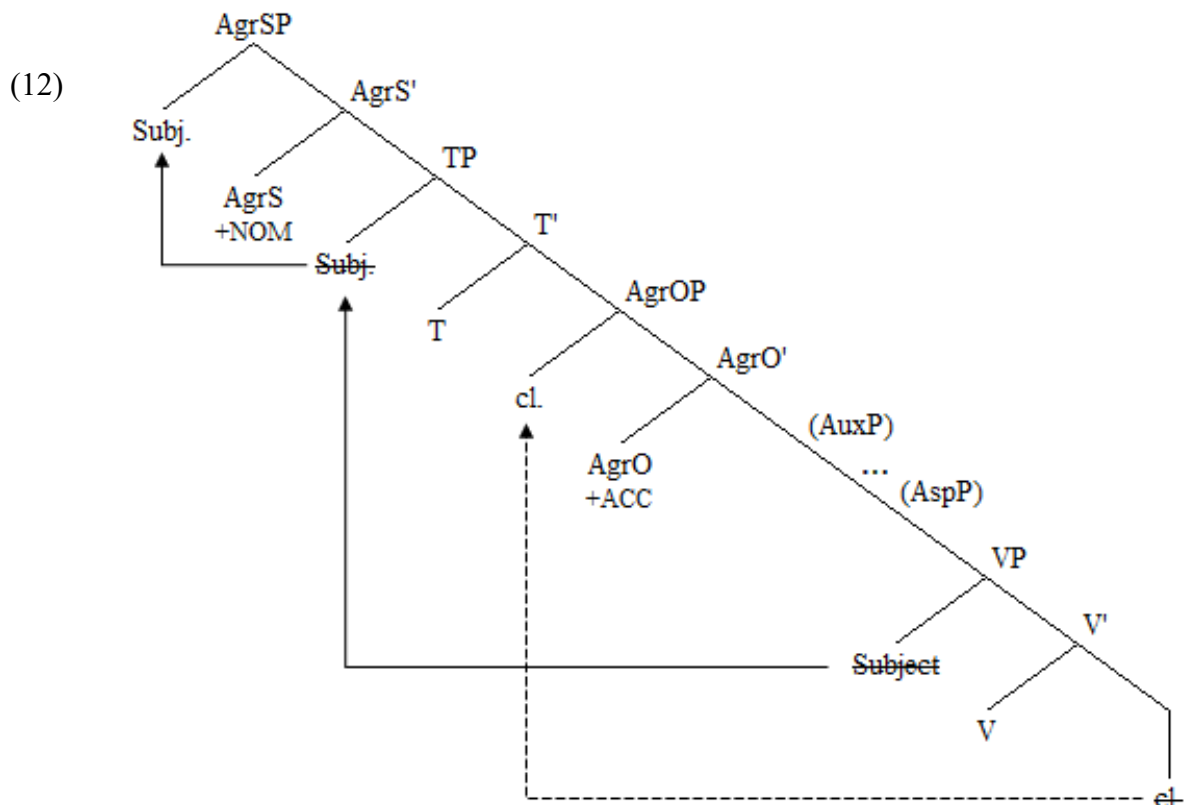
This is even more apparent with a linear representation of the sentence (13).

(13.a) Subject raising: *Jean_j voit* [VP t_j V *Marie*]

                               Jean sees Marie

(13.b) Object cl. raising: *Jean_j la_k voit* [VP t_j V t_k]

                               Jean her sees

                               'Jean sees her'.

1.2. The acquisition of clitic pronouns in French

The acquisition of clitics differs among Romance languages. Varlokosta et al. (2015) compiled an overview of different studies on the acquisition of object clitics in children of 3, 4, 5 and 6 years of age in various languages. From these studies, all comprising an elicited production task, Varlokosta et al. observed that clitic production in French[2] varies sensibly among studies in every age group considered. Even in older children (5- and 6-year-olds), the rate of production of clitics – including gender errors – would vary between 53% (Castilla et al., 2008) and 94% (Chillier-Zesiger et al., 2006). For reference, the percentages of clitic production in Spanish and Italian for 3- and 4-year-old children from previous research would be quite variable (Italian: from 62% to 89% in Schaeffer, 2000; Spanish: from 33% in Castilla & Pérez-Leroux, 2010, to 100% in Wexler et al., 2004). Older children instead produce clitics with higher percentages, though Varlokosta et al. (2015) reported only data on one experiment per language (91% in Italian, Schaeffer, 2000; 73% in Spanish, Castilla & Pérez-Leroux, 2010). The data on Italian collected in Cardinaletti et al. (2021) – furtherly presented in Chapter 5 – are consistent with these high percentages (86.7%-87.6% for the group of children aged 5;9-6;11). Children speaking Catalan instead showed consistently high clitic production much earlier, at 3;06-5;01 years of age (70%-96% in Wexler et al., 2004).[3]

Varlokosta et al. (2015) subsequently tested various groups of 5-year-old children (all between 5;0 and 5;11 years of age) speaking 16 different languages using an elicited production task for object clitics. Once again, the results for Catalan, Italian and Spanish were more consistent and showed higher percentages of clitics than those for French. Table 2 reports the

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[2] The studies considered for French were Chillier-Zesiger et al., 2006; Grüter, 2005; Jakubowicz et al., 1998; Jakubowicz & Nash, 2003; Pérez-Leroux et al., 2008. The data from Grüter (2005) and Pèrez-Leroux et al. (2008) was collected on Canadian French.
[3] Data from Romanian and Portuguese were excluded from this comparison, as Romanian has a different syntactic structure from the other Romance languages – partly due to its belonging to the Balkan Sprachbund, and Portuguese is an object-pro-drop language, meaning omissions of object clitics were significantly higher in Portuguese than in any other language.

number of children examined per task, the mean percentage, range and standard deviation of responses containing a clitic and the mean percentages for other responses in the four languages.

	Participants	Mean % clitics	Range	SD	Full DPs	Omission	Other
Catalan	20	98.8%	92-100%	3	0.4%	0%	0.8%
Italian	20	92.9%	67-100%	10	2.5%	2.5%	1.3%
Spanish	23	94.2%	75-100%	7	1.8%	2.2%	0.7%
French	**25**	**90.0%**	**33-100%**	**19**	**4.7%**	**2.3%**	**3.0%**

Table 2: Data on Romance languages from Varlokosta et al. (2015)

Aside from the much wider range of accuracy and the lower overall mean percentage of clitics, French had the third highest standard deviation of all 16 languages (following only Portuguese and Polish). Additionally, French children had a much higher mean percentage of full DPs produced instead of the target clitic. As will be discussed in Chapter 3, the results from the study presented in this thesis confirm full DPs as the main alternative strategy for French children in the ACC task.

Other previous research on French also only focused on 3ACC[4] clitics. Among others, Zesiger et al. (2010), Tuller et al. (2011) and Delage et al. (2016) analysed the production of clitic pronouns; these studies were selected as they employed testing and coding processes similar to those of the experiment presented in this thesis. Table 3 reports the mean percentage results for the main responses of the tests (i.e., target sentences with clitics, full DPs, and clitic omissions).

Zesiger et al. (2010) tested 99 participants ranging between 3;5 years old and 6;5 years old divided into five groups. The children were presented 48 photographs paired with lead-in questions that would elicit the production of subject, object, and reflexive clitics. Half of the

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[4] 3rd person accusative and dative clitics will respectively be referred to as 3ACC and 3DAT in the following sections.

photographs focused on masculine pronouns, the other half on feminine ones; these 24 items included sets of 6 pictures that each focused on a different combination of Gender, Number and [+Reflexive] marking for all possible types of clitics.

Tuller et al. (2011) tested 24 typically-developing children aged 6;1-6;11 and compared their results to a group of 12 typically-developing 11-year-olds (11;1-11;9), and 71 adolescents (11;3-20;5) with either SLI, mild-to-moderate hearing loss or Rolandic Epilepsy. The participants were presented with a series of 32 pictures and corresponding questions that elicited the use of 1st and 3rd person subject, object and reflexive clitics marked for different Gender and Number.

Delage et al. (2016) divided 41 monolingual French children in two groups aged 4;7-6;4 and 6;5-8;5. They tested the two groups with four tasks that investigated the higher complexity of 3ACC compared to 1st and 2nd person ACC clitics by observing their morphological marking for Gender and discourse independency with elicited production tasks, and optionality in some contexts of spoken French in a judgement task. Additionally, Delage et al. intended on checking if the performance of older children would reflect the results from previous research by Delage (2008), which found that 8-year-olds produced 1st and 3rd ACC pronouns with similar rates of accuracy.

Zesiger et al. (2010)				Tuller et al. (2011)				Delage et al. (2016)			
Age	**Target**	Full DP	Cl. Ø	Age	**Target**	Full DP	Cl. Ø	Age	**Target**	Full DP	Cl. Ø
3;5-4;5	**45.6%**	13.9%	21.0%								
4;6-4;11	**69.4%**	5.5%	8.5%								
5;0-5;6	**64.5%**	10%	6.4%								
5;7-5;11	**76.9%**	4.8%	7.3%					4;7-6;4	**67%**		
6;0-6;5	**76.4%**	9.9%	2.5%	6;1-6;11	**70.3%**	11.5%	9.9%			5.5%[5]	17.1%[5]
								6;5-8;5	**85%**		
				11;1-11;9	**97.9%**	2.1%	0%				

Table 3: Data from 3ACC production studies on French

Zesiger et al. (2010) observed that although children generally placed subject, object, and reflexive clitics correctly in the sentences, object clitics were delayed in both comprehension and production tasks. Children struggled with correctly marking 3ACC and 3NOM (i.e., 3rd person singular subject clitics) for Gender, with an overall 30% of sentences containing a gender error in either position for 4-year-old children and 10% for 6-year-olds. Zesiger et al. compared these results to the higher rates of comprehension for both genders; they observed that in both tests, masculine pronouns led to more accurate performance and were preferred to feminine ones in production.

These results were compatible with previous studies (e.g., Clark, 1985; Jakubowicz & Nash, 2003), and are imputable to the different morphological levels of "markedness": the masculine, singular form corresponds to the default φ-features of pronouns (Lapointe, 1986; Hulk & Tellier, 1999; Franck et al., 2004), as well as other words in French (e.g., generic nouns, expletive subjects). The morphological "unmarkedness" of the masculine singular pronoun makes it preferable in production, as it requires computing less morphological information, while the explicit markedness of [+Feminine] renders the pronoun more complex but

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[5] This mean value refers to data from both groups.

"recognisable", thus leading to a better performance for feminine pronouns in comprehension tasks. Higher accuracy in default pronouns, i.e. masculine singular, was also supported by the fact that Zesiger et al. (2010) observed more errors in encoding of Number in items that elicited a plural clitic (7.3%) compared to those targeting a singular clitic (< 1%). However, as Zesiger et al. specified, the difficulties shown with gendered suffixes do not affect the grammatical gender of nouns, suggesting that the mental grammar of children actually distinguishes between the two Gender markings, with the marking for semantic gender being acquired later in Romance languages.

Tuller et al. (2011) observed that although all 6-year-old children from their experiments produced 3ACC clitics, their overall rates were much lower than those of the older group of 11-year-olds, which produced all ACC clitics at a rate over 90%, similarly to NOM and reflexive pronouns. They considered as target all ACC clitics produced but observed that for 3ACC clitics, 6-year-old children struggled with correctly marking the pronouns for Gender, with a mean 17% of gender errors. They hypothesised that this is linked to a working memory overload, as in most cases children produced gender errors in sentences in which the subject and object were not the same. This was supported by the fact that children usually marked the first pronoun of their response with the gender of the last full DP in the sentence, and then the opposite gender for the second pronoun.

Tuller et al. (2011) also noted that 1st and 2nd person ACC clitics and 3ACCs, aside from the generally lower accuracy for 3ACC, differed by omission rate. Object omission is acceptable in spoken French when the 3rd person referent is sufficiently salient in the context and only with some verbs. This resulted in 30% omission of 3ACC clitics by the group of 6-year-old children, while 1st and 2nd person ACC clitics were omitted only in 10% of the sentences. Tuller et al. observed that this distinction does not appear in NOM or reflexive pronouns and suggested that 3ACC could be particularly complex to compute as they require multiple explicit markings, i.e.,

Person, Gender, Number and Case, while also keeping in mind the discourse referent. This is supported by the fact that the adolescents with different non-typical development tested alongside the 6-year-olds showed higher percentages of 3ACC omission compared to 1st and 2nd person clitics, though alongside full DPs. 3DAT clitics were not explicitly investigated, but they cannot be omitted even in low-monitored spoken French.

Tuller et al. (2011) reported the data from Audollent & Tuller (2003) for a young man with SLI who barely omitted dative clitics in obligatory contexts (7% clitic omission), while still omitting object clitics with a production ratio of 1:5.4 for ACC clitics in comparison to NOM clitics. Since DAT clitics only differ from ACC clitics for the absence of marking for Gender, it seems likely that the complexity of 3ACC clitics is intertwined with the cumulative markings required for their correct production.

Lastly, Tuller et al. (2011) noted that other mistakes, such as gender errors of 3ACC clitics when paired with a subject whose φ-features are mismatched for Gender, might be due to the children's memory resources. Aside from long-term memory, which stores permanent information, and short-term memory, used when keeping in mind a finite amount of information for a limited amount of time (e.g., a phone number), there is a third process, called 'working memory'. It is responsible for keeping track of small, on-going, and fast-paced tasks (e.g., remembering which cards have been previously played during a game) and is not able to store large amounts of information; it 'resets' immediately after the task is completed, taking on the next on-going process. Keeping track of the antecedent's gender while also being exposed to other elements can be very taxing on children's working memory, as Pirvulescu & Strik (2014) also noted in their research on the comprehension of clitics in French-speaking children.

Delage et al. (2016) also observed lower accuracy for 3ACC clitics compared to 1st and 2nd person ACC clitics and, as previously mentioned, prepared tests to specifically examine the

three characteristics that differentiate 3ACC clitics from others: Gender marking, discourse independency, and optionality in colloquial contexts. In the Gender marking test, they observed better performance in sentences with a "neutral" 3ACC clitic (i.e., the contracted form *l'*), followed by sentences in which subject and object were in accordance for Gender, and a slightly worse performance with mismatched items. However, the difference between the results for matched and mismatched sentences was not as significant as that between neutral, contracted clitics and all items with explicitly Gender-marked clitics. Delage et al. observed that most gender errors in mismatched sequences resulted in the "uniformization" of Gender marking, with answers containing clitics marked for only one of the two target genders.

