Language development in multilingual contexts:

The role of structural differences and similarities in multilingual acquisition

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Outline

- The target system: the expression of inflection, subjects and objects in French;
- Monolingual acquisition of French;
- Multilingual acquisition of French;
- A model to explain the acquisition of French: research questions and hypothesis through parameter hierarchies;
- Results and observations: are there specific tendencies?
- Discussion: The role of differences –and similarities- in multilingual acquisition;
- (Excursus) Code-Switching in multilingual acquisition: The role of differences –and similarities– for the realization of intrasentential code-switching.

Introduction

Monolingual and multilingual utterances found in the corpora:

1. (Théophile, 2;3) * *je* ***va*** *apprendre dessiner dans mon école* [*je vais apprendre*]
   'I go(es) learning how to draw at my school'
2. (Ju_fi, 3;5) **pourquoi* ***un animaux***? [*un animal*]
   'why an animal(s)?'
3. (Adrien, 3;3) ***veux** la oeuf* [*le oeuf*]
   '(I) want the egg'
4. (Eva, 2;6) **après* ***j' ai*** *après*
   'after I have (it) after'

Children realize target-deviant utterances with respect to the expression of inflection, subjects and objects.

Inflection in French

Operational definition of class for the present work:

An inflectional class is a set of inflectional morphemes that provides a language system with morpho-phonological and (possibly) syntactic tools to express the belonging of a lexeme to an inflectional pattern.

The expression of class in French:

- Nouns are only partially affected by class (*-al*/*-aux* nouns). The class feature is psycholinguistically active (cf. Becker et al. 2011) but not morphologically (Brinkmann et al. 2025);
- Adjectives are not inflected for class (D'Aurizio 2025);
- Several approaches for the verbal domain, based on either stem inflection (Hinzelin 2017), (2) ending of the infinitive form (Schwarze 2009), or (3) phonological form (Ferdinand 1996).

Monolingual acquisition of inflection in French:

Summary of results about monolingual acquisition:

- Class is **one of the first features acquired** by children in the first stages of language acquisition in several language, e.g., Italian (i.a. Belletti & Guasti 2015);
- Depending on its expression in the target system, significant differences in the acquisition of inflection has been reported (cf. i.a., Corbett 1991);
- French language acquisition is characterized **by gender and number errors until the age of 3;5 or even later** (i.a., Prévost 2009). Inflection has not been considered yet;
- Root-Infinitives (RI) are frequently realized by monolingual French children (Ferdinand 1996);
- In many languages, **morphological phenomena** are reported to be acquired comparably earlier than phenomena at the **morphology/syntax interface** (Sorace & Filiaci 2006).

Multilingual acquisition of inflection in French

The results of studies considering multilingual acquisition of **DPs features** show that:

- French-Italian bilinguals are **comparable** to monolingual children as concerning the acquisition of gender (Eichler et al. 2013).

The results of studies considering multilingual acquisition of **TPs features** show that:

- French-German children generally realize **no number inflection** until the age of 2;8 years old (Koehn 1989). As for the other features, French and German verbs are generally acquired early and realized **target-like** (Meisel 2003).

No studies focusing on the acquisition of inflectional classes in French multilingual children.

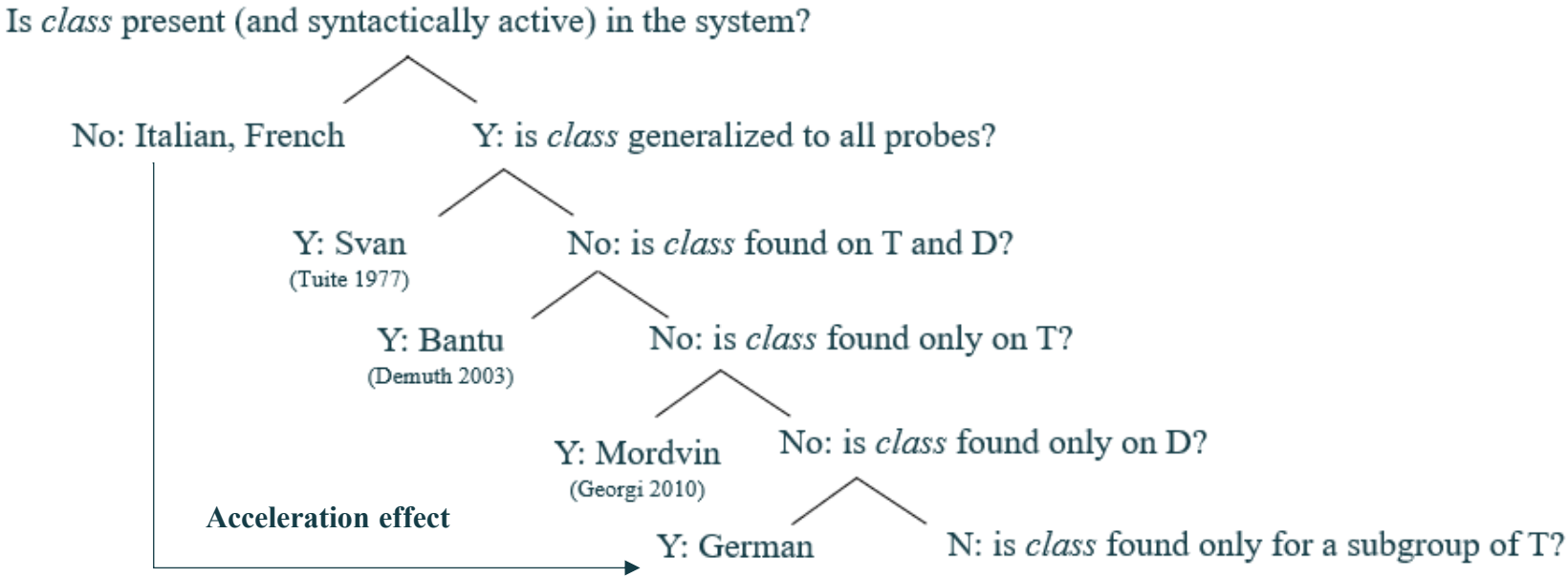
A model to explain monolingual and multilingual acquisition

How to account for the differences between monolingual and multilingual children?

- Acquisition is based on the development of **several linguistic layers**;
- In the generative framework, the interaction of UG, input and cognitive factors (Chomsky 2007) enables the emergence of parameter hierarchies (cf. Biberauer et al. 2014);
- Hierarchies include observations about variational and acquisitional pattern of formal features as well as fundamental characteristics of the target language, such as markedness;
- In language acquisition, the learner starts from the top of the hierarchy and covers every step by testing the input for incompatibility with specific options (cf. i.a. Picallo 2014);
- In multilingual acquisition, **parametric differences** between the acquired languages are able to cause acceleration effects in multilingual children (cf. Müller 2024).

A model to explain monolingual and multilingual acquisition

The class hierarchy



A model to explain monolingual and multilingual acquisition

Research question and hypothesis

Declension and inflectional classes are reported to be acquired depending on their expression in the target-system:

- *How is inflection acquired by multilingual children with parametrically different languages*?

If the AIM-ALL Model (as proposed by Müller 2024) is correct, we should expect more target-deviant inflection in German than in French children.

Moreover, the acquisition of two different languages (e.g., French/Italian and German) should lead to acceleration in the more marked system (in this case, German).

The data

Data from **3 monolingual children** for **every language** (Italian, French and German, MacWhinney 1989: CHILDES Corpus) as well as **3 bilingual children** for a combination of marked and less marked language as well as two less marked systems (German-Italian and French-Italian).

→ Data from **15 children** analysed from 1;10 to 3;5 years old.

→ ≈ **1.500 utterances** for every child in monolinguals and for every language in bilinguals for **a total of ≈ 34.000 utterances**.

→ Comparison of the data on the basis of **age** and **MLU** values.

Results – qualitative analysis

Target-deviant inflectional classes

Italian

1. **la torra* (Camilla 2;2) ‘the tower’
2. **sono forta* (Ma_di 2;5) ‘I am strong’
3. **voglio colorire* (Ju_fi 3;3) ‘I want to colour’

French

1. **c’est pas un chevaux* (Madeleine 2;5) ‘this is not a horse’
2. **une gros voiture* (Theophile 2;10) ‘a$_{f.sg}$.big$_{m.sg.}$ car $_{f.sg}$’
3. **j’va* (Di_fis 2;9) ‘I go(es)’

German

1. **die Mausen* (Chantal 2;2) ‘the mice’
2. **der großer Tisch* (Simone 2;7) ‘the big table’
3. ** hab gegesst* (Au_di 2;5) ‘(I) have eaten/ate’

Results – quantitative analysis

- Direct comparison between monolinguals and bilinguals for each language shows that **Italian and French are acquired at a similar pace** by monolingual and bilingual French-Italian and German-Italian children.
- A **significant difference** is found between monolingual and bilingual children as concerning the acquisition of inflection in German.

