

Grammatical alternates: the interplay of frequency, markedness, and derivation in language acquisition

Marta Velnić – marta.velnic@ntnu.no

Possessive alternates (prenominal and postnominal) have mirrored properties in Italian and Norwegian when taking into consideration frequency, derivation, and markedness, i.e., the variant that is base-generated in one language is considered the derived one in the other language. Previous studies have shown that Italian children acquire the contextual use (markedness) of the variants with ease, whereas Norwegian children were found to overuse the marked variant. Here, we reanalyse the co-occurrences of the possessive and the noun in the monolingual corpora for the two languages available on CHILDES, by focusing more attentively on the contextual use of the variants, to reveal whether the same principles underly the acquisition process. Our findings contradict the previous claims on the acquisition of Italian but are in line with the previous findings for Norwegian. Both groups of children overuse the marked but base-generated variant, indicating the relevance of syntactic economy in language acquisition.

Keywords: possessives; economy; Italian, Norwegian

Introduction

Languages can have two grammatical variants for expressing a semantic relation. However, these variants are often only seemingly equal as there are contextual preferences for when they are used. Take for example word order alternations as seen through the dative alternation or scrambling: these are often a reflection of what is given and what is new in the context. In the current study, we focus on the variation in the order of the noun and a possessive pronoun that modifies it in relation to the context. The goal of the study is to use the structural variation of the order of the possessive and the noun to discuss the interplay of derivation (syntax), markedness (pragmatics), and overall frequency. We have thus chosen to investigate the production of possessive constructions in Italian and Norwegian monolingual children. The reason why these two languages were chosen is that they have pre- and postnominal possessives, but more importantly, the distribution of the two variants is the opposite in the two languages in terms of derivation, markedness, and frequency. Consequently, if children acquiring the two possessive variants are driven by the same principles, we should observe the opposite patterns of acquisition in terms of relative frequency and potential target deviations. By comparison of the acquisition patterns, we will be able to distinguish whether the surface structure or the properties of the variants is more relevant for acquisition, as the two groups of children should have the same overproduction in case of the former, but mirrored preferences in case of the latter.

For both of Italian and Norwegian the acquisition of possessives has been investigated, and these analyses have shown that Italian children (Bernardini, 2003; Cardinaletti & Giusti, 2011) acquire this variation with relative ease, but Norwegian children (Anderssen & Westergaard, 2010; Westergaard & Anderssen, 2015) go through a phase in which the contextually marked, but syntactically base-generated structure is overused. If the same principles govern the dynamics of acquisition, why has the overproduction of the base-generated variant not been observed in Italian? What other factors could be at play here?

For this reason, we will delve deeper into the patterns of acquisition of the possessive-noun combinations by focusing more on the context in which the structures under investigation appear. For this we will be using corpus data of monolingual Italian and Norwegian children that is available in the CHILDES database (MacWhinney, 2000a), containing six corpora for Italian (Antelmi, 1997; Antinucci & Parisi, 1973; Cipriani et al., 1989; D'Odorico & Carubbi, 2003; Tonelli et al., 1998; van Oosten, 2005), and three for Norwegian (Anderssen, 2006; Garmann et al., 2019; Ringstad, 2014)¹. The first aim is to reanalyze the Italian data by contextualizing the occurrences, to check if the children are as target-like as previously reported; as well as to analyze the contextual uses of Norwegian child data, as these children could be using more marked contexts which would explain the increased frequency of marked possessive order use with respect to the adults. Indeed, we found an overuse of the marked structure, extended to unmarked contexts, in both languages. Which brings us to the second aim of the study, that is to discuss the interplay of derivation, markedness, and frequency in language acquisition.

The paper is structured as follows: in the following section the distribution and use of the prenominal and postnominal possessive variant in the two languages is outlined, followed by an overview of the contexts in relation to the variants that should be used. Following that, we discuss the literature on the acquisition of possessive structures in Italian and Norwegian, which allows us to present the aims and goals of the study. Then we present the corpus data, and conduct the statistical analyses of those corpus data. The results are then discussed, and a conclusion is provided.