As for discourse independence, Delage et al. (2016) compared rates of production for 2nd person ACC clitics and 3ACC clitics, observing that among the two age groups 2nd person clitics led to higher accuracy but not to a statistically significant degree (2ACC: mean 75%, SD 30; 3ACC: mean 66%, SD 32; $p < .1$). Though the difference was not significant, it still suggested that discourse dependent referents are easier to retrieve syntactically, as they are restricted to those involved in the speech act (i.e., the speaker or the listener). In order to challenge this hypothesis, Delage et al. tested an additional group of 4-year-old children and observed that the difference between 2ACC and 3ACC was more pronounced than in the older children previously tested (2ACC: mean 70%, SD 24; 3ACC: mean 39%, SD 25; $p < .05$). Based on these results, Delage et al. argued that the effect of discourse independence as an element of difficulty for 3ACC clitics might be relevant in the earlier stages of language acquisition, but its effect tapers off earlier than that of Gender marking. No data on this were collected during the test presented in this thesis, as the tasks focused specifically on 3rd person clitics, though the claims by Delage et al. (2016) seem to be supported by previous research (e.g., Gibson, 1998; Gibson & Warren, 1998).

Concerning the optionality of 3ACC in spoken French, Delage et al. (2016) observed that it is only possible after specific verbs when the discourse topic is sufficiently salient – meaning,

the object is easily retrievable from the situational context. They presented the children with a test in which they had to judge the grammaticality of sentences containing either possible or illicit 3ACC and subject omissions. Verbs with which 3ACC omission is acceptable in the judgement task included *connaitre* 'know', *chercher* 'look for' and *adorer* 'like/adore', leading to test items such as (14).

(14)　　- *T' as déjà vu Dora à la télé?*　- *Oui, je connais Ø.*
　　　　　- You have already seen Dora on the TV?　- Yes, I know Ø.
　　　　　- 'Have you ever seen Dora on TV?'　　　- 'Yes, I have / I know her.

Overall, the children tested by Delage et al. (2016) showed accuracy comparable to adults in the subject omission judgement items, while the rate of correct judgements was significantly lower for the 3ACC omission contexts (NOM: mean 82%, SD 17; 3ACC: mean 75%, SD 16; $p < .05$). Younger children performed similarly in both legitimate and illegitimate omission contexts in the 3ACC tasks (respectively, 71% vs. 69%, $p < 1$), while older children were significantly more accurate in identifying the items with ungrammatical 3ACC omissions than in accepting sentences with legitimate omissions (respectively, 89% vs. 73%, $p < .05$).

　　Overall, Delage et al. (2016) argued that all three elements of difficulty for 3ACC clitics play a role during language acquisition. More specifically, discourse independency seems to affect accuracy until around 5 years of age, optionality in some spoken contexts adds difficulty until 6 years of age, and the morphological marking for Gender affects production until 8 years of age. Delage et al. suggest that younger children might struggle more than older children in producing 3ACC clitics due to the overlap of the developmental windows for these three factors, along with the previously mentioned storage limitations of the working memory in children. However, as Delage et al. underline, this analysis was based only on 3ACC clitics, meaning any conclusions reached might not be valid for 3DAT clitics.

1.3. Goal of the study

Cardinaletti et al. (2021) carried out a study on the production of Italian 3rd person clitics in typically developing children attending primary school (which will be further presented in Chapter 5). This study was inspired by Delage et al. (2016), the results of which were presented in the previous section. Cardinaletti et al. aimed at investigating whether there were any similarities in the production of accusative and dative clitics, since previous research only focused on direct object clitics and did not consider indirect object clitics. Additionally, Cardinaletti et al. were interested in verifying if the marking for Gender would prove to be a predictor of performance for Italian clitics as significantly as it appeared to be for French clitics, based on the data from previous studies on French, including Delage et al. (2016).

While Cardinaletti et al. found that the Gender marking of the direct object in the test items did not significantly affect target productions of clitic pronouns, the fact that 3DAT clitics do not encode Gender seems to predict the higher accuracy rates in the dative task, as the results showed a Case asymmetry. More specifically, all children generally produced a rather high percentage of target sentences, but the three older groups TD3, TD4 and TD5 showed significantly higher accuracy in dative clitics compared to accusative clitics. Cardinaletti et al. proposed that this difference might be due to the less demanding nature of 3DAT clitics, as *gli* in colloquial Italian is unmarked for both Gender and Number.

The test on French children presented in this thesis aimed to verify whether the observations made by Cardinaletti et al. (2021) would be confirmed when analysing French clitics, as Italian and French share some morphosyntactic similarities. In fact, Italian 3ACC clitics *lo, la, li, le* encode both Gender and Number φ-features, as do the French *le, la* and *les*. However, 3DAT clitics are somewhat different, as French marks the Number feature in *lui* and *leur*, while the Italian dative clitic *gli* – as previously mentioned – is an invariant form in

colloquial Italian (in formal Italian, it is masculine singular and opposes to the feminine singular *le* and plural *loro*).

Chapter 2. The test

2.1. Materials

The test consisted of two elicited production tasks. The task eliciting 3ACC clitics used by Cardinaletti et al. (2021) was a variant of the one used by Arosio et al. (2010, 2014). The task eliciting 3DAT clitics was created by Cardinaletti et al. (2021). The children were presented a slide with two characters and a recording describing the scene, followed by a second slide showing the same two characters carrying out an action. The recording for the second picture would ask the children to describe what was happening in the pictures.

The test items from Cardinaletti et al. (2021) were translated into French. They were originally created with the intention of reducing any distractors or elements of increased difficulty, making sure that the φ-features of the subject and the object(s) were the same. Although it did not ultimately affect the performance (see Chapter 3), it is relevant to mention that this has been lost in the translation of three items in the ACC test and three items in the DAT test. In these items, the gender of the direct objects shifted, while the subjects and the indirect objects maintained their original gender φ-features, as exemplified below:

(15)   e.g., Item 5 DAT:

ITA: In questa storia c'è *un signore* che vuole dare **un gelato** <u>ad un bambino</u>.

                 Subj.MS.SG.   Dir.Obj.MS.SG Ind.Obj.MS.SG

FR: Dans cette histoire, il y a *un monsieur* qui veut donner **une glace** <u>à un petit garçon</u>.

                 Subj.MS.SG.   Dir.Obj.FM.SG Ind.Obj.MS.SG

This happened with the words 'mask' (It. *la maschera*, F > Fr. *le masque*, M) in Item 2 of the ACC test, 'ice cream' (It. *il gelato*, M > Fr. *la glace*, F) in Item 3 ACC and Item 5 DAT, 'butterfly' (It. *la farfalla*, F > Fr. *le papillon*, M) in Item 7 ACC, 'cake' (It. *la torta*, F > Fr. *le gâteau*, M) in Item 10 DAT and 'bike' (It. *la bici*, F > Fr. *le vélo*, M) in Item 12 DAT.

Accusative task

The ACC test was preceded by five familiarisation trials, involving an animate agent and an animate or inanimate patient. The actual tasks consisted of 12 items, 7 of which targeted masculine singular 3ACC clitics and 5 targeted feminine singular 3ACC clitics. Except for Items 2, 3 and 7, the grammatical gender of the subject matched the grammatical gender of the direct object.

The questions of the second slide aimed at contextually restricting the answers, favouring the production of clitics and making a full object DP pragmatically redundant, though grammatically acceptable. All the descriptions of the first slide contained a verb starting with a consonant to discourage the production of the contracted clitic *l'*, which is unmarked for Gender. The questions linked with the second slide were all formulated using the present tense of the verb *faire* followed by the indirect object corresponding to the theta-patient of the sentence, i.e., the direct object. The following is an example of a test item:

(16)   Item 4:
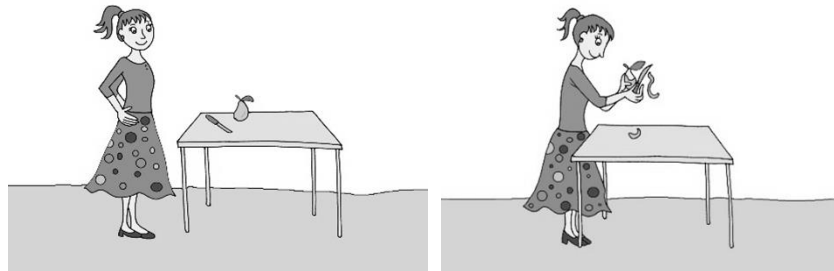
First slide: *Dans cette histoire, il y a une dame qui veut peler une poire.*
                    In this story, there is a woman who wants to peel a pear.

Second slide: *Regarde, qu'est-ce qu'elle fait à la poire?*
                    Look, what is she doing to the pear?

Target answer: *Elle **la** pèle.*
                    She is peeling it.

Dative task

The DAT test was preceded by two familiarisation trials, involving an animate agent, an animate indirect object, and an inanimate direct object. The actual tasks consisted of 12 items, 6 of which had a masculine singular antecedent for the 3DAT clitics and 6 had a feminine singular antecedent for the 3DAT clitics. With the exception of Items 5, 10 and 12, the grammatical gender of the subject matched the grammatical gender of both the indirect and direct object of the sentence.

Similarly to the ACC test, the questions aimed at restricting the answers to the use of a clitic pronoun. A 'Full PP' answer would still be grammatically correct, though pragmatically redundant. All questions contained a present tense verb *faire* and a mention of the indirect object that would be substituted by the DAT clitic. The following is an example of a test item:

(17)   Item 3:
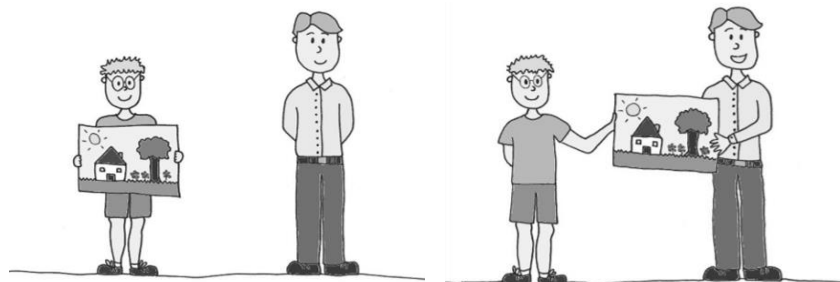
First slide: *Dans cette histoire, il y a un garçon qui veut donner un dessin à son papa.*
                     In this story, there is a boy who wants to give a drawing to his dad.

Second slide: *Regarde, qu'est-ce qu'il fait à son papa?*
                     Look, what is he doing to his dad?

Target answer: *Il **lui** donne un/le dessin.*
                     He is giving him a/the drawing.

2.2. Participants

French-speaking children attending a primary school in Geneva were interviewed in a quiet room at their school; all testing sessions were recorded and later transcribed by a group of students attending the University of Geneva supervised by Professor Stephanie Durrleman. A total of 69 children were tested, ranging from 4;5 to 7;11 years of age. The participants were later classified in the four groups listed in Table 4 for a more effective analysis.

Group	#	Age	Mean age	SD (years)
G1	11	4;5-5;0	4;8	0.23
G2	23	5;1-5;11	5;6	0.22
G3	17	6;0-6;11	6;5	0.29
G4	18	7;0-7;11	7;3	0.30

Table 4: Number and age of participants

Given the linguistic policy of Switzerland, with Italian, German and French all considered as official national languages along with Romansch, it is extremely likely that all the participants are bilingual or even plurilingual. Unfortunately, no formal data were collected regarding this factor. It is nonetheless a relevant element to keep in mind while analysing the results, as the co-existence of multiple grammatical systems in the children's mind can have some influence on their performance. Hamann & Belletti (2006) have observed that the productions of bilingual children or children exposed to multiple languages are characterised by mistakes that differ from those of monolingual or SLI children. These errors usually regard word order and are possibly caused by an active interference of the first language (L1) into the second language (L2). As we will see, however, no word order mistake was found in our data. Thus, the children behaved like monolingual children in this respect.

2.3. Response coding

The transcribed answers of both tests were classified as 'Target', 'Full DP/PP', 'Clitic omission', 'Case error', and other grammatical and non-grammatical sentences; additionally, two other categories were used, specifically 'Gender error' in the ACC test and 'Accusative clitics' in the DAT test.

In their responses, children generally produced the same verb tense as the question (i.e., the present simple tense), but in a handful of cases they used the *passé composé* tense in both the ACC and the DAT test. The use of the *passé composé* in itself does not influence the syntactic structure of the answer, but the contraction between the vowel of the 3ACC singular clitic pronouns and the 3rd person auxiliary *a* does not allow for a clear distinction of the Gender φ-features of the clitics. The shift in tense has not been considered when coding the answers unless it rendered the sentence ungrammatical, meaning any sentences with the correct clitic but in a *passé composé* have been nonetheless categorised as 'Target'; the same applied to sentences with full DPs/PPs, clitic omissions, etc. Some children in G1 produced sentences with an infinitive VP and no finite verb; these sentences were considered ungrammatical. The following table summarises the frequency of *passé composé* sentences in the test (ACC/DAT gen.), and their use specifically in target answers (ACC/DAT target):

Group	ACC gen.		ACC target		DAT gen.		DAT target	
G1	10	(7.58%)	3	(2.27%)	4	(3.03%)	0	(0%)
G2	30	(10.87%)	11	(3.99%)	18	(5.52%)	6	(2.17%)
G3	36	(17.65%)	17	(8.33%)	11	(5.39%)	5	(2.45%)
G4	42	(19.44%)	27	(12.50%)	17	(7.87%)	4	(1.85%)
TOT	118	(14%)	58	(7%)	49	(5.70%)	15	(1.62%)

Table 5: Frequency of the passé composé

The choice of tense in the responses was generally mixed, with many children using alternatively the present simple or the *passé composé* (only marginally, infinitives), although it is worth mentioning that children incidentally used other constructions. These include *il/elle veut/voulait + CLpro + infinitive verb*, ("he/she wants/wanted to" + clitic + verb), and rare instances of *[être] en train de + infinitive verb*, a progressive construction of agentive verbs similar to the Italian *stare + gerund verb* (literally, "to be in the middle of" carrying out the verb action)[6]. In both the ACC and DAT test, S21 from G2 (aged 5;6) always produced sentences with the *il/elle voulait + CLpro + inf. verb* construction, while S20 (G2, 5;6) produced 10 sentences in the ACC test with *il/elle a réussi à + CLpro + inf. verb* ("he/she managed to" + clitic + verb); e.g., *il a réussi à le laver*, 'he managed to wash him/it'.