→ **Bilingual children** realize **significantly less** target-deviant utterances and adjectives.

- Linearized models in R lead to the identification of the factors '**time**', '**MLU**' and '**bilingualism**' as significant for the number of inflectional class errors.

→ While 'time' and 'MLU' are relevant across all models – as expected –, the factor '**bilingualism**' reaches the **significance threshold** ($p<0.05$, $t = -3.25$) **for the German data**.

Discussion

The results lead to the identification of the following patterns:

- Declension and inflectional **classes in Italian** are acquired **target-like early** (< 2;6, MLU < 2) by monolingual and bilingual children.
- Monolingual and bilingual **French children** acquire inflection at a comparable rate to Italian. A **difference** is observed between the monolingual French and the bilingual French-Italian groups at MLU of 1.5 – 2.
- **German monolingual children** acquire class **later** than Italian and French children. **Bilingual German-Italian children** realize significantly **less target-deviant utterances** than monolingual German children.

→ The acquisition of a less marked language, e.g., **Italian** (possibly French) **accelerate the acquisition of German**, i.e., a more marked system.

Discussion

Acquisition of inflection:

- a higher degree of morphological markedness leads to a faster acquisition process;
- a higher degree of syntactic markedness represents a challenge for acquisition.

→ The intersection of two grammatical layers at the morpho-syntactic interface for German adjectives leads to the development of a marked grammar;

→ Inflection in French and Italian covers only the morphological layer.

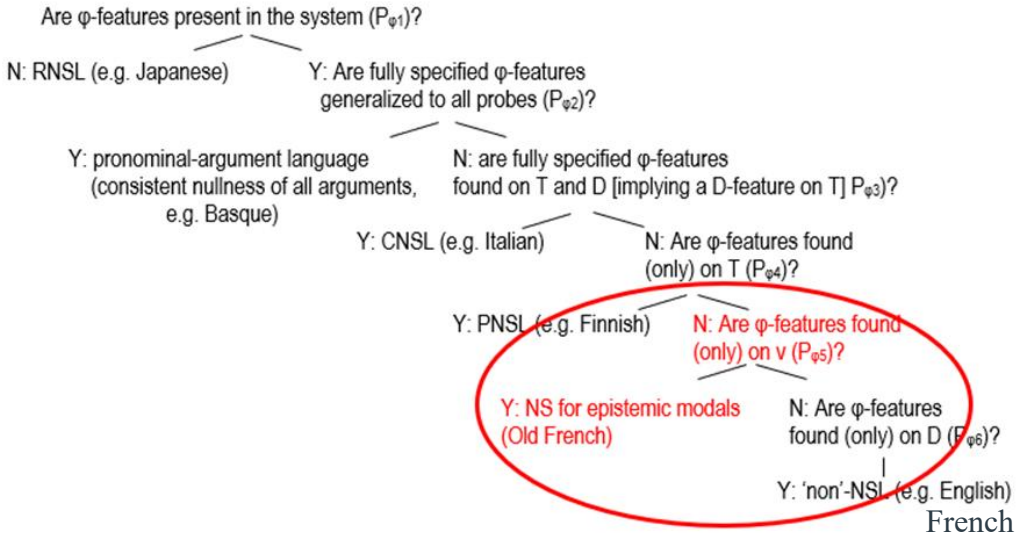
Subjects in French

French is generally described as a **Non-Null-Subject Language** (NNSL)

- Approximately 95% (Patuto 2012) - 98% (Apostolidis 2024) subject realizations in spoken French;
- Patuto (2012: 224,230) observes **5.8% omissions** of the expletive pronoun *il* with impersonal verbs, e.g., with *falloir* 'to need' (not with weather verbs, cf. Matushanky 1998);
- Different types of subjects, even though the most frequently realized in spoken French are subject clitics (Schmitz & Müller 2008);
- The expression of subjects depend on **inflection**, among other features (cf. Roberts 2019);
- Diachronically, French has lost the rich(er) inflection in the verbal system (cf. Fisher 2010);
- In Old French (9th-16th century), subjects were omitted most frequently with epistemic and impersonal verbs (Corpus: MCVF-PPCHF, different text types).

Subjects in French

The null-argument hierarchy



Monolingual acquisition of subjects in French:

Summary of results about monolingual acquisition:

- French is described as a **marked language** with respect to subject expression (cf. Roberts 2019), since omissions are reported in 5 to 10% of utterances in the spoken variety (cf. Franceschini & Carella 2024);
- Depending on the expression of subjects in the target domain, clear differences have been reported among **monolingual children acquiring different languages** (i.a., Genesee 2022);
- The acquisition of the expression of subjects in French is reported to happen 'late', with some children realizing **more than 10% of target-deviant subject omissions at the age of 4;0** (cf. Prévost 2009);
- Monolingual French children omit subjects **until an MLU of 3.5-4.5** (cf. i.a. Lutkewitz 2023).

Multilingual acquisition of subjects in French

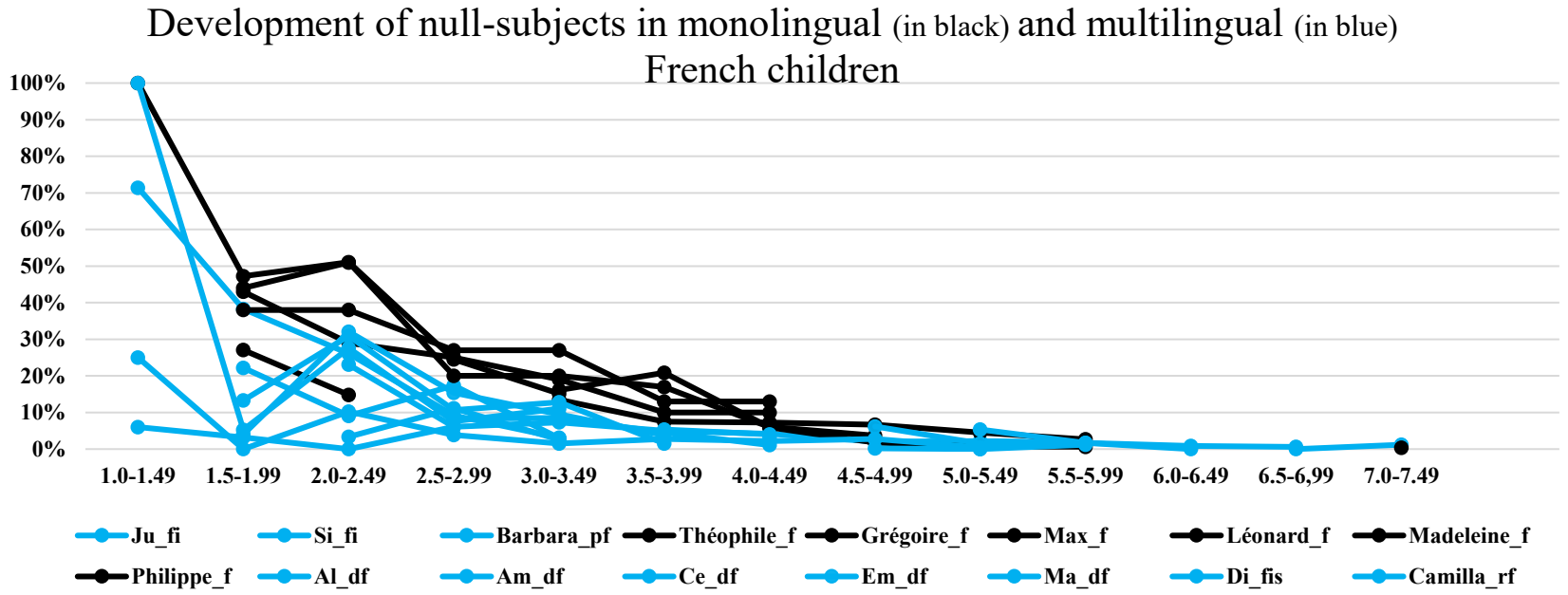
Summary of results about multilingual acquisition:

- Bilingual and trilingual children cease to omit subjects around an **MLU of 2.5**, some children **even earlier** (Arnaus, Stahnke & Müller 2021, Müller 2024);
- Bilingual children acquiring German, Italian, Portuguese or Spanish simultaneously with French are generally reported to be **accelerated** in French with regard to the acquisition of subject realizations (cf. i.a. Silva Colaco, Hoffmann, D'Aurizio & Müller 2024);
- Bilingual, trilingual children **skip the** well documented **stage of postverbal subjects** in French (Arnaus Gil & Müller 2018);

→ However, **few residual subject omissions** (>10%) appear until the age of 3;0.