Comparison of possessive structures in Italian and Norwegian

The use of possessive structures in the two languages is comparable as they both have pre- and postnominal variants, and these are contextually dependent. There are nevertheless key differences between the two languages, which ultimately result in the possessive structures in the two languages being mirror images of one another. In the next section the Italian possessives will be outlined in terms of derivation, markedness, and frequency; following that, Norwegian possessives will be described according to the same parameters.

¹ The Anderssen corpus is not available on CHILDES.

Possessive structures in Italian

The two Italian variants are displayed in (1), the article is the first element in both structures thus the only difference is the position of the possessive in relation to the noun.

- (1) a. La mia macchina
the-F my-F car-F
- b. La macchina mia
the-F car-F my-F

A complete list of Italian possessives is given in table 1.

PERSON	SINGULAR		PLURAL	
	Masculine	Feminine	Masculine	Feminine
1 ST	mio	mia	miei	mie
2 ND	tuo	tua	tuoi	tue
3 RD	suo	sua	suoi	sue
1 ST + 2 ND	nostro	nostra	nostri	nostre
2 ND + 3 RD	vostro	vostra	vostri	vostre
3 RD + 3 RD	loro			

Table 1: Italian possessive pronouns

In terms of derivation, Cardinaletti (1998) claims that the underlying structure is the postnominal one. This order is obtained by leftward raising of the noun, typical for Romance languages (Cinque, 1994). The prenominal possessive is then derived by movement to the prenominal position (Cardinaletti, 1998).

With regard to contextual use, the prenominal possessive is the unmarked variant while the postnominal is used in focal contexts, such as contrast (Cardinaletti & Giusti, 2011). There are some other uses that are exclusive to the postnominal form, more specifically vocatives (e.g., *Tesoro mio*- my precious), and exclamations (e.g., *Mamma mia!*), which do not denote possession. Additionally, the prenominal possessive cannot be used to identify a new discourse referent (Cardinaletti, 1998), which may be related to what we refer to as emphasis. This contextual distribution also impacts frequency as unmarked contexts are more frequent than marked contexts, consequently the unmarked structure is used more frequently. Cardinaletti and Giusti (2011) analyzed possessive structures from the LIP corpus (Voghera et al., 2014) which contains adult spoken interactions, and found that 86% occurrences were the prenominal possessive.

Possessive structures in Norwegian

The two Norwegian variants are displayed in (2), which reveals that these two variants differ not only regarding word order, but also because the prenominal possessive does not have an article, unlike the postnominal construction.

(2)a. Min bil
my-M car-M

b. Bilen min
car-the-M my-M

A complete list of Norwegian pronouns is provided in table 2.

	MASCULINE	FEMININE	NEUTER	PLURAL
1 ST	min	mi	mitt	mine
2 ND	din	di	ditt	dine
3 RD REFLEXIVE	sin	si	sitt	sine
3 RD M	hans			
3 RD F	hennes			
1 ST + 2 ND	vår		vårt	våre
2 ND + 3 RD	deres			
3 RD + 3 RD				