In the DAT test there were also a total of 33 sentences among all groups structured as *il/elle lui donne + Ø object*. There were three additional answers which followed the *subject + lui + VP + Ø object* structure, but with a different verb: '*il lui lance Ø*' in Item 11 by S33 (from G2, aged 5;10), '*il lui lit Ø*' in Item 7 (S42, G3, 6;4) and '*elle lui lit Ø*' in Item 4 (S68, G4, 7;11).

Il/elle lui + verb + Ø object			
Group	Total	M	F
G1	2 (1.52%)	0 (0%)	2 (3.03%)
G2	15 (5.43%)	6 (4.35%)	9 (6.52%)
G3	14 (6.86%)	6 (5.88%)	8 (7.84%)
G4	5 (2.31%)	3 (2.78%)	2 (1.85%)
Total	36 (4.35%)	15 (3.62%)	21 (5.07%)

Table 6: Distribution of lui *+ verb + Ø responses*

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[6] Coincidentally, this was the structure of the questions and the target answers for the Italian test in Cardinaletti et al. (2021).

These sentences were considered target during the main process of response coding, as the 3DAT clitic was produced correctly and positioned between the subject and the finite verb. Table 6 summarises the distribution of this type of answer per Group and Gender based on the antecedent of the target indirect object pronoun; however, in Chapter 3 they will be explicitly analysed as a separate category of answers when discussing the production of the direct object complement in the DAT task.

Target

Target answers include grammatical sentences containing the intended clitic pronoun marked with the correct φ-features for both gender and number.

(18.a) Item 1 ACC: *il   le   détruit*
                     he it.3SG.MS destroys
                     'he is destroying it'

(18.b) Item 7 DAT: *il lui   lit   le journal*
                     he to.him.3SG.MS reads the newspaper
                     'he is reading the newspaper to him'

Full DP/PP

The most common non-target answer in the ACC test and overall consists in the repetition of the full DP (19.a) – or the full PP in the DAT test (19.b). As previously mentioned, the test questions were formulated so that these productions would still be grammatical but pragmatically redundant in the given context.

(19.a) Item 1 ACC: *il détruit   le château*
                     he destroys the castle
                     'he is destroying the castle'

(19.b) Item 7 DAT: *il   lit   le   journal   à son grand-père*

                            he reads the newspaper to his grand-father

                            'he is reading the newspaper to his grand-father'

Clitic omission, or clitic Ø

The most common type of non-target answer in the DAT test, and the second most common in the ACC test, is the omission of the indirect or direct object, respectively. In the ACC test, all clitic omission productions resulted in ungrammatical sentences (20), as all verbs required a direct object to fulfil their valence.

(20)   Item 1 ACC: **il Ø détruit*

                          *he Ø destroys

                          '*he is destroying Ø'

The DAT test was slightly different, however, as the verb *lire* 'read' and *lancer* 'throw' in Items 4, 7 and 11, do not always require a third argument in the form of an indirect object. The resulting sentences were non-target but still fully grammatical and acceptable in other contexts (21.a); this cannot be said for the other items, such as those with verbs *donner* 'give', and *offrir* 'offer' (21.b), which require both a direct and indirect complement.

(21.a) Item 7 DAT: *#il Ø lit   le   journal*

                          #he Ø reads the newspaper

                          '#he is reading the newspaper Ø'

(21.b) Item 3 DAT: **elle Ø donne la fleur*

                          *she Ø gives   the flower

                          'she is giving the flower Ø'

Case error

The production of a clitic with the wrong case marking was a frequent strategy almost exclusive to the DAT test. Specifically, children frequently used the 3ACC clitics *le/la* instead of the 3DAT clitic *lui* (22.b). They sometimes replaced the target accusative with a dative clitic (22.a):

(22.a) Item 1 ACC: **il   lui   détruit*
                                  *he to.him.3SG destroys
                                  '*he is destroying to him'

(22.b) Item 7 DAT: **il   le   lit   le   journal*
                                  *he him/it.3SG.MS reads the newspaper
                                  '*he is reading the newspaper it'

ACC clitics in DAT test

Another common non-target answer in the DAT test consists of a DAT clitic omission alongside the production of an ACC clitic in lieu of the direct object. As with simple clitic omissions, the resulting sentences could be grammatical (23.a) or ungrammatical (23.b) depending on the verb of the item:

(23.a) Item 7 DAT: *#il Ø le   lit*
                                  #he Ø it.3SG.MS reads
                                  '#he is reading it Ø'

(23.b) Item 7 DAT: **elle Ø la   donne*
                                    *she Ø it.3SG.FM gives
                                  '*she is giving it Ø'

Gender error in ACC test

Since 3DAT clitics in French do not encode gender, the gender error response was only possible in the ACC test. These answers respect the syntactic structure of a target sentence, but the ACC clitic encodes the wrong grammatical gender. The resulting production is not ungrammatical per se, but the clitic pronoun does not correctly identify its antecedent. See (24) instead of the target *il le détruit* in (18.a).

(24) Item 1 ACC: *#il   la   détruit*
              #he it.3SG.FM destroys

Other

Other strategies included the production of grammatically correct sentences that were completely unrelated to the test, as in (25), or without any relevant clitic (26) for that specific task, though not an erroneous production of the wrong case clitic. Any ungrammatical sentences (27) were also categorised as "other". Ungrammatical sentences were produced mostly by the youngest group of children and were more frequent in the DAT test.

(25) Item 1 ACC: *il marche dessus*
              he walks   on [it]

(26) Item 7 DAT: *il lit   le journal   pour lui*
              he reads the newspaper for   him.3SG.MS

(27.a) Item 1 ACC: **l   s'   écrase le   château*
              *(?) to.himself crush   the castle

(27.b) Item 7 DAT: **il   a   livre*
              *he has book

Chapter 3. Results

Overall, the children produced 1656 sentences, 828 for the ACC test and 828 for the DAT test. All referents in both tests were singular; this was correctly reflected in the vast majority of the children's responses. The only exceptions, both found in the ACC test, were produced by S28 in G2 (aged 5;8), who produced an ungrammatical sentence with a plural clitic in Item 4, and S43 from G3 (6;7), who produced a grammatical sentence with the correct plural clitic in Item 12 by switching the referent from '*la grand-mère*' to 'the grandmother's hair' (*les cheveux*, 'hair', being plural in French).

Similarly to Cardinaletti et al. (2021), the results were analysed with GLME (generalised linear mixed-effect) using RStudio[7] as a statistical software. First, the overall results of both tests were analysed; Case and Group were considered as the independent fixed factors, while 'Target' and other types of non-target responses were the dependent variables. Then the two tests were analysed separately considering Group, Gender of all the verbal arguments and Type (i.e., match/mismatch of Gender between the subject/indirect object and the direct object) as fixed factors; the dependent variables were 'Target' and all the other non-target strategies when analysing the responses to the clitic tasks. When analysing the subjects in both tasks, Subject Gender was considered as a fixed variable alongside Group and Type; the dependent variables were 'Correct subject', 'Gender error' and 'Subject omission'. When analysing the direct objects in the DAT task, Object gender, Group and Type were used as fixed variables, while 'Correct DP' and other non-target productions were considered as the dependent variables. Items and Participants were used as random factors in all analyses. The results are reported as

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[7] RStudio 2023.12.0+369 "Ocean Storm" Release (33206f75bd14d07d84753f965eaa24756eda97b7, 2023-12-17) for windows. R version 4.3.2 (2023-10-31 ucrt). Copyright (2023) The R foundation for Statistical Computing.

χ^2 (i.e., the difference in deviance obtained by adding the predictors to the first column, with the degrees of freedom in brackets) and as estimate, standard error, z-ratio, and p-value.

Graph 1 visually synthesises the percentage results for the main categories of response in both tests; each test will be discussed separately in the upcoming sections. The results are reported as their overall percentage value.
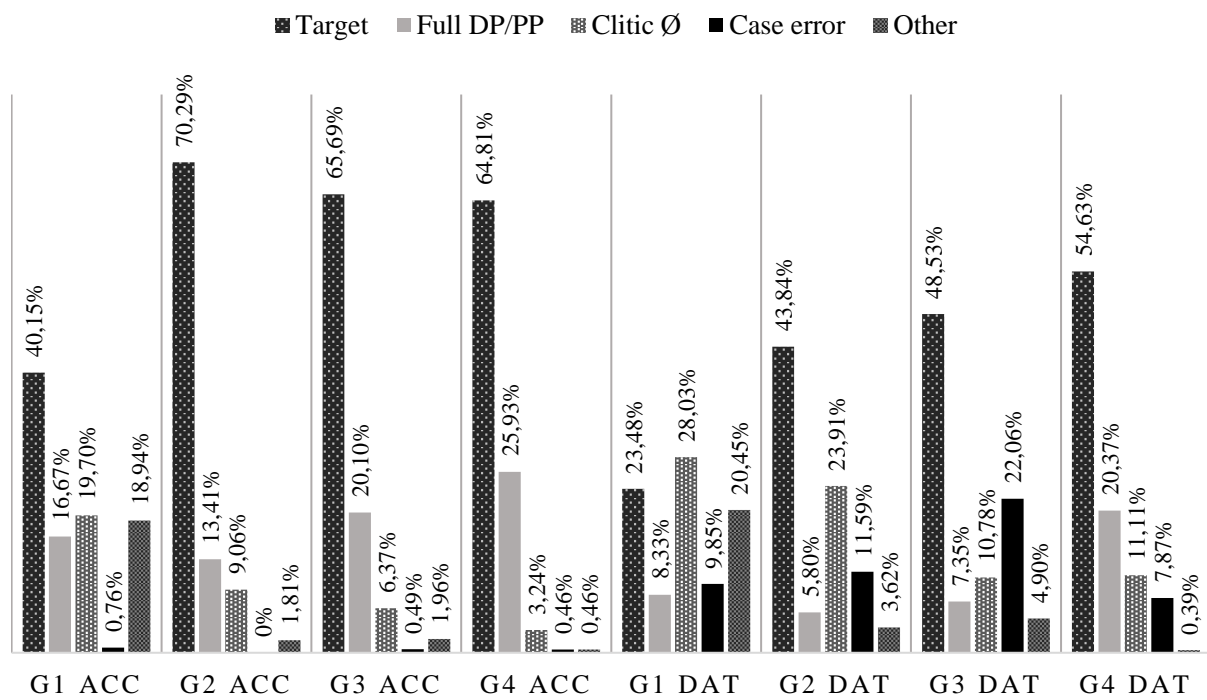
Graph 1: Overall results of the ACC and DAT tests

When analysing the overall results of both tasks, the Group variable did not prove to be a significant predictor of performance for 'Target' responses ($\chi^2(3) = 7.6066$; $p = .055$), but children in G1 were significantly less accurate than all the other groups in both tests. Table 7 summarises the results for the analysis that considered Group as the independent factor and 'Target' as the dependent variable.

	EST	SE	z-ratio	p-value
G1 vs. G2	1.698	0.677	2.507	**< .05**
G1 vs. G3	1.695	0.716	2.37	**< .05**
G1 vs. G4	1.771	0.709	2.497	**< .05**
G2 vs. G3	0.002	0.586	0.003	= .99
G2 vs. G4	0.073	0.578	0.126	= .90
G3 vs. G4	0.074	0.622	0.119	= .91

Table 7: Results of the statistical analysis of 'Target' answers in both tasks per Group

Case as an independent factor generally proved to be a significant predictor of performance when statistically analysed with the different response categories as dependent variables. When 'Target' responses were considered the dependent variable, Case proved to be significant ($\chi^2(1)$ = 90.285; p < .001), with ACC responses being significantly more accurate than those of the DAT task (EST = 1.22; SE = 0.13; z-ratio = 9.29; p < .001). The same was true for 'Full DP/PP' answers – that is, Case led to statistically significant difference in performance ($\chi^2(1)$ = 797.58; p < .001), as Full DPs were produced more often than Full PPs (EST = 1.14; SE = 0.19; z-ratio = 6; p < .001). Case was also a predictor for 'Case Error' responses ($\chi^2(1)$ = 1250.4; p < .001), which were significantly more frequent in the DAT test than in the ACC test (EST = 4.51; SE = 0.63; z-ratio = 7.15; p < .001). 'Clitic Ø' responses were also predicted by Case ($\chi^2(1)$ = 800.78; p < .001) and were significantly more frequent in the DAT task (EST = 1.23; SE = 0.19; z-ratio = 6.48; p < .001). The overall number of clitic omission answers for the DAT task was significantly higher than in the ACC task arguably due to the chance of producing grammatical sentences even when omitting the indirect object clitic.

Table 8 summarises the results of the ACC test for the four groups of children. Each value refers to the raw number of sentences produced by each group, the mean score for the 12 total items, the mean percentages in relation to the total responses in each group, and the standard deviations.

Group	Values	Target	Full DP	*Clitic Ø	Case error	Other	Gender error
G1	Raw #	53	22	26	1	25	5
	Mean/12	**4.82**	**2**	**2.36**	**0.09**	**2.27**	**0.45**
	%	40.2%	16.7%	19.7%	0.76%	18.9%	3.79%
	SD	3.89	1.90	2.73	0.30	3.58	0.69
G2	Raw #	194	37	25	0	5	15
	Mean/12	**8.43**	**1.61**	**1.09**	**0**	**0.22**	**0.65**
	%	70.3%	13.4%	9.06%	0%	1.81%	5.43%
	SD	2.94	1.85	2.13	0	0.42	1.23
G3	Raw #	134	41	13	1	4	11
	Mean/12	**7.94**	**2.41**	**0.76**	**0.06**	**0.24**	**0.65**
	%	66.2%	20.1%	6.37%	0.49%	1.96%	4.90%
	SD	4.23	4.14	1.30	0.24	0.44	0.71
G4	Raw #	140	56	7	1	1	11
	Mean/12	**7.83**	**3.11**	**0.39**	**0.06**	**0.06**	**0.61**
	%	65.3%	25.9%	3.24%	0.46%	0.46%	4.63%
	SD	3.71	4.11	0.98	0.24	0.24	0.70
Total	Raw #	521	156	71	3	35	40
	Mean/12	**7.55**	**2.26**	**1.03**	**0.04**	**0.51**	**0.61**
	%	62.9%	18.8%	8.57%	0.36%	4.23%	4.83%
	SD	3.76	3.20	1.90	0.21	1.61	0.91

Table 8: Results of the ACC test by groups

As previously mentioned, the most common non-target response in the ACC test was the production of a full DP. The different categories of answer were analysed separately as dependent variables with Group as a fixed factor. Group was not a predictor of performance for 'Target' (χ^2(3) = 5.3856; p = .14), despite G1 being significantly less accurate than all other groups:

	EST	SE	z-ratio	p-value
G1 vs. G2	1.848	0.669	2.761	**< .01**
G1 vs. G3	1.628	0.711	2.289	**< .05**
G1 vs. G4	1.443	0.697	2.070	**< .05**
G2 vs. G3	0.220	0.589	0.374	= .71
G2 vs. G4	0.405	0.574	0.707	= .48
G3 vs. G4	0.185	0.622	0.298	= .77

Table 9: Results of the statistical analysis of 'Target' answers in the ACC task per Group

Group was not a significant predictor for 'Full DP' responses (and all comparisons between groups led to p > .2); however, Group was a predictor of performance when considering 'Omissions' as the dependent variable ($\chi^2(3) = 207.65$; p < .001). Clitic omissions were significantly more common in G1 compared to the older children in G4 (EST = 2.68; SE = 1.01; z-ratio = 2.65; p < .01), but no statistically relevant difference was observed when comparing all other groups. Aside from G1, 'Other' responses were not prevalent; on the contrary, 'Gender errors' were slightly more frequent in G2, G3 and G4 than in G1, though not in a statistically significant way (p > .05 when comparing all groups with one another).