Multilingual acquisition of subjects in French

Monolingual and bilingual data



A model to explain monolingual and multilingual acquisition

Even though inflection and subject realizations are generally strict

→ French occupies different positions on the two parameter hierarchies;

- In the null-argument hierarchy, French is placed on a lower level since it presents a nano-parametric option (cf. Müller 2024). In the class hierarchy, French is represented on a higher level due to its macro-parametric setting (D'Aurizio 2025).
- According to i.a. Rizzi (1982, 1986) and Roberts & Holmberg (2010), null-subjects and inflectional morphology on the verb are closely related.

→ French distinguishes inflection for person and number only for a small class of verbs (overall 9.66%, cf. Marty 2001:220).

A model to explain monolingual and multilingual acquisition

Research question and hypothesis

Even though multilingual children are accelerated with regard to the realization of subjects in French (cf. Scalise, Stahnke & Müller 2021), residual omissions (<10%) still occur in the data.

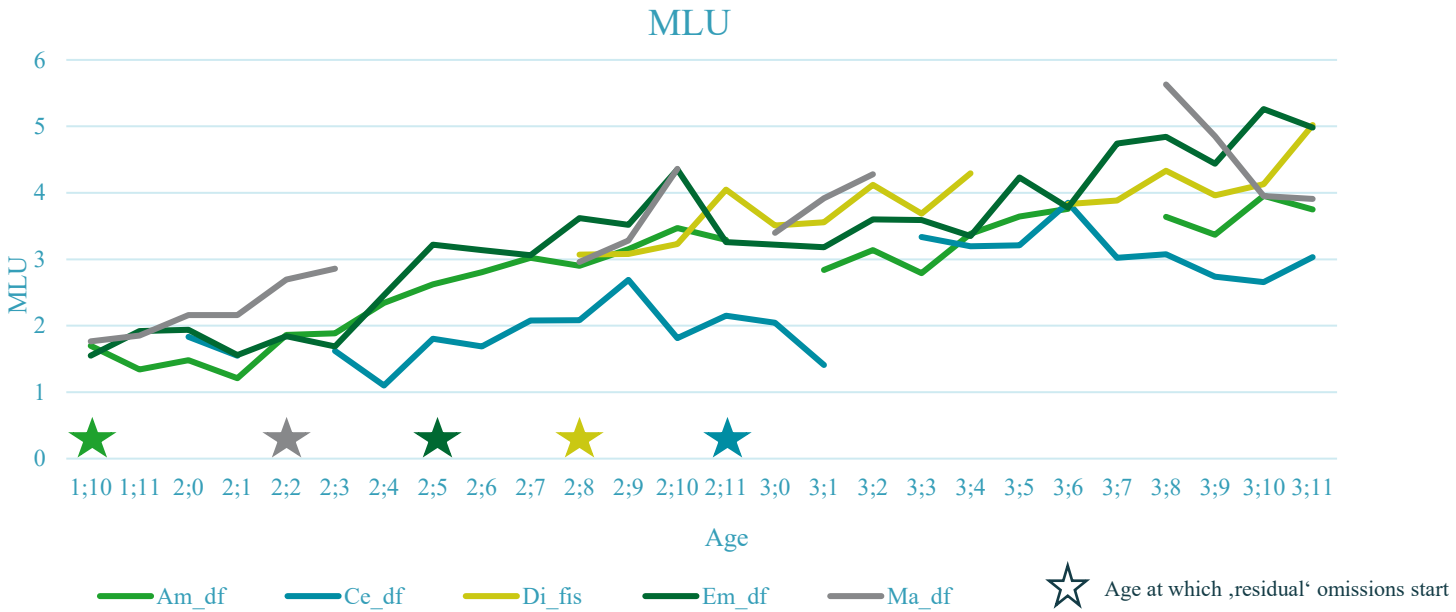
→ Do subject omissions occur with one verb (or one group of verbs)? If so, are there also subject realizations with specific verb(s)?

Quality and quantity of verbs with residual subject omissions (*types* and *tokens*) were considered in five multilingual children:

- Am_df, Ce_df, Di_fis, Em_df, and Ma_df: multilingual French children acquiring French simultaneously to either Romance systems (Di_fis) or to German, in Germany (Am_df, Ce_df) or in France, with a preference for either German (Ce_df) or French.

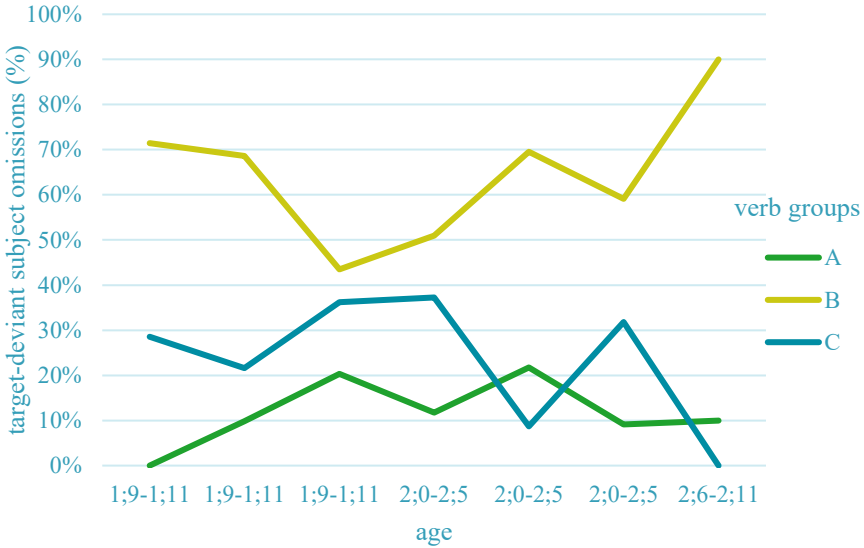
The data

MLU development in French by Am_df, Ce_df, Di_fis, Em_df, and Ma_df

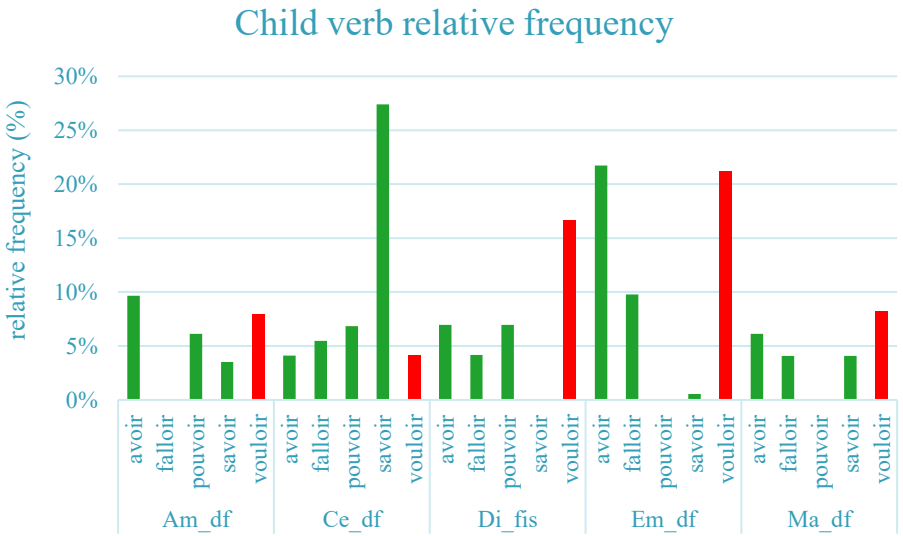


Results

Development of residual subject omissions with verb over time



Frequency of residual subject omissions with c-verb types



Results

- Subject omissions occur most frequently with verbs of the *–oir* class in all children

e.g. *non vois pas ça* ‘voir’ (Di_fis 2;11);

neg *see* neg *that,* ‘(I) don’t see that’

- The verb *vouloir* occurs most frequently (>20%) with subject omissions in all children (with few exceptions)