Table 2: Norwegian possessive pronouns

In terms of derivation, the Norwegian possessive is considered to be generated above the head noun, i.e. in Spec-NP (Julien, 2005). The postnominal possessive is thus realized by leftward movement of the noun past the possessor (Anderssen & Westergaard, 2010; Fábregas et al., 2019), while the prenominal possessive is in its surface position, but it is still considered to move to a higher position in the DP (Julien, 2005). Nevertheless, this order is considered as basic (Fábregas et al., 2019), especially because in the early stages of acquisition the movement of the possessive higher in the DP is not necessary, and it is thus considered the base-generated possessive. Anderssen and Westergaard (2010) discuss how this relates also to complexity as the derived possessive is more complex as it involves movement. Complexity is never discussed as a factor in the studies on Italian, but if complexity is defined in terms of derivation, then the derived form, the prenominal, is the more complex one. Lødrup (2012) states that there are valid arguments for considering both the prenominal and postnominal possessive to be unmarked, but ultimately, he does not seem to make distinction between what we refer to as *basic* here (from a point of view of generative grammar) and (contextually) *unmarked*. His main argument for the prenominal being unmarked is that some combinations of the possessive and the noun are only possible with the prenominal possessive (e.g., *mitt Norge*/**Norge mitt*- my Norway). He relates this to the fact that these nouns cannot have a definite article, which is required in the postnominal structure. For the postnominal variant, Lødrup (2012) claims that it is more natural and easier to contextualize. Thus, contextually, in Norwegian the postnominal possessive is considered the unmarked form and it is used in topical contexts (Lødrup et al., 2011); conversely the prenominal possessive is used in cases of contrast and emphasis (Anderssen & Westergaard, 2010) and is thus used for focal information. Again,

contextual markedness relates to frequency, and consequently the postnominal possessive is the more frequent variant. Westergaard and Anderssen (2015) investigated the frequencies of the two variants in the NoTa-Norwegian Spoken Corpus (Bondi Johannessen & Hagen, 2008) where the distribution was 73% in favor of the postnominal structure.

Summary of differences

The relevant differences between Italian and Norwegian possessives can be summarized as follows (table 3).

	ITALIAN		NORWEGIAN	
	Pre-nominal	Post-nominal	Pre-nominal	Post-nominal
EXAMPLE	La mia macchina	La macchina mia	Min bil	Bilen min
DERIVATION	Derived	Basic	Basic	Derived
MARKED	Unmarked	Marked	Marked	Unmarked
CONTEXT	Neutral	Focal	Focus	Topic
FREQUENCY	More (86%)	Less	Less	More (73%)

Table 3: summary of main differences between Italian and Norwegian possessives

When these features are laid out on a table, it is obvious that the possessives structures in the two languages are the mirror image of one another. This is not unexpected as the markedness is an adaptive cognitive strategy for economy of processing according to which salient experiences are filtered (marked), and frequent experiences are accorded with more automated processing (unmarked) (Givón, 1991, p. 31). The choice of word order thus relates to both complexity and frequency: what is marked is more complex, and what is unmarked is more frequent (Givón, 1991). If universal principles are at play in the acquisition of contextual variants such as the position of the possessive pronoun in these languages, then we should expect to see the same dynamics of acquisition of these variants in Italian and Norwegian, which would result in opposite surface structures being acquired first when the two languages are compared.

What we call markedness and context in table 3 are two sides of the same coin, as marked structures are used when the context is marked, and as we will see in the next section, neutral and topical contexts are considered unmarked, whereas contexts in which contrastive focus or emphasis is denoted are considered marked.

Markedness and the contextual uses of possessive variants

It has been mentioned in the previous section how a certain possessive variant is the unmarked one and the other one is used in several marked contexts. The terms marked

and unmarked have been used to denote various aspects of the language, for a full overview see Haspelmath (2006), it is thus essential to clarify how the terms are used here. Here the two terms are used in their pragmatic sense: the unmarked variant is the one produced in neutral and topical contexts; whereas the marked variant is used in contexts such as contrast, emphasis, focus, and vocatives.

What is intended by topic here is both the discourse topic and the sentence topic, whereas a neutral context includes NPs with possessives that are not the topic but also not marked in any way. We take examples from the adult speakers in the corpora to illustrate these contexts. Note that throughout the paper the target child is CHI, all other participants are adult speakers.

(3)² CHI: la mi' palla , la mi' [: mia] palla . ITALIAN, TOPIC

FAT: tieni **la tua palla** .

My ball, my ball. /here, **your ball**.

Location: Calambrone/Guglielmo/020201.cha": line 22.

(4) CHI: brum brummm . ITALIAN, NEUTRAL

CHI: vieni , chi vo' salire qui ?