Since not all items maintained the same gender for the subject and the direct object after being translated into French, as mentioned in section 2.1, the results were also analysed by item. Table 10 summarises the results for all four groups, reporting the raw number and the percentage. The means are calculated over the total 69 children participating to the study; the items in italics are those in which the gender of the direct object is different from that of the subject.

The mismatch of Gender between the subject and direct object in some items, i.e. the independent factor 'Type', was not a predictor of accuracy, as it did not affect the performance in respect to 'Target' responses ($\chi^2(1) = 0.0365$; p = 0.85), with Item 7 actually being the second most accurate in the ACC test. However, this was not the case when considering 'Gender error'

as the dependent variable: Type was a significant predictor ($\chi^2(1) = 285.08$; p < .001) of performance, with a higher frequency of clitic gender errors in mismatched items compared to matched items (EST = 1.21; SE = 0.61; z-ratio = 1.98; p < .05). Additional data on how Type influenced gender errors are discussed in Chapter 4.

Item	M/F	Values	Target	Full DP	*Clitic Ø	Case error	Other	Gender error
Item 1	M	Raw #	41	12	10	1	4	1
		%	59.4%	17.4%	14.5%	1.45%	5.80%	1.45%
Item 2	M	Raw #	42	6	7	1	7	6
		%	60.9%	8.7%	10.1%	1.45%	10.1%	8.70%
Item 3	F	Raw #	38	14	7	0	1	9
		%	55.1%	20.3%	10.1%	0%	1.45%	11.6%
Item 4	F	Raw #	37	24	3	0	4	1
		%	53.6%	34.8%	4.35%	0%	5.80%	1.45%
Item 5	M	Raw #	48	13	4	0	2	2
		%	69.6%	18.8%	5.80%	0%	2.90%	2.90%
Item 6	M	Raw #	51	9	8	0	1	0
		%	73.9%	13%	11.6%	0%	1.45%	0%
Item 7	M	Raw #	49	10	4	0	2	4
		%	71.0%	14.5%	5.80%	0%	2.90%	4.35%
Item 8	M	Raw #	44	17	3	1	4	0
		%	63.8%	24.6%	4.35%	1.45%	5.80%	0%
Item 9	F	Raw #	39	11	9	0	1	9
		%	56.5%	15.9%	13%	0%	1.45%	13%
Item 10	M	Raw #	45	13	6	0	4	1
		%	65.2%	18.8%	8.70%	0%	5.80%	1.45%
Item 11	F	Raw #	42	15	7	0	1	4
		%	60.9%	21.7%	10.1%	0%	1.45%	5.80%
Item 12	F	Raw #	45	12	3	0	4	5
		%	65.2%	17.4%	4.35%	0%	5.80%	7.25%
Total		Raw #	521	156	71	3	35	42
		Mean/69	**43.4**	**13**	**5.92**	**0.25**	**2.92**	**3.50**
		M mean	45.7	11.43	6	0.43	3.43	2.00
		F mean	40.2	15.2	5.8	0	2.2	5.60
		%	62.9%	18.8%	8.57%	0.36%	4.23%	5.07%
		SD	4.42	4.49	2.47	0.45	1.88	3.23

Table 10: Results of the ACC test by item

Gender proved to be a predictor of performance for 'Target' responses ($\chi^2(1) = 6.1641$; p < .05) with higher accuracy for masculine items (EST = 0.53; SE = 0.18; z-ratio = 2.99; p < .01). Gender

was also a predictor for 'Gender errors' ($\chi^2(1) = 577.06$; p < .001), with children being significantly less accurate in producing feminine marked clitics (EST = 0.53; SE = 1.78; z-ratio = 2.99; p < .01). 'Full DP' responses were also influenced by Gender ($\chi^2(1) = 296.98$; p < .001), with a significantly higher production of DPs in items which elicited a feminine clitic compared to masculine items (EST = 0.64; SE = 0.3; z-ratio = 2.1; p < .05).

Further analysis was performed to determine if any other factors were relevant to account for the low production of 'Target' answers with respect to clitic production. This led to coding the production of subject pronouns – as 'Correct subject', 'Gender error' and 'Subject omission' – to see if the low Gender-marking accuracy of feminine items could be caused by attraction of the subject φ-features. The raw number, mean value over the 12 items, percentage over the total number of sentences produced by each group and SD are provided in Table 12.

Once again, the three types of subject responses were analysed separately as dependent variables in relation to the independent factors of Group and Subject Gender. The Group variable was statistically significant for the production of 'Correct subjects' ($\chi^2(3) = 17.825$; p < .001), as summarised in Table 11. The performance of G1 was significantly less accurate than that of the older children; G2 was also significantly less accurate than G3.

	EST	SE	z-ratio	p-value
G1 vs. G2	1.618	0.703	2.301	**< .05**
G1 vs. G3	3.586	0.873	4.108	**< .001**
G1 vs. G4	2.708	0.783	3.459	**< .001**
G2 vs. G3	1.685	0.664	2.539	**< .05**
G2 vs. G4	0.949	0.589	1.612	= 0.1
G3 vs. G4	0.736	0.715	1.028	= 0.3

Table 11: Results of the statistical analysis of 'Correct subject' answers in the ACC task per Group

		Correct subject			Gender error			Subject omission		
		M	F	Total	M	F	Total	M	F	Total
G1	Raw #	56	29	85	9	35	44	1	2	3
	Mean/12			**7.73**			**4**			**0.27**
	%	84.8%	43.9%	64.4%	13.6%	53.0%	30.3%	1.52%	3.03%	2.27%
	SD			2.33			2.10			0.65
G2	Raw #	128	101	229	9	37	46	1	0	1
	Mean/12			**9.96**			**2**			**0.04**
	%	92.8%	73.2%	83.0%	6.52%	26.8%	16.7%	0.7%	0%	0.36%
	SD			2.42			2.41			0.21
G3	Raw #	97	96	193	5	6	11	0	0	0
	Mean/12			**11.4**			**0.65**			0
	%	95.1%	94.1%	94.6%	4.90%	5.88%	5.4%	0%	0%	0%
	SD			1.54			1.54			0
G4	Raw #	106	92	198	0	14	14	2	2	4
	Mean/12			**11**			**0.78**			**0.22**
	%	98.2%	85.2%	91.7%	0%	13%	6.5%	1.85%	1.85%	1.85%
	SD			1.57			1.22			0.94
Total	Raw #	387	318	705	23	88	111	4	4	8
	Mean/12			**10.2**			**1.67**			**0.12**
	%	93.5%	74.1%	82.7%	5.56%	22.2%	13.9%	0.97%	0.97%	0.97%
	SD			2.32			2.20			0.56

Table 12: Analysis of subjects in the ACC test per group

The main error consisted in a change of the subject's gender rather than a null subject for all groups, and although children in G1 produced some null subject sentences, their percentage is low and equally distributed between masculine and feminine subjects. This shows that the tested children have already developed their mental grammar to project a full CP sentence rather than a truncated sentence, which would allow for null subjects (see Rizzi, 1994; 2000).

Subject Gender was a predictor of performance for 'Correct subjects' in items ($\chi^2(1)$ = 353.66; p < .001): children were significantly more accurate in producing masculine subjects (EST = 2.00; SE = 0.28; z-ratio = 7.18; p < .001) and used more masculine subjects in general, with 6 children in G1 and G2 going as far as producing only masculine subjects for all items. Only S3 from G1 (aged 4;5) and S26 from G2 (5;7) produced exclusively feminine subjects for all ACC items. An interesting detail is that S9 from G1 (4;11) produced alternatively '*il*' and its

strong pronoun counterpart, '*lui*', as the masculine subject. The percentage of correct subjects was higher in the older children, but masculine subject pronouns were preferred to feminine pronouns, meaning feminine subjects were produced with significantly lower accuracy ($\chi^2(1) = 373.31$; $p < .001$), and had a corresponding higher rate of 'Gender error' responses than masculine subjects (EST = 2.11; SE = 0.29; z-ratio = 7.23; $p < .001$).

The results were analysed per item, to check if the mismatch of gender between the subject and direct object in some items had any influence on the performance (Table 13).

	Subject	Correct subject	Gender error	Subject omission
Item 1	M	66 (95.7%)	2 (2.90%)	1 (1.45%)
Item 2	F	53 (76.8%)	15 (21.7%)	1 (1.45%)
Item 3	M	62 (89.9%)	6 (8.70%)	1 (1.45%)
Item 4	F	55 (79.7%)	14 (20.3%)	0 (0%)
Item 5	M	65 (94.2%)	4 (5.80%)	0 (0%)
Item 6	M	66 (95.7%)	3 (4.35%)	0 (0%)
Item 7	F	51 (73.9%)	17 (24.6%)	1 (1.45%)
Item 8	M	63 (91.3%)	4 (5.80%)	2 (2.90%)
Item 9	F	46 (66.7%)	22 (31.9%)	1 (1.45%)
Item 10	M	65 (94.2%)	4 (5.80%)	0 (0%)
Item 11	F	55 (79.7%)	13 (18.8%)	1 (1.45%)
Item 12	F	58 (84.1%)	11 (15.9%)	0 (0%)
Total	Raw # (%)	701 (84.7%)	111 (13.4%)	8 (0.97%)
	Mean/69	**58.75**	**9.58**	**0.67**
	M mean	64.50	3.83	0.67
	F mean	53.00	15.33	0.67
	SD	6.72	6.60	0.65

Table 13: Analysis of the subjects in the ACC test per item

Just like for object clitics, Type was not a predictor of performance when considering 'Correct subject' as the dependent variable ($\chi^2(1) = 1.6107$; $p = .2$): Items 2, 3 and 7 did not constitute an additional challenge, and the mean rate of correct subject pronouns was only slightly lower

than the overall mean of other items with the same gender marking. Null subjects were roughly distributed among all test items, once again not highlighting any relevant factor in their incidence (p = .4 when considering Type as the fixed factor for the 'Null subject' dependent variable).

Dative task

The values in Table 14 refer to the raw number of sentences produced by each group, the mean score for the 12 total items, the mean percentages, and the standard deviations. The cases of clitic omission have been divided based on the grammaticality of the sentences: '*Clitic Ø' stands for ungrammatical omissions, while 'Clitic Ø' for sentences that are grammatically acceptable, though non-target (as mentioned in section 2.3).

Group	Values	Target	Full PP	*Clitic Ø	Clitic Ø	Case error	Other	ACC cl.
G1	Raw #	31	11	30	7	13	27	13
	Mean/12	**2.82**	**1**	**2.73**	**0.64**	**1.18**	**2.36**	**1.18**
	%	23.5%	8.33%	22.7%	5.30%	9.85%	20.5%	9.85%
	SD	3.97	1.90	2.69	1.03	1.54	2.91	2.32
G2	Raw #	121	16	50	16	32	10	31
	Mean/12	**5.26**	**0.70**	**2.17**	**0.70**	**1.39**	**0.43**	**1.35**
	%	43.8%	5.80%	18.1%	5.80%	11.6%	3.62%	11.2%
	SD	4.81	1.33	3.45	1.18	2.66	0.79	2.48
G3	Raw #	99	15	17	5	45	10	13
	Mean/12	**5.82**	**0.88**	**1**	**0.29**	**2.65**	**0.59**	**0.76**
	%	48.5%	7.35%	8.33%	2.45%	22.1%	4.90%	6.37%
	SD	5.17	1.83	1.62	0.47	3.84	1.46	1.71
G4	Raw #	118	44	16	8	17	2	11
	Mean/12	**6.56**	**2.44**	**0.89**	**0.44**	**0.94**	**0.11**	**0.61**
	%	54.6%	20.4%	7.41%	3.70%	7.87%	0.93%	5.09%
	SD	5.43	4.00	1.91	0.86	1.80	0.47	2.35
Total	Raw #	369	86	113	36	107	49	68
	Mean/12	**5.35**	**1.25**	**1.64**	**0.52**	**1.55**	**0.71**	**0.99**
	%	44.6%	10.4%	13.7%	4.35%	12.9%	5.93%	8.21%
	SD	4.99	2.53	2.64	0.93	2.71	1.62	2.23

Table 14: Results of the DAT test by groups

The Group variable was not a predictor of performance for 'Target' answers ($\chi^2(3)$ = 4.7268; p = .19), the only significant difference was found between children from G1 and children in G4 (EST = 3.23; SE = 1.63; z-ratio = 2.04; p < .05).

Though 'Target' answers increased in frequency in the older children, they remained rather low overall, with a strong prevalence of DAT clitic omissions, case errors and accusative clitics mistakenly produced in place of datives. 'Other' responses were quite common in G1, but they dramatically decreased in the other groups in favour of 'Accusative clitic' and 'Case error' phrases. This could be linked to the growing competence of the children in the production of ACC clitics, which then became a frequent alternative to DAT clitics (this is discussed further in Chapter 5).