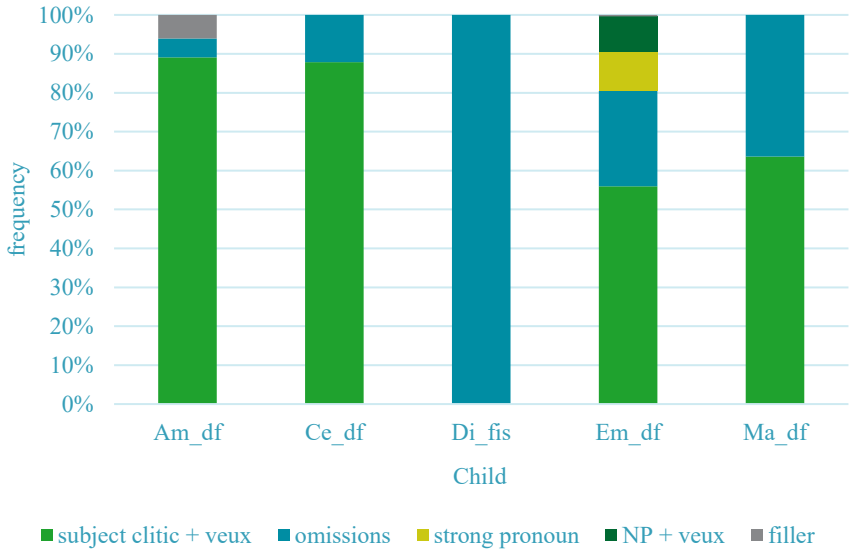
e.g. *veut manger* ‘vouloir’ (Em_df 2;4);

want eat, ‘(I) want to eat’

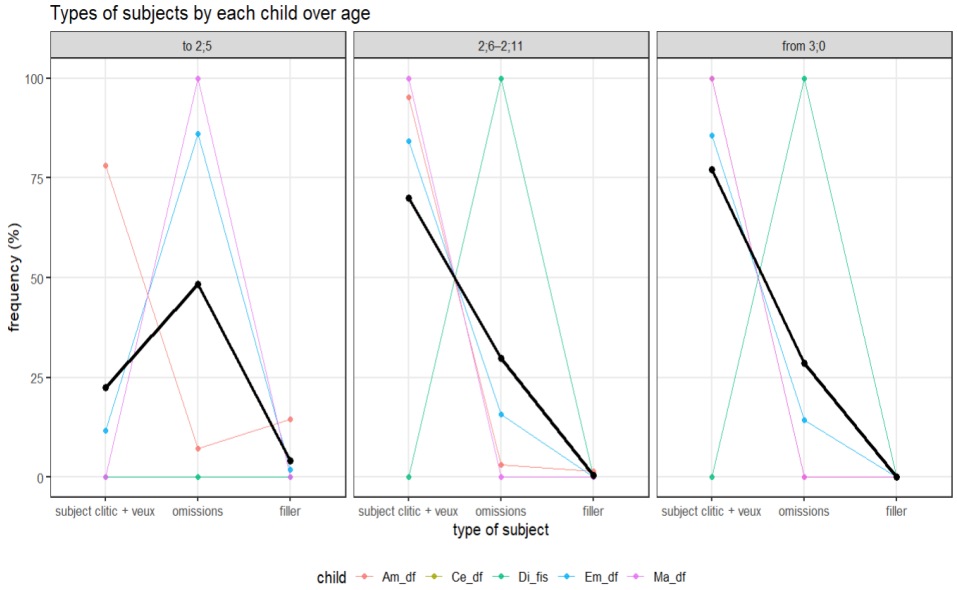
→ The development of *vouloir* is particularly interesting due to its frequency in language production’s data as well as due to its inflectional behaviour.

Results

Frequency of different subject types with the verb *vouloir*



Development of type of subject over age



Results

- The class of *–oir* verbs is not found as Root Infinitives (RIs) in monolingual (Prévost 2009:57) and bilingual children: → *-oir* verbs occur always inflected (not always target-like);
- From 2;6 onwards, omissions with *–oir* verbs strongly decrease, while realization of clitic subject dramatically increase:

→ A first phase of omissions is accompanied by the realization of fillers and strong pronouns as subjects (*moi*), revealing the children's different strategies:

**moi veux l'ouvrir* (Em_df, 2;4) → *moi, je veux l'ouvrir* (Standard French)

me want it open 'I want to open it'

- Omissions and MLU do not (significantly) correlate ($p>0.05$).

Discussion

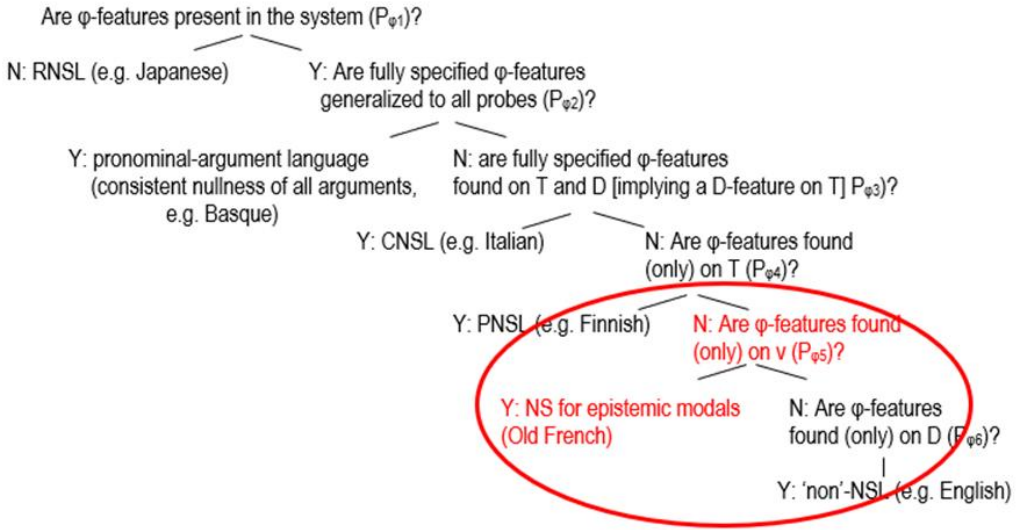
what does mediate the EPP feature in the child's grammar with *–oir* verbs?

- Strong and clitic pronouns appear at about the same age in the data of the bilingual children (as well as in the data of further monolingual and bilingual children, as reported by Schmitz & Müller 2008);
- With *–oir* verbs, (in particular impersonal and epistemic forms) a phase including the realization of omissions, fillers and strong pronouns (*moi*) precedes the clitics. Afterwards, the clitics *je* and *tu* occur most frequently.
- From 2;6 y.o., residual omissions abruptly diminish.

→ Until this age, the child's grammar is comparable to previous stages of French concerning null-arguments, in that subjects are omitted most frequently with epistemic modal verbs (Fischer 2010).

Subjects in French

The null-argument hierarchy



Discussion

Null-arguments and class: French in the child's grammar

- On the class hierarchy, French is present at a macro-parametric level (D'Aurizio 2025) while null-arguments exhibit a nano-parametric setting (Müller 2024);
- Impersonal and epistemic *–oir* verbs, e.g., *falloir* 'to need', occur frequently without an overtly realized subject in the children's input.

→ The comparison with the other L1 and the French input drives the bilingual children through the hierarchy, leading to the hypothesis that class and epistemic modality regulates omissions for specific verbs;

→ In this hypothesis, the null-subject property is mediated 'for a subgroup of *v*', namely *–oir* verbs with epistemic modality, which seems to be generated in little *v*°.

- As soon as this hypothesis is rejected (< 2;6), children realize target-like clitic subjects.

Objects in French

French is generally described as a **non-topic-drop language**.

- French presents strong and clitic pronouns (cf. Cardinaletti & Starke 1999);
- French object (accusative) clitics are obligatorily proclitic in finite clauses, with enclitic placement restricted to imperative and causative contexts (Roberts 2019:37).
- In French, most transitive verbs can occur without a direct object to include a generic interpretation, e.g., *Jean mange une pomme / Jean mange* (Bello & Pirvulescu 2022:69)
- Moreover, latent objects which can be abstracted from the context can also be omitted (Larvajaara 2000);
- Frequency of occurrence of object clitics in spoken interactions among adults is generally high, reaching peaks of 35% in transitive utterances (of 1,072 utterances, Schmitz & Müller 2008).

Monolingual acquisition of objects in French:

Summary of results about monolingual acquisition:

- Object clitics appear later than subject clitics (Bernardini & van de Weijer 2017);
- In spontaneous production, the incidence of object clitics is below 30% until the age of 4;0 (Prévost 2009:142), with the first occurrences emerging at 2;0-2;6 (Hamann & Belletti 2004:50);
- In elicited production, children aged 2;5 realising between 0 and 21% of object clitics and 9 to 62% of target-deviant object omissions (Jakubowicz & Rigault 2000; Varacosta et al. 2015);
- Acquisition proceeds through three stages (Prévost 2009):

1. Strong pronouns, DPs, and target-deviant omissions;
2. Initial realizations of object clitics;
3. Target-like object-clitic production rates.