CHI: chi vo' salire qui ?

DON: ecco , due passeggeri per **la tua macchinina** , vai !

CHI: venite , passeggeri .

Brum brum. / come, who wants to get on here?/ who wants to get on here?/ here, two passengers for **your car**, go./ come here passengers.

Location: Antelmi/020904.cha": line 255.

(5) INA:finn Ina boka. NORWEGIAN, TOPIC

INV: skal vi finne boka til ho Ina?

FAT: skal vi finne **Donald_boka di** kanskje?

INA: ja.

FAT: finne Donald_bok?

INA: Donald_bok!

FAT: ei Donald_bok?

Find Ina's book./ Shall we find the book belonging to Ina?/ Shall we find **your Donald book** maybe?/ yes/ find the Donald book?/ Donald book!

Location: Anderssen/INA/Ina07.cha": line 252.

(6) ANN: Ann (s)torbilen. NORWEGIAN, NEUTRAL

MOT: storbilen skal være med?

ANN: ja.

² Since the language here is quite simple, and we are focusing on the context to represent the use of the variants, only the translation of the examples is provided, but not the gloss.

MOT: kanskje du heller skal ta nån bøker med i **lillesekken din**?

ANN: ja.

Ann's big car./ The big car is joining?/ Yes./ Maybe you should rather bring some books in **your little backpack**? Yes./

Location: Anderssen/ANN/Ann04.cha": line 1740.

The following types of context are the marked ones and yield the opposite noun-possessive order in each language from the order in topic/neutral contexts. Focus is seen as the opposite side of the coin from Topic. Focus is a pragmatic category, and it has a multitude of definitions, since there are numerous contexts that may trigger focus (Büring, 2009), but according to many definitions it is the new and informative part of the clause (Pereltsvaig, 2004). Among the various types of focus, Büring (2009) specifies the existence of *answer focus*, which is the type of focus that we are taking into consideration in the current analysis. Gundel (1999) defines this type of focus as new information that is being asserted or questioned, an implicit or explicit answer to a wh-question. Here, focus is counted as a possessive NP that was the answer to a question that explicitly asked about the possession, as this places the possessive itself (and not the noun denoted by the possessive) in focus. The occurrences of this type were very scarce, and thus for Italian we present one from a child speaker.

(7)OBS: una scarpa ?

ITALIAN, FOCUS

OBS: e di chi è ?

CHI: è mia !

CHI: è tua pè **tappa tua** .

OBS: ma non è un pochino piccola ?

A shoe?/ And who's is it?/ Mine!/ It is **your shoe**./Isn't it a bit small?

Location: Calambrone/Rosa/020629.cha": line 261.

(8) MOT: kemmes bokstav er det der?

NORWEGIAN, FOCUS

ANN: xx xx sin.

INV: **min bokstav** og.

ANN: den og sånn.

MOT: og så er det Merete sin.

Who's letter is the one over there?/ Xx's./ **My letter** and./ That one also like this./ And also it is Merete's.

Location: Anderssen/ANN/Ann21.cha": line 159

Contrast, or contrastive focus, is a contextual category that deals with alternates (Richter & Mehlhorn, 2006). It is what Kiss (1998) calls identification focus: *a subset of the set of contextually or situationally given elements for which the predicate phrase can potentially hold* (p.245). As we are investigating possessives, this refers to possessive

alternates: occurrences that contrast the possession of the target occurrence with another NP.

(9) MOT: questo è tutto il pelo della pancia della loro mamma . ITALIAN, CONTRAST

CHI: loro cosa fanno ?

MOT: e loro stanno prendendo il latte .

MOT: chi è che prendeva il latte **dalla mamma tua** ?

CHI: io lui e Gherardo .

All this is the fur of their mother's belly./ And they, what are they doing?/ They are drinking milk./And who was drinking milk from **your mother**?/ Me, him, and Gherardo.

Location: Calambrone/Guglielmo/020517.cha": line 143.