The results were analysed by item (Table 15) to verify if any items were particularly problematic and if the gender of the indirect object influenced accuracy. The items in italics are those in which the direct object was marked differently for Gender. Despite the mismatch of the direct object's gender, Items 5, 10 and 12 did not show any significant difference in the production of target 3DAT clitics compared to the other items. In fact, the only category of response which showed any dependency from the Type fixed factor were 'ACC clitic' responses ($\chi^2(1)$ = 293.89; p < .001), which were slightly more common in matched items than in mismatched ones, though not to a highly statistically relevant degree (EST = 0.96; SE = 0.53; z-ratio = 1.81; p = .07). Further analysis on the match/mismatch of Gender in relation to the subject and object production is presented in Chapter 4.

Item	M/F	Values	Target	Full PP	*Clitic Ø	Clitic Ø	Case error	Other	ACC cl.
Item 1	F	Raw #	25	6	12	0	9	8	9
		%	36.2%	8.70%	17.4%	0%	13.0%	11.6%	13.0%
Item 2	M	Raw #	26	9	16	0	8	7	3
		%	37.7%	13.0%	23.2%	0%	11.6%	10.1%	4.35%
Item 3	M	Raw #	32	8	9	0	8	3	9
		%	46.4%	11.6%	13.0%	0%	11.6%	4.35%	13.0%
Item 4	F	Raw #	24	10	1	17	9	4	4
		%	36.2%	14.5%	1.45%	24.6%	13.0%	5.80%	5.80%
Item 5	M	Raw #	33	7	9	0	12	5	3
		%	47.8%	10.1%	13.0%	0%	17.4%	7.25%	4.35%
Item 6	F	Raw #	33	6	15	0	11	1	3
		%	47.8%	8.70%	21.7%	0%	15.9%	1.45%	4.35%
Item 7	M	Raw #	31	8	1	11	8	4	6
		%	44.9%	11.6%	1.45%	15.9%	11.6%	5.80%	8.70%
Item 8	F	Raw #	29	8	9	0	9	4	10
		%	42.0%	11.6%	13.0%	0%	13.0%	5.80%	14.5%
Item 9	M	Raw #	34	8	11	0	7	3	6
		%	49.3%	11.6%	15.9%	0%	10.1%	4.35%	8.70%
Item 10	F	Raw #	35	5	12	0	9	3	5
		%	50.7%	7.25%	17.4%	0%	13.0%	4.35%	7.25%
Item 11	M	Raw #	34	5	5	8	8	3	6
		%	49.3%	7.25%	7.25%	11.6%	11.6%	4.35%	8.70%
Item 12	F	Raw #	33	6	13	0	9	4	4
		%	47.8%	8.70%	18.8%	0%	13.0%	5.80%	5.80%
Total		Raw #	369	86	113	36	107	49	68
		Mean/69	**30.8**	**7.17**	**9.42**	**3.00**	**8.92**	**4.08**	**5.67**
		M mean	31.7	7.50	8.50	3.17	8.50	4.17	5.50
		F mean	29.8	6.83	10.3	2.83	9.33	4.00	5.83
		%	44.6%	10.4%	13.6%	4.35%	12.9%	5.92%	8.21%
		SD	3.82	1.59	4.91	5.77	1.38	1.88	2.50

Table 15: Results of the DAT test by item

In this case, Gender does not seem to be a relevant variable, as 'Target' answers for masculine items were only marginally more frequent. '*Clitic Ø' and 'Case errors' were slightly more common in responses to feminine items, but the M or F means for other types of responses were not significantly distinct. This is coherent with the lack of Gender marking in 3DAT clitics.

The results were coded again for a more specific analysis of the data on the subject (Table 16, 18) and direct object of the items (Table 19, 21). Differently from the ACC test, two children (S9 from G1, aged 4;11, and S13 from G2, 5;2) produced a full DP subject instead of a subject pronoun.

		Correct subject			Gender error			Subject omission			Full DP
		M	F	Total	M	F	Total	M	F	Total	Total
G1	Raw #	54	31	85	11	32	43	0	2	2	2
	Mean/12			**7.72**			**3.91**			**0.18**	**0.18**
	%	81.8%	47.0%	64.4%	16.7%	48.5%	32.6%	0%	1.52%	1.52%	1.52%
	SD			1.95			1.87			0.60	0.60
G2	Raw #	129	91	220	7	46	53	1	1	2	1
	Mean/12			**9.57**			**2.30**			**0.09**	**0.04**
	%	93.5%	65.9%	79.7%	5.07%	33.3%	19.2%	0.72%	0.72%	0.72%	0.36%
	SD			2.39			2.40			0.29	0.21
G3	Raw #	97	84	181	5	18	23	0	0	0	0
	Mean/12			**10.7**			**1.35**			**0**	**0**
	%	95.1%	82.4%	88.7%	4.90%	17.7%	11.3%	0%	0%	0%	0%
	SD			1.66			1.66			-	-
G4	Raw #	103	92	195	4	16	20	1	0	1	0
	Mean/12			**10.8**			**1.11**			**0.06**	**0**
	%	95.4%	85.2%	90.3%	3.70%	14.8%	9.26%	0.93%	0%	0.46%	0%
	SD			1.25			1.23			0.24	-
Total	Raw #	383	229	681	27	112	139	1	3	5	3
	Mean/12			**9.87**			**2.01**			**0.04**	**0.07**
	%	92.5%	70.5%	82.3%	7.6%	28.6%	16.8%	0.2%	0.9%	0.60%	0.36%
	SD			2.15			2.08			0.27	0.31

Table 16: Analysis of the subjects in the DAT test per group

The results for correct subjects are overall similar to those of the ACC test, but null subjects were slightly less frequent. Differently from the responses relative to 'Target' 3DAT clitics (Table 14), the Group variable proved to be significant when considering 'Correct subject' productions ($\chi^2(3) = 16.856$; $p < .001$). Children from G1 were significantly less accurate than those in the other groups; G2 was significantly less accurate than G4. Table 17 summarises the results for the statistical analysis of 'Correct subject' in relation to Group:

	EST	SE	z-ratio	p-value
G1 vs. G2	2.163	0.571	3.790	**< .05**
G1 vs. G3	2.019	0.575	3.511	**< .001**
G1 vs. G4	2.163	0.571	3.790	**< .001**
G2 vs. G3	0.848	0.497	1.707	= .09
G2 vs. G4	0.992	0.493	2.013	**< .05**
G3 vs. G4	0.144	0.548	0.264	= .79

Table 17: Results of the statistical analysis of 'Correct subject' in the DAT task per Group

Subject Gender proved to be a predictor of performance for correct subjects ($\chi^2(1) = 23.639$; p < .001): masculine subjects were produced more accurately than feminine subjects (EST = 1.93; SE = 0.27; z-ratio = 7.2; p < .001), with a corresponding higher rate of 'Gender errors' in feminine subjects (EST = 2; SE = 0.26; z-ratio = 7.66; p < .001). Again, this preference for masculine subjects is supported by the fact that 7 children in G1 and G2 produced exclusively masculine subjects, while only S3 from G1 and S26 from G2 produced all feminine subjects.

The results were analysed per item to see if any other relevant data could be observed based on Type or Subject Gender. The distribution of masculine and feminine subjects in the items of the DAT test, as shown in Table 18, corresponds to the gender of the indirect object (see Table 15).

The data per item confirm that Subject Gender plays a role in subject accuracy. Although Type in itself did not prove to be a predictor of performance for any subject production, the results for the mismatched items are still interesting: children almost always correctly produced a masculine subject in Item 5, even though its direct object's Gender marking was not the same as that of the two other arguments. Items 10 and 12, instead, seem to have been of higher difficulty for correctly producing a feminine subject, but their rates are still roughly in line with those of the other feminine items.

	Subject	Correct subject	Gender error	Subject omission	Full DP
Item 1	F	54 (78.3%)	14 (20.3%)	1 (1.45%)	0 (0%)
Item 2	M	65 (94.2%)	4 (5.8%)	0 (0%)	0 (0%)
Item 3	M	66 (95.7%)	3 (4.35%)	0 (0%)	0 (0%)
Item 4	F	49 (71.0%)	19 (27.5%)	1 (1.45%)	0 (0%)
Item 5	M	63 (91.3%)	4 (5.80%)	1 (1.45%)	1 (1.45%)
Item 6	F	49 (71.0%)	20 (29.0%)	0 (0%)	0 (0%)
Item 7	M	63 (91.3%)	5 (7.25%)	1 (1.45%)	0 (0%)
Item 8	F	55 (79.7%)	13 (18.8%)	0 (0%)	1 (1.45%)
Item 9	M	63 (91.3%)	5 (7.25%)	0 (0%)	1 (1.45%)
Item 10	F	42 (60.9%)	26 (37.7%)	1 (1.45%)	0 (0%)
Item 11	M	63 (91.3%)	6 (8.7%)	0 (0%)	0 (0%)
Item 12	F	49 (71.0%)	20 (29.0%)	0 (0%)	0 (0%)
Total	Raw # (%)	681 (82.3%)	139 (16.8%)	5 (0.48%)	3 (0.36%)
	Mean/69	**57.08**	**11.58**	**0.42**	**0.25**
	M mean	63.8	4.50	0.17	0.33
	F mean	49.7	18.7	0.33	0.17
	SD	8.08	8.08	0.50	0.45

Table 18: Analysis of the subject in the DAT test per item

The higher mean of 'Gender errors' in feminine subjects in the DAT test might be influenced by the higher number of verb arguments, or possibly by the fact that the target 3DAT '*lui'* is homophonous to the strong masculine pronoun morpheme '*lui*'. Due to this, there might have been attraction between the indirect object pronoun and the subject, meaning the children's mental grammar associated the 3DAT clitic (actually unmarked for Gender) with masculine φ-features and mistakenly marked the whole sentence accordingly. This hypothesis will be further explored when investigating the results of the direct objects per item (Table 19).

Another coding was performed, to observe if any relevant data could be found regarding the direct objects of the items. The sentences were coded as 'Full DP objects' (correct full DPs and 'Gender', i.e. full DPs with an article of the wrong gender), 'ACC clitic' (correct or with a

gender error), 'Null object' (Object Ø and *lui + Ø object* structures) and 'Other', which include all other non-target strategies that led to a wrong NP and DP. These categories are exemplified below (28-31) based on Item 8; once again the coding did not take into account the overall grammaticality of the sentences or their status as target or non-target for the main DAT test, but it strictly focused on the direct objects.

Full DP : (28.a) *Elle donne **le**   gâteau.*   Correct
She gives   the.MS.SG cake

(28.b) **Elle le   donne **une**   gâteau.*   Gender
*She it.3ACC.MS.SG gives a.FM.SG cake

ACC clitic: (29.a) *Il **le**   donne.*   Correct
He it.3ACC.MS.SG gives

(29.b) *#Elle **la**   donne.*   Gender
#She it.3ACC.FM.SG gives

Null object : (30.a) **Ø à   sa grand-mère, après grand père n'est pas venu*   Null object
*'Ø to her grandma, after grand father has not come'

(30.b) **Elle lui   donne Ø.*   *Lui + Ø*
*She to.him gives Ø

Other :   (31) **Elle est donné **pizza**.*
*She is given pizza

In general, all children produced a majority of correct objects as full DPs, regardless of age – though accuracy was higher for the older children in G3 and G4 compared to the children in G1 and G2. Group proved to be a predictor of performance only when considering 'Null object' as the dependent variable ($\chi^2(3) = 446.2$; $p < .001$): children in G1 had a significantly higher percentage of object omissions compared to the older children, while the other three groups did

not show any statistically relevant difference. The results for the statistical analysis of 'Null objects' as the dependant variable with Group as the fixed factor are summarised in Table 20.

		Full DP		ACC clitic		Object Ø		Other
	Value	Correct	Gender	Correct	Gender	Null obj.	*lui* + Ø	
G1	Raw #	85	5	9	4	20	2	7
	Mean/12	**7.73**	**0.45**	**0.82**	**0.36**	**1.82**	**0.18**	**0.64**
	%	64.4%	3.79%	6.82%	3.03%	15.2%	1.52%	5.30%
	SD	3.80	0.82	1.66	0.67	1.83	0.60	1.21
G2	Raw #	207	4	28	3	11	15	8
	Mean/12	**9.00**	**0.17**	**1.22**	**0.13**	**0.48**	**0.65**	**0.35**
	%	75.0%	1.45%	10.1%	1.09%	3.99%	5.43%	2.90%
	SD	3.64	0.39	2.39	0.34	1.08	1.94	0.57
G3	Raw #	167	3	10	3	2	14	5
	Mean/12	**9.82**	**0.18**	**0.59**	**0.18**	**0.12**	**0.82**	**0.29**
	%	81.9%	1.47%	4.90%	1.47%	0.98%	6.86%	2.45%
	SD	2.60	0.53	1.28	0.53	0.33	2.16	0.47
G4	Raw #	180	8	7	4	3	5	9
	Mean/12	**10.0**	**0.44**	**0.39**	**0.22**	**0.17**	**0.28**	**0.50**
	%	83.3%	3.70%	3.24%	1.85%	1.39%	2.31%	4.17%
	SD	3.11	1.04	1.42	0.94	0.51	0.96	0.79
Total	Raw #	639	17	54	14	36	36	29
	Mean/12	**9.26**	**0.25**	**0.78**	**0.20**	**0.52**	**0.52**	**0.42**
	%	77.2%	2.05%	6.52%	1.69%	4.35%	4.35%	3.50%
	SD	3.32	0.71	1.81	0.63	1.15	1.63	0.74

Table 19: Analysis of the direct object in the DAT test per group

	EST	SE	z-ratio	p-value
G1 vs. G2	2.010	0.818	2,456	**< .05**
G1 vs. G3	3.296	1.058	3,117	**< .01**
G1 vs. G4	3.043	0.997	3,054	**< .01**
G2 vs. G3	1.287	0.995	1,293	= .20
G2 vs. G4	1.034	0.917	1,127	= .26
G3 vs. G4	0.253	1.141	0,222	= .82

Table 20: Results of the statistical analysis of 'Null object' in the DAT task per Group

It is also relevant to mention that among all correct 'Full DP' objects, children overall produced 358 DPs with a definite article and 281 with an indefinite article, but they also resorted to using

possessive adjectives instead of articles 31 times. This resulted in sentences such as (32), with the possessive adjectives always reflecting the correct gender φ-features of the object.