Multilingual acquisition of objects in French

Summary of results about multilingual acquisition:

- In multilinguals, the acquisition of objects in French is often considered with a Germanic language, which lacks Romance-type syntactic clitics (Bernardini & van der Weijer 2017);
- In French-German bilinguals, the acquisition of object clitics in French is delayed in comparison to monolingual children, with 35–60 % omissions at ages 2;0–3;0 (Müller et al. 1999, cf. also Granfeldt et al. 2007 for French-Swedish bilinguals).
- In French–English bilinguals, omission rates are below 23 % (Paradis et al. 2005; cf. Serratrice et al. 2004), though still higher than the corresponding adult grammars;
- In contrast, children acquiring other Romance languages with syntactic clitics, e.g. Spanish, show almost no target-deviant omissions as early as age 2;0 (Gavarrò et al. 2010).

A model to explain monolingual and multilingual acquisition

- Studies on Romance–Germanic acquisition (e.g., German) show similar results for multilingual and monolingual children.
- However, languages with syntactic clitics, e.g. Spanish, are acquired target-like early on.

→ How are object clitics acquired by bilingual French–Italian children?

- Given the similarities between French and Italian with regard to the pronominal system including syntactic clitics and, hence, that within a parametric approach to clitics the two systems can be assumed to include the same parametric extension (cf. Roberts 2019)
- For this reason, children receive increased input frequencies in the two systems (Mateu & Sundara 2021);

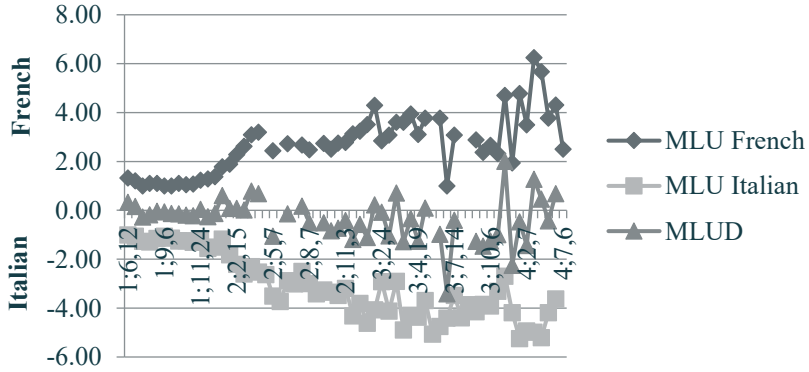
→ Bilingual French-Italian children are expected to skip the object omission stage reported for monolingual children.

The data

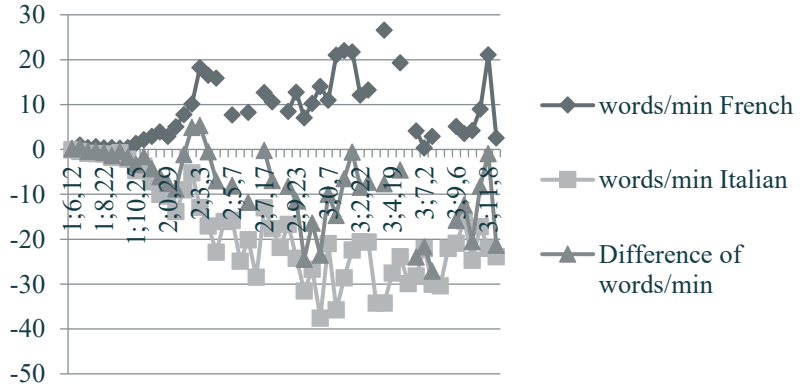
The data examined for the present study include one bilingual French-Italian child, **Si_fi (1;6-4;7)** and elicited production data by 17 monolingual French children (2;0 to 2;11).

Si_fi child grows up in Rome and shows a strong dominance in Italian (MLU and Words per Minute, cf. Hauser-Grüdl et al. 2010).

MLU development Si_fi



Words per minute Si_fi



The data

The data examined for the present study include one bilingual French-Italian child, Si_fi (1;6-4;7) and elicited production data by **17 monolingual French children** (2;0 to 2;11).

The data were elicited through a production task in which children were expected to realize pronominal verbal arguments. The test involved colored picture cards depicting animals engaged in various actions. Children were asked to "fish" the cards using a magnet and to describe the depicted events to the examiner in response to guiding questions (cf. Müller et al. 2006).

In addition to age and several background information, the MLU was calculated on the basis of spontaneous interactions with the children.

The data

1) Since most transitive verbs in French can appear without an overt direct object, including a more generic interpretation (Bello & Pirvulescu 2022:69),
2) and since (almost) "all [studies] identify omissions on the basis of the verb's argument structure and the discourse context" (Hamann & Belletti 2004:49),

each utterance in the dataset was classified as either including a target-deviant clitic omission or not, depending on contextual and language-specific constraints.

For instance, the verb *manger* is generally considered transitive in French.

Example	Interpretation	Classification
mange Ø demain (I) eat (it) tomorrow	Object omission not licensed	Target-deviant omission
mange ! 'eat!'.	Pragmatically licensed	Not target-deviant

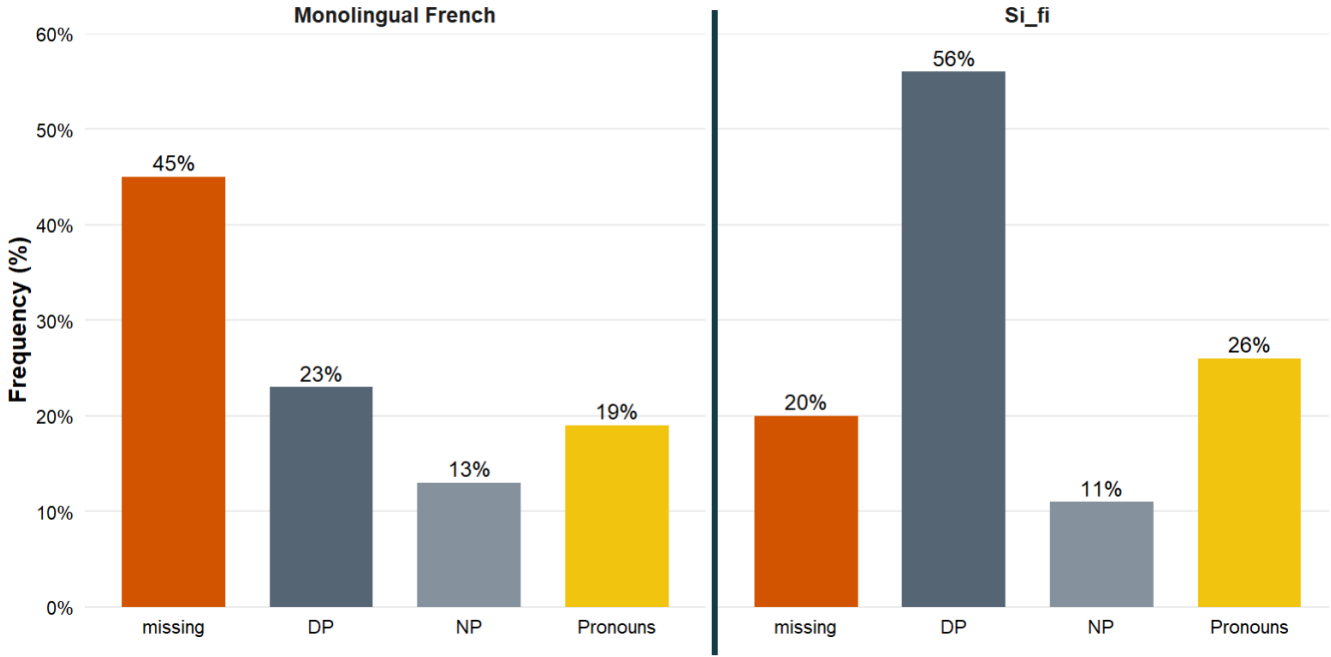
Results

Overview

	monolingual French children (n=17)	Si_fi
utterances	1188	2325
Target-deviant omissions	213(18%)	176(7%)
excluded	670(56%)	1282(56%)
objects	304(26%)	796(37%)
DPs / NPs	114	404
object clitics	49	233