(10) CHI: skal du ha han på fingeren?

NORWEGIAN, CONTRAST

INV: skal eg ha han på fingeren?

CHI: ja du må vente litt.

INV: sånn.

INV: må sette den litt fast så han ikkje dett av.

INV: satt litt laust.

INV: ops.

CHI: den kunne ikkje på din.

INV: kunne vi ikkje sette han på min?

CHI: nei.

INV: nei han var lettare å få til å sette fast på **din finger**.

Will you have him on the finger?/ Will I have him on the finger?/ Yes but you must wait a little. /Like this./ Must fix it a bit so he doesn't fall off./ It's a bit loose./Oops./ It cannot go on yours./ Cannot we put it on mine?/np./ No, it is easier to make him sit tight on **my finger**.

Location: Anderssen/ANN/Ann18.cha": line 624.

Also, for the marked order to be triggered, the possession needs to be contrasted (*my ball* vs. *your ball*) not the NP (*my ball* vs. *my car*).

Emphasis is yet another elusive category of information structure as there is no common agreement on the exact meaning (Richter & Mehlhorn, 2006). Winkler (2011) defines emphasis in terms of non-neutral, non-normal, non-standard (p.331), which captures the vagueness with which emphasis has been described, also in the intonational domain. Richter and Mehlhorn (2006) claim that according to their study on intonational contour the emphatic stress is distributed at the sentence-level, and thus is not part of information structure. Here we are interested in the syntactic components of emphasis and we have observed how emphasizing the possessive requires it to be in the marked order for the respective languages. However, Richter and Mehlhorn (2006) also specify how emphasis seems to be a blanket term for every kind of highlighting (p.351), and we

use it as such in this study. What we mark as emphasis in this study is somewhat similar to contrast, but unlike contrast, there is no alternate to which the target-possessive is being compared to or contrasted with, and it is the whole NP that is emphasized.

(11) MOT: e lo so non sei mai stato in Austria , Marco . ITALIAN, EMPHASIS
MOT fino che non ti faccio **il documento tuo** .
I Know you have never been to Austria, Marco. / until I make **your document**.
Location: Tonelli/Marco/020413.cha": line 2101.

(12) MOT: det der er gaffelen. NORWEGIAN, EMPHASIS
MOT: den høre til.
MOT: det der er jo **din gaffel**.
MOT: nei ho kan jo ikke få +//.
That over there is the fork./ it belongs to./ It is indeed **your fork**./ No she cannot have it.
Location: Anderssen/ANN/Ann08.cha": line 195.

Vocatives are examples of calling out, but with a possessive, and these use the marked order in the respective languages.

(13)INV: ma vuole stare un po' in braccio. ITALIAN, VOCATIVE
INV: **piccola mia**.
INV: vuoi cantare la ninnananna?
But she wants to be held for a bit./ **My little one**. / Do you want to sign a lullaby?
Location: Klammler/010927.cha": line 400.

(14) p1: Kan du si Nina? NORWEGIAN, VOCATIVE
p2: Skrape.
p1: Du sier ingen ting, **din tullekopp!**
p3: Ikke så lett med eplebit i munnen.
Can you say "Nina"?/ You say nothing, **your silly head!**/ Not so easy with an apple piece in your mouth.
Location: Garmann/Olav/010429.cha": line 290.

For the purposes of analysis in this study, we establish a binary distinction of contextual use, referring thus to the contexts as either unmarked or marked.