(32) *Elle lui   donne sa   pomme.*
      She to.him.3SG gives her.3SG.POSS apple
      'She gives her her apple'

This was not the case with the DPs produced in the non-target answers to the ACC task: children mainly produced definite articles (127 over the total 156 'Full DP' answers). They produced indefinite articles only 8 times, and used a possessive adjective 15 times, mainly in Item 12 (e.g., *elle coiffe sa grand-mère*, 'she brushes her grandmother ['s hair]', but sometimes also as the semantically erroneous *elle coiffe ses cheveux,*'she brushes her [own?] hair'). Interestingly, when producing full DPs as the direct object in the ACC test, both types of articles and possessive adjectives were almost always correctly marked for Gender in accordance with their corresponding NP. The only exceptions are the responses for Item 8 by S9 (from G1, aged 4;11), which contained a null-DP object, and those to Item 9 by S37 (G3, 6;1) and Items 4, 6, 9, 12 by S64 (G4, 7;5), which contained a DP gender error. The much lower rate of gender errors in the 'Full DP' responses produced instead of the 3ACC clitics in the ACC task shows that the children know the correct Gender marking for the direct objects but occasionally fail to take it into account when producing a 3ACC clitic or a full DP object alongside a 3DAT clitic. This is furtherly proved by the fact that *la pomme* 'the apple', present as a direct object in both tasks, was erroneously produced as "*le pomme*" in Item 11 of the ACC task only by S64, whereas five children made the same mistake with Item 6 of the DAT test. It is possible that this is linked to the fact that dative sentences have three verbal arguments, meaning they are much more taxing on the children's working memory, which might struggle to keep in mind the correct φ-features for all complements.

The results for the direct objects of the DAT task were once again divided by item, as presented in Table 21.

	Object	Full DP		ACC clitic		Object Ø		Other
		Correct	DP err.	Correct	Gender	Null obj.	$lui + Ø$	
Item 1	F	49 71.0%	1 1.45%	7 8.70%	2 2.90%	4 5.80%	3 4.35%	3 4.35%
Item 2	M	53 76.8%	1 1.45%	3 4.35%	0 0%	4 5.80%	6 8.70%	2 2.90%
Item 3	M	53 76.8%	0 0%	9 13.0%	0 0%	1 1.45%	4 5.80%	2 2.90%
Item 4	F/M[8]	55 79.7%	2 2.90%	4 5.80%	0 0%	6 8.70%	1 1.45%	1 1.45%
Item 5	F	54 78.3%	2 2.90%	1 1.45%	2 2.9%	5 7.25%	5 5.80%	0 0%
Item 6	F	56 81.2%	5 7.25%	2 2.90%	1 1.45%	2 2.90%	2 2.90%	1 1.45%
Item 7	M	52 75.4%	2 2.90%	6 7.25%	0 0%	3 4.35%	1 1.45%	5 7.25%
Item 8	F	40 58.0%	2 2.90%	4 4.35%	6 8.70%	4 5.80%	3 4.35%	10 14.5%
Item 9	M	54 78.3%	2 2.90%	5 7.25%	1 1.45%	2 2.90%	4 5.80%	1 1.45%
Item 10	M	56 81.2%	1 1.45%	3 4.35%	2 2.90%	1 1.45%	4 5.80%	2 2.90%
Item 11	M/F[8]	58 84.1%	1 1.45%	6 8.70%	0 0%	2 2.90%	1 1.45%	1 1.45%
Item 12	M	59 85.5%	1 1.45%	4 4.35%	0 0%	2 2.90%	2 2.90%	1 1.45%
Total	Raw #	639	20	54	14	36	36	29
	Mean/69	**53.3**	**1.67**	**4.50**	**1.17**	**3.00**	**3.00**	**2.42**
	M mean[9]	54.5	1.17	5	0.5	2.17	3.50	2.17
	F mean	49.8	2.50	3.50	2.75	3.75	3.25	3.50
	%	77.2%	2.42%	6.52%	1.69%	4.35%	4.35%	3.50%
	SD	4.96	1.23	2.24	1.75	1.60	1.65	2.71

Table 21: Analysis of the direct object in the DAT test per item

[8] The intended target object for these items was respectively F for item 4 and M for item 11. However, children of all groups used a corresponding lexical object of the opposite gender in their answer (i.e., in item 4 '*un/il conte de fée*' (M) was often replaced by '*une/l'histoire*' (F); in item 11 '*une/la balle*' (F) was often replaced by '*un/le ballon*' (M)). This affected the counting of gender errors in Clitic objects, as it was impossible to determine if each child intended to produce a pronoun replacing a M or equally possible F object.

[9] The general means/69 were calculated based on all 12 answers, while gendered means were calculated only based on the 10 items with a univocally gendered target object.

Object Gender does not play a role in performance for 'Correct full DP' objects: although masculine direct objects were produced as 'Correct full DPs' more frequently than feminine ones, the lower number of unequivocally feminine items renders this value less significant. Object Gender was not a significant predictor for the two categories of omission either: when considering 'Null object' sentences as the dependent variable, feminine objects were omitted only slightly more frequently, and '*lui* + Ø' sentences were roughly evenly distributed between masculine and feminine items. The only type of response which showed a statistically significant difference when considering Object Gender as the fixed factor was 'ACC clitic gender error' ($\chi^2(2) = 514.75$; p < .001), with a higher rate of masculine 3ACC clitics produced instead of the correctly marked feminine ones (EST = 2.28; SE = 0.77; z-ratio = 2.96; p < .01).

Interestingly, the mismatched items reflect the tendency for similarly gendered items. In fact, the low accuracy shown in feminine subject production for Items 10 and 12 is not carried over to the masculine object production, as their rates for correct DPs are among the highest in the DAT test. Additionally, Item 5 has a rather low percentage of correct DP objects in favour of object omissions.

Chapter 4. Comparing results with previous tests on French

As previously presented in section 1.2, the analyses by Zesiger et al. (2010), Tuller et al. (2011) and Delage et al. (2016) investigated the production of 3ACC clitics in French-speaking children and analysed the different factors that seem to impact on the accuracy of these pronouns.

As a brief reminder, Zesiger et al. (2010) investigated the role of Gender marking in 3ACC clitics, suggesting that the additional marking is what causes lower accuracy in production of 3ACC clitics compared to 1st and 2nd person ACC and reflexive clitics. They specified that children seem to prefer the morphologically "unmarked" masculine 3NOM and 3ACC pronouns to the explicitly marked feminine counterparts. The data presented in Chapter 3 supports this claim, as Gender proved to be a significant predictor of performance for both 3ACC clitics and 3NOM clitics in the ACC and DAT tasks.

As for Tuller et al. (2011), when investigating the accuracy of 3ACC clitics, they hypothesised that the main cause for the difficulties shown by the children was a working memory overload – once again, linked to the explicit marking for Gender. They observed that the children in their test, when presented with an item that with subject and object mismatched for Gender, children usually marked the first pronoun of their response in accordance with the φ-features of the last DP in the prompt. The second pronoun, instead, would be marked as the opposite Gender.

In relation to the groups of the children tested for the experiment discussed in this thesis, this does not seem to be the case: overall, there were only 9 cases of 'Gender error' for both subject and direct object clitics in the ACC test, over a total of 115 'Gender error' subjects and 40 'Gender error' 3ACC clitics. Additionally, 8 of these 9 sentences were produced in response to items in which the subject and object were both marked as feminine (with the exception of one combined gender error in Item 2, in which the two arguments were not in accordance for Gender). The results of the DAT task showed a similar trend, with only 10 instances of combined

gender errors in subject and direct objects (expressed both as DP gender errors in full DPs and as 'Gender error' in ACC clitics), as opposed to 139 subject 'Gender errors' and 34 overall object 'Gender errors'. In this case, the children produced 7 combined gender errors in feminine-marked items, 1 in Item 4 – in which both a feminine and a masculine object were acceptable – and 2 in Items 10 and 12, in which the two arguments did not have the same Gender.

Despite this difference between Tuller et al.'s data and those collected in the experiment presented in this thesis, it is apparent that Gender has an impact on the production of 3ACC clitics. As Tuller et al. (and many others) have observed, the lower accuracy in production is not reflected in 1st and 2nd person clitics or reflexive clitics, which encode Person (and perhaps Number), but lack Gender distinctions.

Delage et al. (2016) investigated three factors involved in the production of 3ACC clitics: Gender marking, discourse independency and optionality of object clitics in some contexts. Concerning the role of Gender as a predictor of performance, Delage et al. observed that most gender errors were produced in response to items that had a mismatched subject and direct object. This would frequently lead to a uniformization of Gender in the two clitics in the children's responses.

As briefly mentioned in Chapter 3, this is coherent with the results from the mismatched items in the ACC task of the experiment discussed in this thesis, as 'Gender error' answers were more frequent in Items 2, 3 and 7 than in other items (3ACC gender errors in mismatched items: mean 6.33, SD 2.52; other items: mean 2.56, SD 2.96). Higher gender error rates in mismatched items were also observed in the production of subject pronouns (3NOM gender errors in mismatched items: mean 12.67, SD 5.86; in other items: mean 8.3, SD 6.48). However, children seemed to prefer switching the gender of the subject instead of that of the 3ACC clitic when the 3NOM pronoun was feminine. Table 22 summarizes the strategies employed by the children

when producing a gender error in either the 3NOM or the 3ACC clitic, leading to uniform Gender marking in the answer. The last column reports the total of 'Gender error' responses for both NOM and ACC pronouns, as not all gender errors for NOM or ACC clitics led to uniformization of the marking for Gender.

Group	Item	Target NOM/ACC	M for F NOM	F for M NOM	M for F ACC	F for M ACC	Total item Gender err.
G1			5			0	NOM
G2			7			2	15
G3	Item 2	F / M	0	--	--	1	ACC
G4			2			1	6
G1				2	1		NOM
G2				3	4		6
G3	Item 3	M / F	--	1	1	--	ACC
G4				0	3		9
G1			6			0	NOM
G2			7			1	17
G3	Item 7	F / M	1	--	--	1	ACC
G4			3			2	4
	Total		31	6	9	8	
	Mean		3.88	1.50	2.25	1.00	
	SD		2.75	1.29	1.5	0.76	

Table 22: 'Gender error' in mismatched ACC items

Once again, the preference in production of the morphologically default masculine pronouns is shown by the extremely high rate of masculine 3NOM clitics produced instead of their explicitly marked feminine counterparts. Although the raw number of total gender-shifts in the production of 3ACC clitics was similar between M-for-F and F-for-M, a 'Gender error' in response to an item eliciting a feminine 3ACC clitic was twice as likely as a 'Gender error' in an item targeting masculine clitics.

The results in Table 22 were comparable to the corresponding ones from the DAT 'Gender error' answers for the subject and direct object (made up of DP and ACC clitic gender error). The data from the DAT task are reported in Table 23.

Group	Item	Target NOM/obj.	M for F NOM	F for M NOM	M for F obj.	F for M obj.	Total item Gender err.
G1				0	1		NOM
G2	Item 5	M / F	--	1	0	--	4
G3				1	2		Obj.
G4				1	1		4
G1			6			0	NOM
G2	Item 10	F / M	10	--	--	0	26
G3			4			0	Obj.
G4			6			1	3
G1			7			1	NOM
G2	Item 12	F / M	10	--	--	0	20
G3			1			0	Obj.
G4			2			0	1
	Total		46	3	4	2	
	Mean		5.75	0.75	1	0.25	
	SD		3.23	0.50	0.82	0.46	

Table 23: 'Gender error' in mismatched DAT items

Similarly to the ACC task, children overwhelmingly favoured switching a feminine subject to a non-target masculine one, even though the subject had the same Gender as the indirect complement. The production of direct objects did not show a difference in gender shift as evident as that in 3NOM clitics.

When considering the optional omission of object clitics in French, which could account for the rates of null objects in production tests, Delage et al. (2016) specified that it is only possible when the direct object is sufficiently implied by the verb. Among the verbs in the items for the ACC task presented in this thesis, only *manger* 'eat' in Item 3 could arguably lead to an acceptable sentence when omitting the clitic; however, only S2 (from G1, aged 4;5), S26 (G2, 5;7) and S43 (G3, 6;7) produced a 'Clitic Ø' response with this verb. These three responses are not statistically relevant, and if considered separately from the other clitic omissions they would correspond to 4.23% of the total 71 'Clitic Ø' responses in the ACC task (mean value 0.04 over the total 69 responses to Item 3, 4.35%, SD 0.21).

Chapter 5. Comparing results with the test on Italian clitics

Cardinaletti et al. (2021) tested 178 Italian children aged 5;9-10;11 and a control group of 12 Italian monolingual adults. The following table summarises the participants in the study:

Group	#	Age	Mean	SD (years)
TD1	30	5;9-6;11	6;5	0.26
TD2	41	7;0-7;11	7;5	0.29
TD3	42	8;0-8;11	8;4	0.28
TD4	41	9;0-9;11	9;3	0.22
TD5	23	10;0-10;11	10;5	0.22
Adults	12	21-31	25	2.98

Table 24: Number and age of participants in Cardinaletti et al. (2021)

The results of the younger children of TD1 and TD2 in Cardinaletti et al. (2021) can be compared to the data from G3 and G4 of this study, as shown in Table 25. Aside from the much lower accuracy for 'Target' responses, the alternative strategies are somehow similar: the Italian children produced full DPs as their main non-target response in the ACC test and resorted more frequently to clitic omission in the DAT test; the rates of 'Other' responses are almost identical.

Group	Values	ACC				DAT			
		Target	**Full DP**	**Clitic Ø**	**Other**	**Target**	**Full PP**	**Clitic Ø**	**Other**
TD1	Mean/12	10.4	0.8	0.5	0.3	10.5	0.3	0.7	0.5
	Mean %	86.7%	6.7%	4.1%	2.5%	87.6%	2.5%	5.8%	4.1%
TD2	Mean/12	10.9	0.75	0.3	0.05	11.3	0.02	0.5	0.2
	Mean %	90.9%	6.2%	2.5%	0.4%	94.1%	0.1%	4.1%	1.7%
G3	Mean/12	7.94	2.41	0.76	0.24	5.82	0.88	1.29	0.59
	Mean %	66.2%	20.1%	6.4%	2%	48.5%	7.4%	10.8%	4.9%
G4	Mean/12	7.83	3.11	0.39	0.06	6.56	2.39	1.33	0.17
	Mean %	65.3%	25.9%	3.2%	0.5%	54.6%	19.9%	11.1%	1.4%

Table 25: Results of the test on Italian compared to G3 and G4

However, as briefly mentioned in section 1.2, accuracy in Italian was higher for 3DAT clitics compared to 3ACC ones. This was not true for the French DAT task, despite *lui/leur* only encoding Number and all antecedents being singular, thus removing the requirement of said additional marking. Additionally, the results for the French test showed more persistent clitic omissions in the DAT task compared to the Italian children of TD1 and TD2. Another difference was the absence of 3ACC gender errors in Italian, whereas they were common in the French test across all four groups and were even reflected in the 'ACC clitic' responses of the DAT task. Finally, the types of response implying an ACC clitic in the DAT task (i.e., 'ACC clitic' and 'Case error') were unattested in the Italian test.