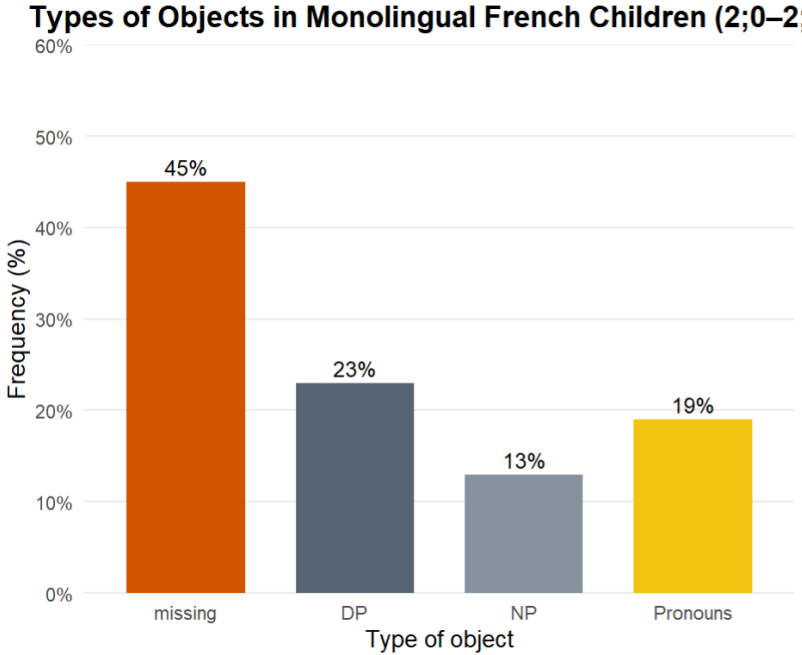
Results

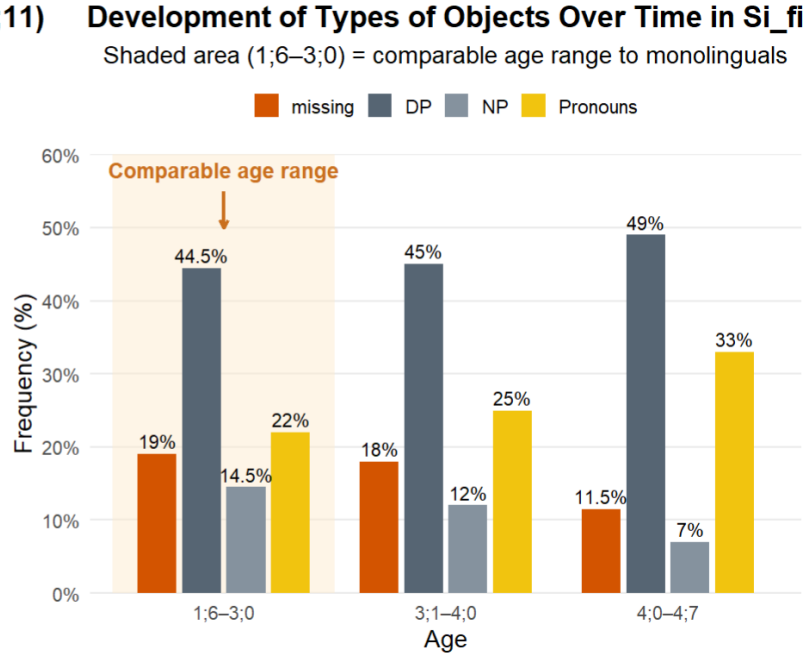
Occurrence of types of objects:



Results

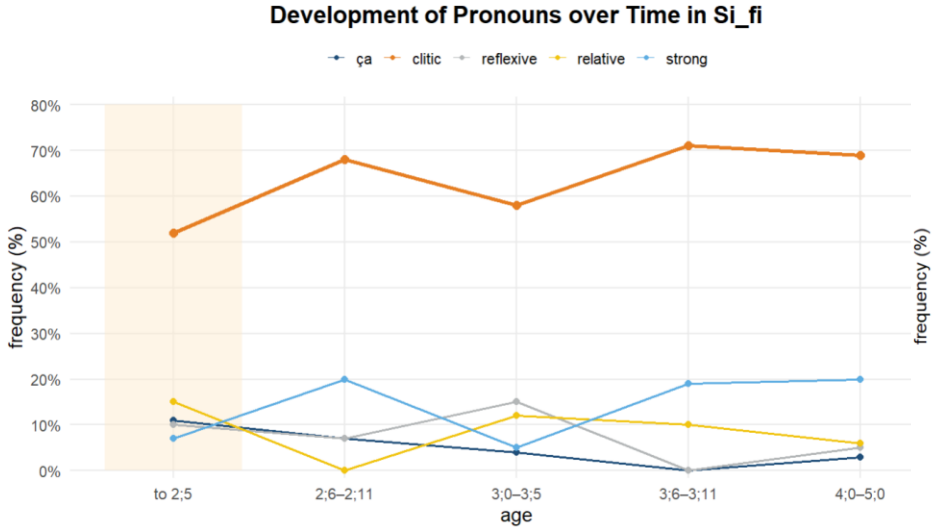
Development of types of objects:

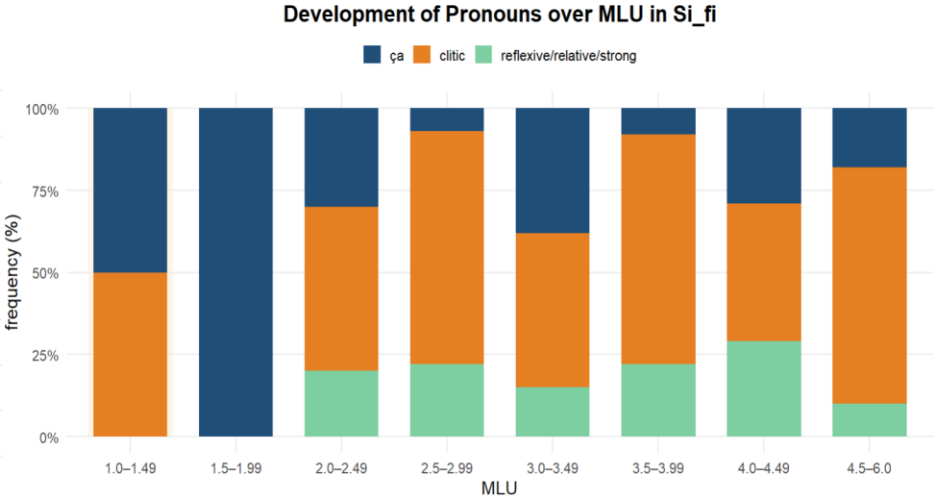




Results

Development of types of pronouns in Si_fi:





Discussion

The results show clear trends in the two groups:

- Monolingual French: ≈ 45 % object-clitic omissions.
- Bilingual French–Italian: ≈ 20 % target-deviant omissions.
- Difference becomes evident when the children are compared at equivalent age.
- Early stage (MLU = 1.0–1.49; age < 2;5):

→ Object clitics are realized target-like from early on.

→ Object clitics appear with strong pronoun *ça*.

- Later stage (MLU ≈ 2.0):

→ Strong, reflexive, and relative pronouns emerge later.

Discussion

- French and Italian present similarities concerning object clitic pronouns (cf. Roberts 2016)

→ The two languages may occupy the same position along the hierarchy of clitic-related parameters (cf. Roberts 2019);

- The acquisition of object clitics in French develops differently if a language without syntactic clitics, e.g., German (Schmitz & Müller 2008) is simultaneously acquired rather than a Romance language, e.g., Italian – as it is the case for Si_fi.

→The child receives input in two languages with syntactic clitics, obtaining convergent evidence for clitic realization (cf. Mateu & Sundara 2021);

→Within a model in which parametric settings constitute shared grammatical knowledge (Müller 2024), the bilingual child uses the linguistic knowledge supported by input frequency and structural similarities to accelerate the acquisition of French and skip the stage of object clitic omission.

General discussion

The findings about the acquisition of inflection as well as (residual) subjects and objects reveal clear differences between the monolingual and multilingual group:

- The acquisition of several phenomena can be accelerated in multilingual acquisition if the languages acquired present **structural similarities or differences**:

→ The inflectional as well as the subjects' and objects' domain differ in the languages of the multilingual children observed, enabling the acceleration effect observed in the multilingual children.

→ Does this mean that both differences and similarities can support the multilingual acquisition process?

Intrasentential code-switching: a quick overview

Code-switching (CS) is generally defined as the occurrence of two languages 'within the same communicative exchange' (Gumperz 1982).

Focus on intrasentential CS, i.e., the occurrence of two or more languages within one utterance (Poplack 1980:590).

→ In adults, CS occur more frequently when:

1) Certain semantic and pragmatic constraints are involved (Li Wei 2013);
2) Multilingual speakers interact with 'known' interlocutors (Dewaele 2010);
3) Two (or more) languages are acquired **before the age of 3;0** (Dewaele & Wei 2013).

Intrasentential code-switching: a quick overview

Results on children show that:

- CS can serve as a communication strategy (MacSwan 1999);
- As also reported for language choice (Genesee et al. 1996, D'Aurizio et al. 2025), children adjust the frequency of CS according to the interlocutors (Anastassiou & Andreou 2017).