Acquisition of possessive structures in Italian and Norwegian

According to the studies conducted on the acquisition of possessives in Italian (Antelmi, 1997; Bernardini, 2003; Cardinaletti & Giusti, 2011), it appears that Italian children do

not face difficulties in acquiring the two possessive variants. Bernardini (2003) and Cardinaletti and Giusti (2011) reported that the prenominal possessive is overall more frequent, as we would expect based on the adult usage. Cardinaletti and Giusti (2011) state that the children in the corpora are target-like as they find postnominal uses in focused contexts as well as postnominal uses with nouns like *casa* (house). We will see in the subsequent sections that the relation of the postnominal possessive and *casa* is due to a particular prepositional use, rather than a special relation of the postnominal possessive with that specific noun. Cardinaletti and Giusti (2011) conclude that the fact that the prenominal possessive is distributed more frequently is a strong indication that the children understand the contextual use of this variant. While we do not disagree with this claim, a closer look at the contextual use is needed in order to determine how target-like the children really are as these grammatical alternates are contextually bound. Bernardini (2003) also found that the two variants of possessives are used correctly, the criteria being the type of noun (such as *casa*) and contrastiveness, although no explanation or example of contrastive use is provided in the study.

For Norwegian, Anderssen and Westergaard (2010) noticed an initial stage (from 1;9-2;0) in which the prenominal possessive is the only variant produced, and in the following stage (2;0-2;4) the distribution of the two variants stayed approximately the same. The explanation provided is that this is an effect of *economy*. This is linked not only to the prenominal possessive being less complex because it does not have an article, but also to the fact that it is considered the base-generated form in Norwegian (Julien, 2005) and thus no movement is required, as children are economical and resort to movement only when they have sufficient evidence from the input (Westergaard & Anderssen, 2015). Anderssen and Westergaard (2010) observed that the development of the postnominal structure becomes increasingly more frequent and reaches a distribution similar to the adult one at around age 2;8. At a subsequent stage the production of the postnominal possessives drops settling on a 50/50 ratio of the two variants. The authors claim that this is not direct evidence for the children not being target like, as they could be using more contrastive contexts than the adults, which would make the prenominal possessive target like, but as the children's utterances are relatively short, the context is not always easy to determine. Anderssen and Westergaard (2010) conclude that, since the unmarked and more frequent structure to which the children are exposed to is not overproduced, along with the initial overproduction of the prenominal possessive, children are economical in their productions but are also aware of contextual implicatures.

Based on the findings of the studies above, it seems that Italian children acquire the possessive variants with more ease than Norwegian children. However, based on the properties of the two languages, we would expect Italian and Norwegian children to face the same difficulties. This could be a consequence of the complexity difference related to the presence/absence of the definite suffixal article that the two Norwegian variants have. However, complexity in the two Norwegian variants is also dependent on the

basic-derived relation as the derived variant (postnominal) undergoes movement which also makes it more complex. Differences in complexity have not been reported for the Italian possessives, but if we were to assume that movement creates complexity, the prenominal possessive (unmarked) should be the more complex variant. So, from the reports in previous literature, it does not seem that Italian and Norwegian children acquire the use possessive variants in the same way. However, since the studies did not have a strong focus on contextual use of the variants; a closer look and subsequent analysis is necessary. In the next session, we will explain the purposes of this study and how context will be the key factor for determining target like usage of the possessives.

Acquisition of the contextual use of possessive variants

In the current study we aim to analyze in more detail how possessive variants are acquired in Italian and Norwegian. The reason why we have chosen to compare these languages is because they are mirror-images of each other which allows us to observe potential crosslinguistic similarities of how children use contextually bound variables. We expect children to be(come) sensitive to the context in similar ways, even though the target-like use of the variants will ultimately be the opposite of one another.

Our research questions are the following:

- (1) Are Italian children as target-like as previously described?
- (2) Can the overuse of the marked form observed in Norwegian children be explained by context-use?
- (3) Are the same principles guiding acquisition in the two languages?
- (4) What can these data tell us about the acquisition of contextual variants and the processes that affect them?

Previous sections outline how children acquiring Italian have roughly the same proportion as adults, which entails that they understand the contextual differences in use (Cardinaletti & Giusti, 2011). In our opinion this conclusion does not automatically follow from its premise as the children might for example be using more contrastive contexts than adults, and if the proportion of the variants is the same, the children are not as target-like as they seem. This brings us to the first aim of our study: to establish whether Italian children are target-like when the context is taken into consideration. We will do so by querying all the available corpora for the two languages and classifying each relevant occurrence by context. If Italian children are target-like we expect to find that the previously reported frequencies of the possessive variants are matched with the contextual use of said variants.