The test on Italian showed an occasional use of clitic clusters (34) and clitic doubling (35) in the DAT task. Clitic clusters are compound pronouns that contain both the 3DAT clitic *gli* (other 3DAT clitics are ungrammatical, see Cardinaletti, 2008; 2010) replacing the indirect object, and a 3ACC clitic which substitutes the direct object. Clitic doubling, instead, consists of a co-production of a clitic and its corresponding complement as a full PP in the same sentence. This type of structure is not acceptable in formal Italian, but it is common in colloquial, low-monitored contexts. The reported sentences refer to the Italian counterpart of Item 3 in the DAT test (example 17, section 2.1).

(34)   [pro] ***glielo***   *dà.*
        [he] to.him.3SG.MS+it.3SG.MS gives
        'he gives it to him.'

(35)   [pro] ***gli***   *dà   un disegno al   papà.*
        [he] to.him.3SG.MS gives a drawing to.the dad
        'he gives a drawing to his dad.'

Clitic doubling (or CD) was present in both the DAT and ACC tasks of the French test. These responses were coded without taking into account the redundant full DP (36.a) or PP (36.b) in the sentence.

(36.a) *elle **l'** attrape #la grenouille avec sa langue.* (Item 9, ACC)
　　　she it.SG catches #the frog with his.3FM.SG tongue
　　　'It catches the frog with its tongue.'[10]

(36.b) *il **lui** donne un ballon #à l' enfant.* (Item 2, DAT)
　　　he to.him.SG gives a balloon #to the child.MS
　　　'He gives a balloon to him.'

It is worth mentioning that some French speakers may use clitic subject pronouns even when the subject is already present in the sentence as a full DP (Zribi-Hertz, 1994). This results in sentences containing a different type of CD such as (37).

(37) *#La giraffe **elle** mord Tomas.*
　　　#The giraffe she bites Tomas
　　　'The giraffe bites Tomas.'

Many children from the groups analysed in this thesis produced clitic doubling of the subject (38) in the DAT task, as summarised in Table 26. This type of construction was not found in the items eliciting a 3ACC clitic or in the data from the Italian children. Out of the total 8 subject clitics, four were produced in response to Item 2, two in response to Item 5, and one for Item 3 and Item 8.

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[10] The theta-agent of the item was a cow; unlike English, French is a gendered language, meaning that all words are grammatically masculine or feminine. In this case 'la/une vache' is a feminine noun, so all pronouns referring to it were correctly marked with feminine φ-features.

Group	Raw #	Mean/12	Mean %	SD
G1	2	0.18	1.52%	0.60
G2	1	0.04	0.36%	0.21
G3	3	0.18	1.47%	0.53
G4	2	0.11	0.93%	0.47
Total	8	0.12	0.97%	0.44

Table 26: Clitic doubling NOM in the French DAT task

Zribi-Hertz (1994) noted that clitic doubling of the subject could happen regardless of the object being a full DP (as in 37), an accusative, dative or reflexive clitic, or even a partitive or locative clitic (i.e., *en* and *y*, respectively). This would lead to sentences with clitic clusters such as in (38).

(38.a) *#La   giraffe **elle le**   mord.*
   #The giraffe she him.3ACC.MS.SG bites
   'The giraffe bites him.'

(38.b) *#La giraffe **elle lui**   mord la main*
   #The giraffe she to.him.3SG bites the hand
   'The giraffe bites his/her hand'

(38.c) *#La giraffe **elle y**   habite*
   #The giraffe she there lives
   'The giraffe lives there'

Audollent & Tuller (2003) argued that such clusters are an example of multiple syntactic operations being applied to functional categories in close position, in which each clitic requires its own interpretation for the original merging position, raising chain, landing projections and antecedent. This results in a heightened difficulty when interpreting the pronouns in the clusters, suggesting that failure to correctly interpret such sentences might be an indicator of SLI. With respect to the sentences with a clitic doubling of the subject (summarised previously in Table

26), all responses were constructed as 'Full PP' (as in 39), meaning there was no 3DAT clitic, and consequently they led to none of the clusters in (38).

(39) *#le clown il donne le ballon à l' enfant* (Item 2, DAT)
      #the clown he gives the balloon to the child

However, Audollent & Tuller (2003) specified that constructions such as those in (38) are limited to informal spoken French and are only valid for clusters of subject clitics produced alongside ACC, DAT or reflexive clitics; in their corpus there were no examples of clusters made up of two object clitics (i.e., an ACC clitic followed by a DAT clitic, like the clusters found in the experiment presented in this thesis, which will be discussed shortly). The only other type of acceptable cluster functioning as a lexicalised ensemble found by Audollent & Tuller were those such as **je m'en** *souvient* ('I remember', with a subject, reflexive and partitive clitic); in the data analysed in this thesis there were no clusters of this kind, only 3ACC+3DAT clusters such as those exemplified in (41).

Productions containing a clitic doubling of the direct or indirect object were more common in French than in Italian, as shown in Table 27. For a more effective comparison of the results, the groups are distributed so that TD1 and TD2 are aligned with G3 and G4, as the children roughly belong to the same age range. Clitic doubling responses were produced by many children alongside a clitic for the direct or indirect object: two children in G1 produced a CD response in the ACC test, five children in G2 produced three CD in the ACC test and two in the DAT test; two children from G3 produced a CD each per task; one child in G4 produced a CD in the ACC test. Two children from G3 and G4 produced multiple CD sentences: S50 (aged 6;10) produced 2 CD in the ACC test and 6 in the DAT test, and S60 (7;2) produced 2 CD in the ACC test and 3 in the DAT test. CD sentences are semantically redundant in both Italian and French, but they were much more common in the French test.

Group	Mean/12	Mean %	SD	Group	Raw #	Mean/12	Mean %	SD
				G1	2	0.18	1.52%	0.40
				G2	5	0.22	1.81%	0.42
TD1	0.03	0.25%	0.18	G3	10	0.59	4.90%	1.94
TD2	0.29	2.41%	1.56	G4	6	0.33	2.78%	1.19
TD3	0.11	0.91%	0.77					
TD4	0.02	0.16%	0.15					
TD5	-	-	-					
Adults	0.9	0.75%	1.62					

Table 27: Clitic doubling ACC/DAT in the Italian and French tests

This high incidence could be explained once again through the limited capacity of the children's working memory: they might have felt the need to repeat the full DP or PP object to "remind" which character the clitic refers to.

Clitic clusters were instead rather scarce in the French tests. More specifically, only S10 (G1, aged 5;0) produced a cluster in the ACC test (40.a), while in the DAT test this strategy was used by S22 (G2, 5;6) (40.b) and S27 (G2, 5;8) (40.c). These responses were coded without taking into account the clusters (40.a was coded as 'Gender error'; 40.b and 40.c as 'Target').

(40.a) *il #le   lui   coiffe.*   (S 10, Item 12, ACC)
     he #it.3MS.SG to.him.3SG brushes
     'He brushes it for her.'

(40.b) *il le   lui   lit   #le journal.*   (S22, Item 7, DAT)
     he it.3MS.SG to.him.3SG reads #the newspaper
     'He reads it/the newspaper to him.'

(40.c) *Elle le   lui   donne #la   fleure.* (S27, Item 1, DAT)
   she it.3MS.SG to.him.3SG gives #the.SG.FM flower.FM
     'She gives it/the flower to her.'

It is interesting to note that all productions containing a clitic cluster reflect the correct word order for 3rd person clitic clusters. While 1st and 2nd person clusters show the order *DAT + ACC* (e.g., *je me le rappelle*, 'I remember it', literally "I remind myself of it"), 3rd person clitic clusters show the opposite order *3ACC + 3DAT* (e.g., *je le lui rappelle,* 'I remind him/her of it'). It is also peculiar that the two clusters produced in the DAT task also present a redundant full DP of the direct object, meaning there are both a cluster and a CD[11]. This is similar to a sentence produced in the DAT task by a child from TD2 in Cardinaletti et al. (2021), which contained both a CD and a cluster (41), though the doubling fell on the indirect object instead of the direct object:

(41) [pro] *glie-lo*　　　　　　　*sta regalando al*　*papà*
　　　 [he] to.him.3SG.MS+it.3SG.MS is　giving　　to.the dad
　　　 'He is giving it to him.'

Table 28 reports data from the Italian DAT test and both French tests for clitic clusters. Once again, the groups comparable by age (i.e., the younger children in the Italian test and the older children in the French test) are aligned.

Group	Mean/12	Mean %	SD	Group	Raw #	Mean/12	Mean %	SD
				G1	1	0.09	0.76%	0.30
				G2	2	0.09	0.72%	0.29
TD1	2.93	24.4%	5.44	G3	0	-	-	-
TD2	0.075	0.62%	3.95	G4	0	-	-	-
TD3	0.064	0.53%	3.27					
TD4	0.057	0.47%	3.41					
TD5	0.045	0.37%	2.52					
Adults	1.91	15.97%	3.87					

Table 28: Clitic clusters DAT+ACC in the Italian test and ACC+DAT in the French test

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[11] The sentences with a cluster were not counted among the other CD productions in Table 26.

The difference between the mean rate of clitic clusters production in G3 and TD1 is very big. Even though three children in the younger groups had produced sentences with clusters, none of the children in G3 and G4 did. This is somewhat unusual since, from a developmental standpoint, the age range of TD1/G3 is that in which children begin to use more complex structures, including clitic clusters. However, when looking back at the data from Table 14, there is a spike in production of 'Case error', 'ACC clitic' and '*lui* + Ø' responses in G3. This increase seems to begin in the responses of G2, whose older children are the same age as the younger ones in TD1. Coincidentally, these types of response were not found in the experiment conducted on Italian by Cardinaletti et al.

As a reminder, Graph 2 summarises the mean percentages of clusters for TD1 and TD2 compared to all four groups from the test on French, alongside the other non-target strategies from the French DAT task:
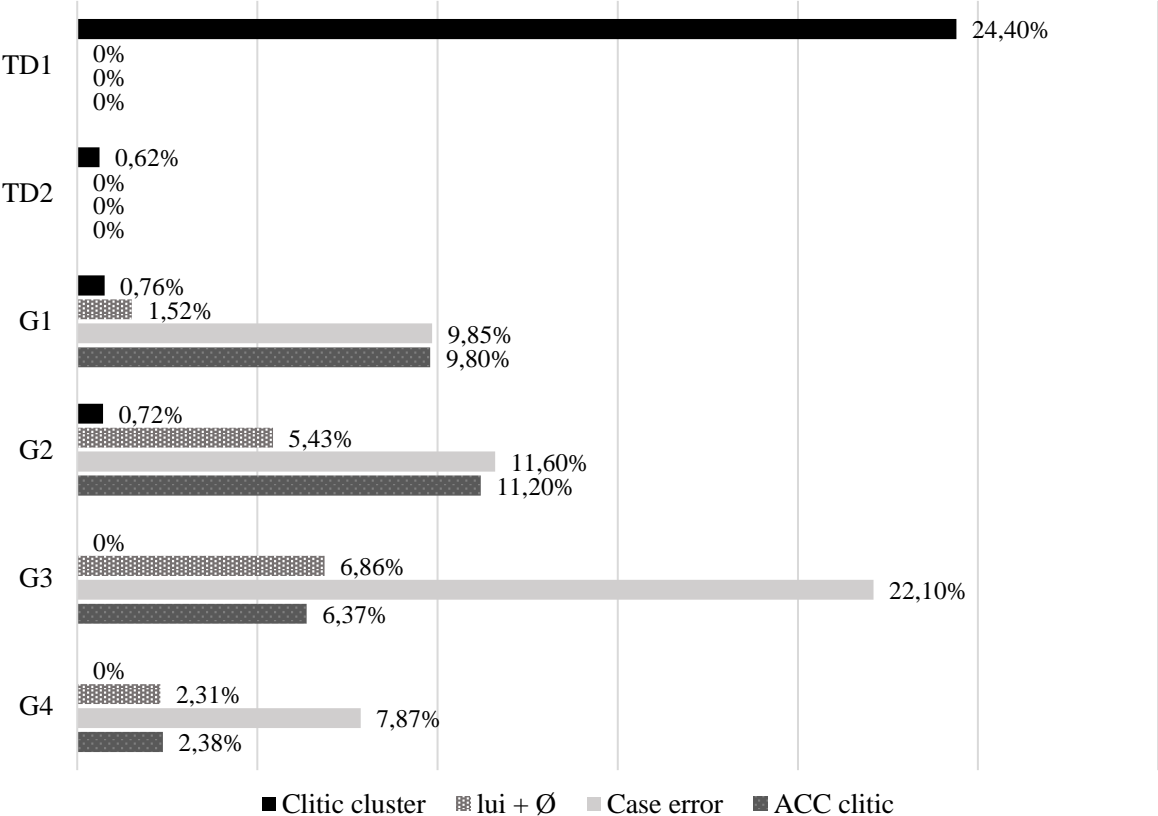
Graph 2: Overview of the mean percentages of clitic clusters and
'Case error', 'ACC clitic' and 'lui + Ø' responses per group

The fact that French children chose to recur to infelicitous ACC clitics in the DAT task, with a spike of 'ACC clitic' responses specifically in G3, might be related to clustering: children might wish to produce a clitic cluster, but fail to produce a 3DAT clitic alongside the 3ACC one. The same could be true for the sentences that had a 3DAT clitic and a null direct object (i.e., *lui + Ø*): it is not unlikely that the children intended to produce a sentence with a cluster but failed to produce the 3ACC clitic. If this hypothesis were true, it would reflect a tendency noted by Varlokosta et al. (2015): in contexts that allow for alternative strategies to full DPs, children tend to use the weakest form available in their language (i.e., clitic pronouns for French). This was especially evident in the data from a group of Portuguese children interviewed by Varlokosta, who often recurred to null objects: since a null object is the weakest direct object element for Portuguese, it is (over)used by children in as many contexts as possible. The same principle could be the cause for the relatively higher percentage of 3ACC omission in French compared to the Italian children from Cardinaletti et al. (2021): since French does allow for clitic omission in some contexts, the children might have occasionally tried to use a null object (without realising they were hyper-regularising the grammatical and semantic rules that determine object optionality). As Varlokosta (2015) argued, the high preference for the weakest form showed by children of all the languages they investigated shows that children at 5 years of age already know how to select between the available options for discourse setting, following the scale *strong pronoun > clitic pronoun > null object*.