→ In children, CS occurs more frequently if :

1) Social, metalinguistic, lexical, or conversational factors are involved (Sczepurek et al. 2022);
2) Parents use CS at home (Comeau et al. 2003).

Intrasentential code-switching: a quick overview

However, predictors for occurrence of CS in children are still debated.

- Smolak et al. (2020) report that the factors driving the rate of code-switching differ across samples: **language exposure** is significant for Spanish–English children, whereas **proficiency** is more important for French–English children;
- Gross et al. (2022) identify children's **age** and language **proficiency** as predictors of variability in code-switching behavior;
- Gutiérrez-Clellen et al. (2009) find that the frequency of code-switching is significantly affected by **language dominance** and the **language of testing**;
- Poeste et al. (2019) report that intersentential mixing is influenced by the **typological proximity between the child's languages**, rather than language dominance dimensions.

The view on the matrix language

The status of the two – or more – languages in code-switching:

- In intrasentential CS, two or more languages are mixed within an utterance (Poplack 1980);
- According to Myers-Scotton (1993:3), CS is composed of:

a) "The matrix language (hereafter ML) [which] is the main language in CS utterances in a number of ways, [and]

b) [an] 'embedded language' (hereafter EL) [which] refers to the other languages' which also participate in CS, but with a lesser role."

Das is taken round the coast here (Clyne1982: 107)

The view on the matrix language

Within this framework, the Matrix Language (ML) has been identified using different criteria, including:

- Number of morphemes (Myers Scotton 1993);
- Language of the verb (Treffers-Daller 1994);
- Word order (Bhat et al. 2016);
- First word in the utterance (Doron 1983);

(For an overview, see Bullock et al. 2018.).

What if … ? Expectations linked to the matrix language

However, predictors of occurrence of CS in children remain debated.

→ What about the ML?

Multilingual children use predominantly the strong or **dominant language** in intrasentential CS utterance (cf. Wui Ng 2018).

→ According to the 'Ivi Hypothesis', they tend to prefer to integrate the EL into the ML, defined as the weak and the strong languages respectively (cf. Bernardini & Schlyter 2004)

What if … ? Expectations linked to the matrix language

However, predictors of frequency of CS in children remain debated.

→ What about the ML?

Multilingual children use more frequently intrasentential CS **in the minority language**
(cf. Smolak et al. 2020)

→ In monolingual societies, multilingual children tend to receive more input in the majority language and therefore use less CS in that system (Yow et al. 2006).

Well … Code-switching in spontaneous and elicited data

Data overview

	Longitudinal	Elicited
N of children (age span)	17 (1;6-5;0 y.o)	90 (2;10-9;9)
Language combination (n)	Fr-Ger (7), Ger-Ita (8), Fr-Ita (2)	Fr-Ger (9), Ger-Ita (18), Ger-Spa (62);
Country of birth (n)	Ger (12), Fr (4), Ita (2)	Ger (43), Spa (37), Ita (10)
Dominance (n)	Balanced (6), dominant in Ger (5), dominant in Romance language (7)	Balanced (32), dominant in Ger (37), dominant in Romance language (21)
Utterances (CS, %)	237,793 (5,521, 2.32%)	17,205 (174, 0.01%)

Well … Code-switching in spontaneous and elicited data

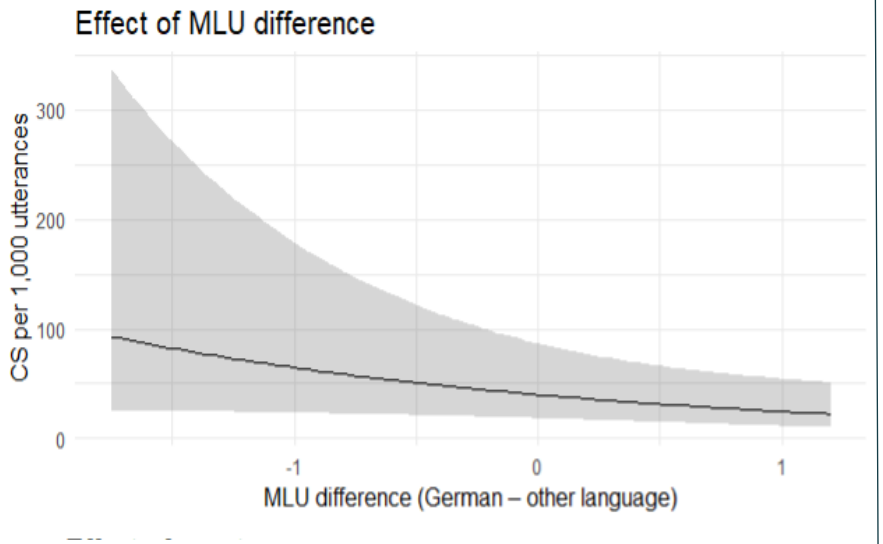
Separate analysis for longitudinal and elicited datasets

1) Negative binomial regression model of the **overall CS rate** across both recording systems, with MLU, dominance, country of birth, language combination, and parental language as predictors.
2) Negative binomial regression model of the CS rate in **German recordings**, with MLU, dominance, country of birth, language combination, and parental language as predictors.
3) Negative binomial regression model of the CS rate in **Romance recordings**, with MLU, dominance, country of birth, language combination, and parental language as predictors.

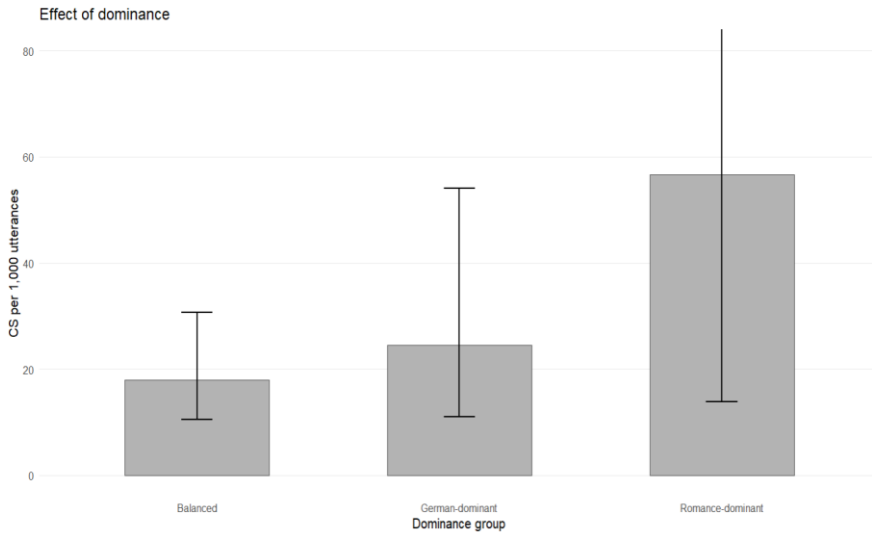
Well … Code-switching in spontaneous and elicited data

Significant predictors of overall CS rate:

Longitudinal data:



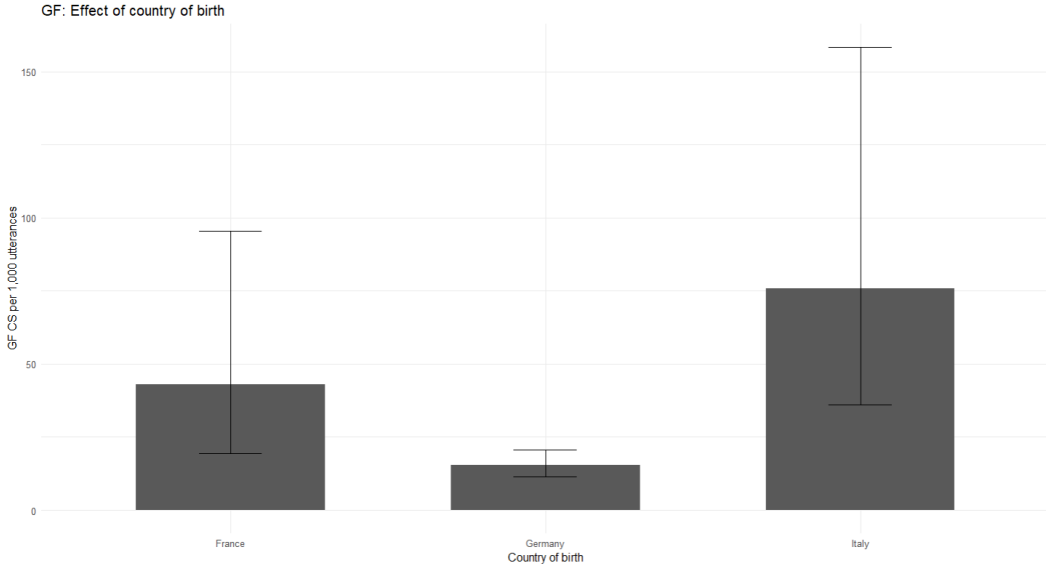
Elicited data:



Well … Code-switching in spontaneous and elicited data

Significant predictors of CS in **German** recordings:

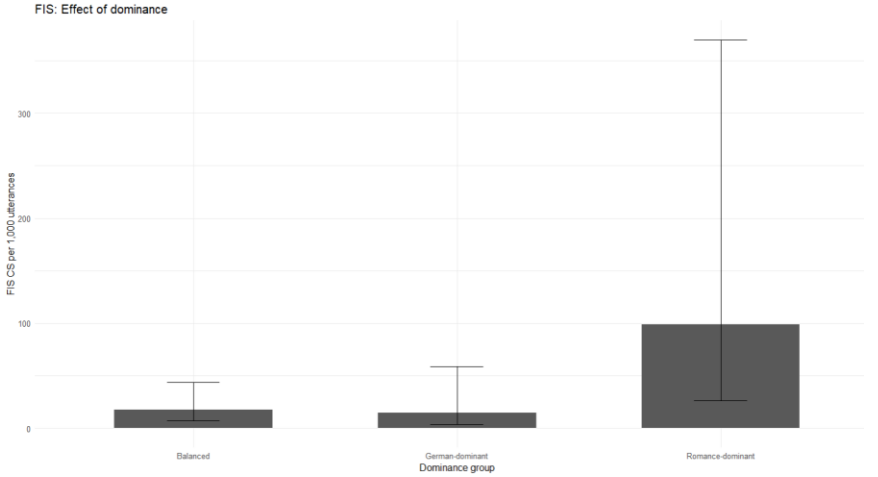
Longitudinal data:



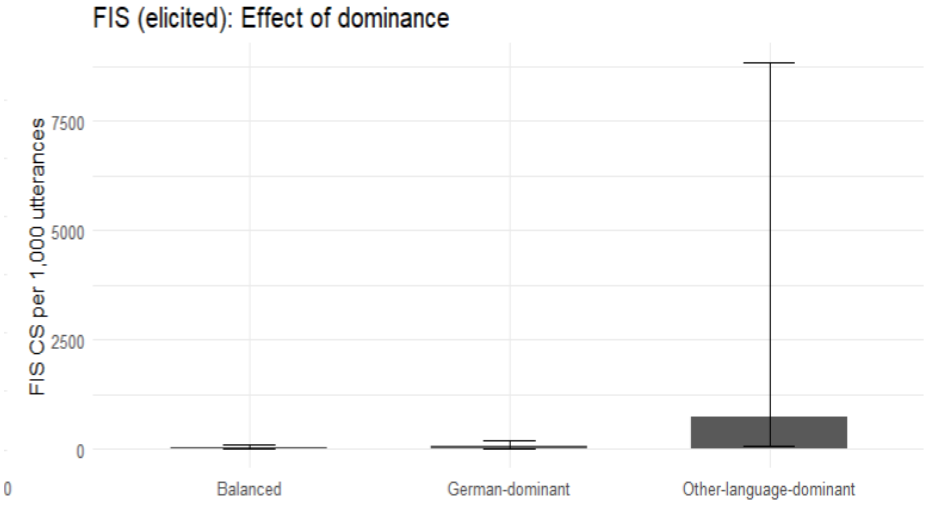
Well … Code-switching in spontaneous and elicited data

Significant predictors of CS in **Romance** recordings:

Longitudinal data:



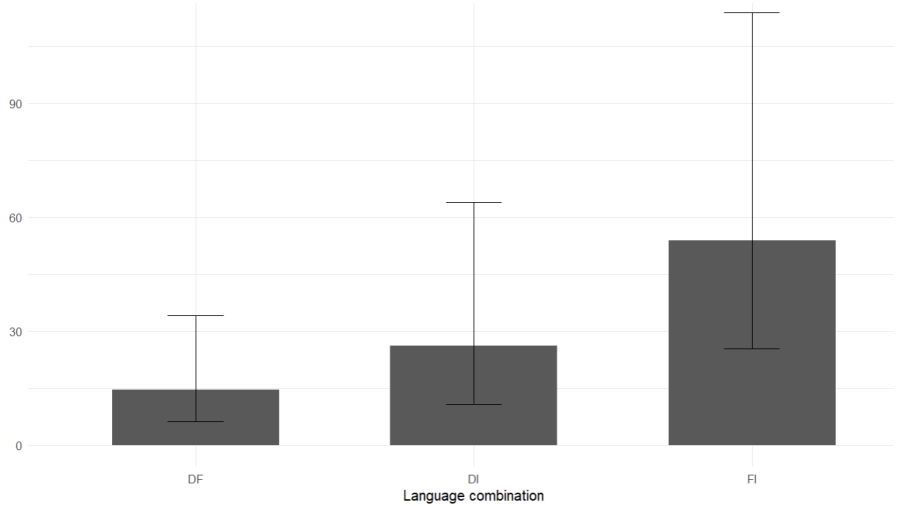
Elicited data:



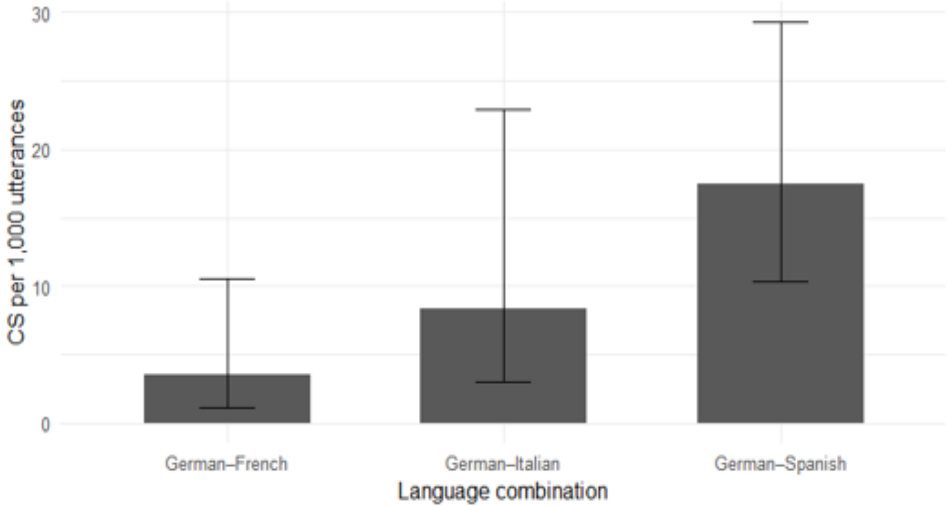
Well … Code-switching in spontaneous and elicited data

Effect of **language combination** on overall CS rate:

Longitudinal data:



Elicited data:



Results: effect of language dominance and societal language on code-switching

Summary of results:

If the overall CS rate is considered:

- A higher relative MLU in the Romance language is associated with significantly higher overall CS rates in the longitudinal data.
- German-French children tend realize significantly less CS utterances.

If the two language systems are considered separately:

- In German recordings, children born in Romance countries tend to produce more CS utterances than children born in Germany (longitudinal data);
- In Romance recordings, children dominant in the Romance system tend to produce more CS utterances.

Discussion: What about the role of structural similarities?

Discussion:

CS occurs particularly often in Romance recordings;
→ CS appears to be driven by language-specific properties.

These properties can be defined on the basis of syntactic and lexical aspects:
→ Cross-linguistic similarity, defined on a syntactic (Longobardi et al. 2013) and lexical (Schepens et al. 2013) dimension, affects the occurrence of CS.

Discussion: What about the role of structural similarities?

Discussion:

does structural proximity – or similarity – play a role in the occurrence of CS?

- The results from the longitudinal and the elicited data show that language combination (i.e., French-German) is relevant.
- This is consistent with studies reporting differences in CS frequency depending on language combination (e.g., Smolak et al. 2020).
- If lexical and syntactic similarity are taken into account, structural similarity may play an important role in the occurrence of CS.

→ But how can this be tested directly?

Discussion: What about the role of structural differences and similarities?

Conclusion

- Structural differences as well as similarities appear to influence language acquisition in multilingual children;
- Lexical similarities, defined on the basis of cognates (Schepens et al. 2013), are reported to support the acquisition of the lexicon

→ They facilitate the use of CS, a phenomenon, that is generally linked to high proficiency in the two languages (Ténes et al. 2023);

- Structural differences, defined on the basis of parametric expression (Longobardi et al. 2013), are reported to support the acquisition of grammar (Müller 2024)

→ They accelerate parametric settings (D'Aurizio 2025).

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