However, when they produced a 3ACC+3DAT cluster, the French children from the test analysed for this thesis did so alongside a CD of the direct object. This could be a sign that they are not entirely confident in identifying the alternative strategies available to them, possibly due to the fact that all children are plausibly non-monolingual French speakers, and the co-existence of grammar rules from multiple languages might cause some clash. However, based on this, it seems likely that the fact that the children still produced a full DP direct object in 'Case error'

sentences does not necessary imply an actual substitution of the 3DAT clitic with an erroneous 3ACC one, but the children might have intended to produce a cluster alongside a CD just like in (40.b) and (40.c) and failed to correctly do so.

Chapter 6. Concluding remarks

This thesis has presented data from an elicited production test which aimed at investigating the acquisition of 3rd person singular direct and indirect object clitics in French-speaking children. The children, all attending a school in Geneva, were divided into four groups based on age (G1: 4;5-5;0, mean age 4;8. G2: 5;1-5;11, mean age 5;6. G3: 6;0-6;11, mean age 6;5. G4: 7;0-7;11, mean age 7;3). The items of the two tasks – one per type of clitic pronoun – were a translated version of those used in a previous study on 3rd person singular accusative and dative clitics in Italian (Cardinaletti et al., 2021). Previous research in both languages had focused only on accusative pronouns, meaning that the data collected on dative clitics unfortunately cannot be compared with pre-existing literature.

All groups of children produced a majority of responses containing the target clitics, except for G1 in the DAT task, which recurred to clitic omission in most sentences. The results showed that the children in G1 were significantly less accurate than those in the other groups, while the difference among the older children was less pronounced. There was also a difference in performance based on Case: children were more accurate in the ACC task and produced more full DPs as a non-target response compared to full PPs in the DAT task. Clitic omission, instead, was more frequent as a non-target strategy in the DAT task, as were case errors (i.e., the production of a 3ACC clitic instead of a 3DAT clitic in the DAT task and vice versa). Other non-target responses included gender errors in the ACC task and the production of a 3ACC clitic alongside a null indirect object in the DAT task (e.g., *il le donne Ø*).

The results from the French test were compared to those of Cardinaletti et al. (2021). This was done because the administered test was the same and Italian and French clitics share some morphosyntactic similarities (e.g., 3ACC clitics are marked for Gender, but 3DAT clitics do not encode Gender in either language). The overall results of the French test differed from those of

the test on Italian: the French children generally showed low accuracy for 'Target' productions in both tasks (ACC: 62.9%, DAT: 44.6%) whereas the Italian children were much more proficient (ACC: 88.3%, DAT: 93.2%). Even when comparing children roughly of the same age, the French children were significantly less accurate (Italian ACC: 88.5% vs. French ACC: 65.6%; Italian DAT: 90.9% vs. French DAT: 51.6%). Additionally, the French children showed a much higher rate of clitic omission than Italian children in the DAT task, and the data on Italian did not report either ACC gender errors or ACC clitics with indirect object omission in the DAT task as non-target responses. Instead, the younger Italian children resorted to clitic clusters much more frequently than the French children of the same age (Italian: 24.4% in the DAT task; French: 0.12% in the ACC task; 0.24% in the DAT task).

The low rates of correct 3ACC clitic production observed in the data from this experiment are not unexpected in French, as previous studies have also shown low accuracy with high standard deviation values. Among others, Zesiger et al. (2010), Tuller et al. (2011), Delage et al. (2016) and Varlokosta et al. (2015) investigated direct object clitics through elicited production tasks. Aside from low accuracy, all these previous studies observed that 3ACC clitics seem to be particularly complex in French in comparison to other accusative and reflexive clitics, lagging in accuracy rates until around 8 years of age (Delage et al., 2016). The general consensus finds the most likely cause for this delay in the overt Gender marking of 3ACC clitics (1st and 2nd person accusative clitics and all reflexive clitics do not encode Gender). Other elements that likely influence accuracy are optionality of 3ACC clitics in some colloquial contexts and discourse independency – 3ACC clitics require a non-local antecedent, unlike 1st and 2nd person ACC clitics and reflexive clitics. Another contributing factor might be the limited capacity of young children's working memory, which might fail in correctly registering all the φ-features of the direct object necessary for the correct production of 3ACC clitics (i.e., Case, Person, Number and Gender). The data collected in this thesis seems to support these proposals.

The analysis of subject pronouns was not among the initial goals of this thesis but had to be performed to check if the mismatch between the gender of the subject and the gender of the direct object of three items in each task had any effect on accuracy. The Gender marking of the subject did not seem to affect the production of ACC clitics, but children showed a distinct preference for masculine subject clitics, often producing them even in items that had a target feminine subject. This role of Gender in subject accuracy is likely due to the morphological unmarkedness of the features [masculine] and [singular], which are considered as the "default" features, while [+feminine] or [+plural] markings are added when producing the other pronominal forms.

The mismatch of Gender in the items did not affect the production of the target 3ACC and 3DAT clitics, but there was a higher rate of gender errors in the mismatched items of the ACC task (no relevant difference was observed in the DAT task, but this is coherent with the lack of Gender marking in 3DAT clitics). Additionally, it was more likely that a feminine subject was attracted by the masculine φ-features of the direct object in mismatched items of both tasks, leading to the uniformization of Gender of the two verbal arguments. However, since the rates of correct subjects in mismatched items were roughly in line with other subjects of the same gender, it is hard to determine if this shift in marking was due to the mismatch or if it was influenced by the subject gender and the unmarkedness of the masculine form.

Although, as previously mentioned, French 3DAT clitics are unmarked for Gender, they seem to be much more complex than their Italian counterpart. This is presumably linked to another φ-feature, required in French but encoded in the Italian 3DAT clitic *gli*, namely Number. Despite originally corresponding only to a 3rd person singular masculine form, *gli* in colloquial Italian is nowadays acceptable for feminine and plural referents. French, on the other hand, distinguishes singular *lui* from plural *leur*. This additional marking might be the reason for the higher complexity of French datives, and their lower rate of accuracy.

Another element that might have played a role in the higher complexity of 3DAT clitics was the construction of the test itself: in the items of the DAT task, there were an animate subject, an animate indirect object and an inanimate object, i.e. three verbal arguments. In the ACC task, instead, there were only two arguments, namely the animate subject and an animate or inanimate direct object. Processing the φ-features for all the elements of the DAT items might have been more taxing for the children's working memory (this seems plausible, based on the high rate of DAT clitic omission alongside the other non-target strategies that led to producing an isolated ACC clitic). It could be worthwhile to test this hypothesis in future research on direct and indirect clitics by constructing a more balanced test with items that always contain three arguments and target either clitic through questions that focus on one element at the time. Taking Item 3 (example 17) as reference, in addition to the question eliciting the 3DAT clitic, a question like "*qu'est-ce que il fait au dessin?*","what is he doing to the drawing?", could be added to elicit a 3ACC clitic, as in "*il **le** donne à son papa*", 'he is giving it to his dad'. This could be achieved by selecting all ditransitive verbs, i.e., verbs that require both a direct and indirect object to fulfil their valence.

Another element that could be considered in future experiments to ensure that the test is as balanced as possible is the uniformity of Gender marking in all arguments in the items; alternatively, there could be an equal amount of matched and mismatched items, with an even distribution of masculine and feminine elements in both types of items. As previously mentioned, this was not the case for the test used to collect the data analysed in this thesis, as the items were translated into French without taking into consideration the balance of masculine and feminine direct objects in the items (and leading to an asymmetry of 7 to 5 in the ACC task).

The participants of the study were divided into groups based on their age, using a range similar to that of the groups in Cardinaletti et al. (2021) to allow for an easier comparison among

groups in the two tests. However, the number of children in each group was not as evenly distributed as in Cardinaletti et al., with G2 being made of more than the double of the children in G1.

Additionally, all children interviewed for this test on French were younger than 8 years old; since this seems to be the age at which 3ACC performance reaches adult-like accuracy in French (Delage et al., 2016), it might be interesting to include children around that age to assess their production of both 3ACC clitics (to verify if the performance reaches the expected accuracy levels) and 3DAT clitics, for which data have yet to be collected to establish at which age adult-like accuracy is reached.

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Accusative task

Familiarisation trials:

a. Dans cette histoire, il y a un monsieur qui veut attraper un poisson.

    Regarde, qu'est-ce qu'il fait au poisson?   *Il l'attrape.*

b. Dans cette histoire, il y a une petite fille qui veut attraper une femme médecin.

    Regarde, qu'est-ce qu'il fait à la doctoresse?   *Il l'attrape.*

c. Dans cette histoire, il y a un pingouin qui veut soulever une souris.

    Regarde, qu'est-ce qu'il fait à la souris?   *Il la soulève.*

d. Dans cette histoire, il y a un enfant qui veut frapper un magicien.

    Regarde, qu'est-ce qu'il fait au magicien?   *Il le frappe.*

e. Dans cette histoire, il y a une dame qui veut éplucher une pomme de terre.

    Regarde, qu'est-ce qu'elle fait à la pomme de terre?   *Elle l'épluche.*

Test stimuli:

Item 1: Dans cette histoire, il y a un enfant qui veut détruire un château de sable.

    Regarde, qu'est-ce qu'il fait au château?   *Il **le** détruit.*

Item 2: Dans cette histoire, il y a une dame qui veut peindre un masque.

    Regarde, qu'est-ce qu'elle fait au masque?   *Elle **le** peint.*

Item 3: Dans cette histoire, il y a un enfant qui veut manger une glace.

    Regarde, qu'est-ce qu'elle fait à la glace?   *Il **la** mange.*

Item 4: Dans cette histoire, il y a une dame qui veut peler une poire.

    Regarde, qu'est-ce qu'elle fait à la poire?   *Elle **la** pèle.*

Item 5: Dans cette histoire, il y a un garçon qui veut laver un chien.

    Regarde, qu'est-ce qu'il fait au chien?   *Il **le** lave.*

Item 6: Dans cette histoire, il y a un enfant qui veut jeter un livre.

    Regarde, qu'est-ce qu'il fait au livre?   *Il **le** jette.*

Item 7: Dans cette histoire, il y a une petite fille qui veut capturer un papillon avec un filet.

    Regarde, qu'est-ce qu'elle fait au papillon?   *Elle **le** capture.*

Item 8: Dans cette histoire, il y a un petit garçon qui veut mouiller un monsieur.

Regarde, qu'est-ce qu'il fait au monsieur?   *Il **le** mouille.*

Item 9: Dans cette histoire, il y a une vache qui veut lécher une grenouille.

Regarde, qu'est-ce qu'elle fait à la grenouille?   *Elle **la** lèche.*

Item 10: Dans cette histoire, il y a un garçon qui veut crever un ballon.

Regarde, qu'est-ce qu'il fait au ballon?   *Il **le** crève.*

Item 11: Dans cette histoire, il y a une dame qui veut couper une pomme.

Regarde, qu'est-ce qu'elle fait à la pomme?   *Elle **la** coupe.*

Item 12 - Dans cette histoire, il y a une petite fille qui veut coiffer sa grand-mère.

Regarde, qu'est-ce qu'elle fait à sa grand-mère?   *Elle **la** coiffe*

Dative task:

Familiarisation trials:

a. Dans cette histoire, il y a une doctoresse qui veut donner un bonbon à une petite fille.

Regarde, qu'est-ce qu'elle fait à la petite fille?   *Elle lui donne un bonbon.*

b. Dans cette histoire, il y a un chien qui veut apporter un bâton à un enfant.

Regarde, qu'est-ce qu'il fait à l'enfant?   *Il lui apporte le bâton.*

Test stimuli:

Item 1: Dans cette histoire, il y a une petite fille qui veut donner une marguerite à l'enseignante.

Regarde, qu'est-ce qu'elle fait à l'enseignante?   *Elle **lui** donne une marguerite.*

Item 2: Dans cette histoire, il y a un clown qui veut donner un ballon à un enfant.

Regarde, qu'est-ce qu'il fait à l'enfant?   *Il **lui** donne un ballon.*

Item 3: Dans cette histoire, il y a un garçon qui veut donner un dessin à son papa.

Regarde, qu'est-ce qu'il fait à son papa?   *Il **lui** donne un dessin.*

Item 4: Dans cette histoire, il y a une mère qui veut lire un conte de fées à sa petite fille.

Regarde, qu'est-ce qu'elle fait à sa petite fille?   *Elle **lui** lit un conte de fées.*

Item 5: Dans cette histoire, il y a un monsieur qui veut donner une glace à un petit garçon.

Regarde, qu'est-ce qu'il fait au petit garçon?   *Il **lui** donne une glace.*

Item 6: Dans cette histoire, il y a une dame qui veut donner une pomme à une petite fille.

Regarde, qu'est-ce qu'elle fait à la petite fille?   *Elle **lui** donne une pomme.*

Item 7: Dans cette histoire, il y a un petit garçon qui veut lire le journal à son grand-père.

Regarde, qu'est-ce qu'il fait à son grand-père?   *Il **lui** lit le journal.*

Item 8: Dans cette histoire, il y a une postière qui veut apporter une lettre à une dame.

Regarde, qu'est-ce qu'elle fait à la dame?   *Elle **lui** donne une lettre.*

Item 9: Dans cette histoire, il y a un enseignant qui veut donner un cahier à un enfant.

Regarde, qu'est-ce qu'il fait à l'enfant ?   *Il **lui** donne un cahier.*

Item 10: Dans cette histoire, il y a une petite fille qui veut offrir un gâteau à sa grand-mère.

Regarde, qu'est-ce qu'elle fait à sa grand-mère?   *Elle **lui** offre un gâteau.*

Item 11: Dans cette histoire, il y a un petit garçon qui veut lancer une balle à son ami.

Regarde, qu'est-ce qu'il fait à son ami?   *Il **lui** lance la balle.*

Item 12: Dans cette histoire, il y a une mère qui veut offrir un vélo à sa petite fille.

Regarde, qu'est-ce qu'elle fait à sa petite fille ?   *Elle **lui** offre un vélo.*