In Norwegian, children overuse the base-generated order (prenominal). An explanation for that may be economy as children are known to avoid complexity until they are sure that it is correct. Anderssen and Westergaard (2010) included contextual use as a factor in their analysis, but unfortunately due to short utterances the context intended by the child was not available for parts of the corpus. The first aim of the study

listed above also holds for Norwegian children. The issue of the context not being available for some occurrences will be solved by adding more data by including what is available in CHILDES. With more data, we may have a window onto the context in which the possessive structures are uttered for more occurrences. From there, we will be able to investigate whether the overuse of the prenominal is non-target like or linked to a more substantial use of marked contexts.

After we have re-analyzed the monolingual data by focusing on context and using all available corpora, we move on to investigating the interplay between frequency, markedness, and derivation. If frequency guides acquisition, an overproduction of the most frequent form is expected. On the other hand, in case markedness is the main factor, the unmarked variant is expected to be overproduced due to its wider contextual applicability: this is because, in a semantic sense, the marked variant is more specific than the unmarked one (Haspelmath, 2006, p. 29), and unmarked terms have a less specific meaning and may thus be used to denote both poles of the opposition (Murphy, 1994). Thus, it is not pragmatically inappropriate to use the unmarked variant in contexts where the marked one may be more appropriate. If this is the case, we may assume something like *pragmatic economy* affecting production. The unmarked variant can be extended to marked context with a certain accentual contour (Lødrup et al., 2011)³. However, we already know that children do not overuse the unmarked form in Norwegian. Finally, if syntactic complexity and derivation is guiding acquisition, then the base-generated structure should be overproduced, which is what has already been found for Norwegian children (Anderssen & Westergaard, 2010; Westergaard & Anderssen, 2015). Conversely, if children acquire the variants based on their surface position (i.e., the prenominal variant is easier) then we should find that variant being overused in both languages, irrespective of its derivation and markedness.

With our more thorough analysis of structure-context relatedness, we might unravel other similarities, and this will give us insight into more general aspects of the acquisition process when there is variation in the input. This is an interesting testing ground as in both languages the unmarked structure is the derived one and the marked structure is the basic form. It thus allows us to observe the interaction between syntax (base-generated form) and other factors such as frequency and pragmatics, since the unmarked form is the more attested one, as well as with the surface structure. If the two languages show similarities regardless of their surface structures, we will have more insight on how the acquisition of grammatical variants is implemented, but if the same surface structure is preferred in both languages, this would entail that neither of the factors we are investigating guides acquisition at a cross-linguistic level.

³ According to Cardinaletti (1998) Italian possessives cannot be accented in order to signal contrast; We however believe this not to be the case. This was checked through personal communication with native speakers, and as we will see from the adult portion of our data, the unmarked possessive is used for marked contexts 33% of the time. Unfortunately, we do not know if in these cases it has a specific accentual contour.

Data

For our analysis we will be using monolingual corpora of Italian and Norwegian children from the CHILDES database. A list of all the corpora and the details are given in table 2. Note that the Anderssen corpus (Anderssen, 2006) is not available on CHILDES.

	LANGUAGE	CORPUS	CHILD	AGE RANGE	NR. OF FILES
ITALIAN		Antelmi	Camilla	2;02-3;04	7
		Calambrone	Diana	1;08-2;06	9
			Guglielmo	2;02-2;11	9
			Martina	1;07-2;07	13
			Raffaello	1;07-2;11	17
			Rosa	1;07-3;03	21
			Viola	1;11-2;10	10
			D'Odorico	Claudia	1;11-2;06
		Davide		1;06-2;00	2
		Federica		1;05-2;00	3
		Linda		1;04-2;00	3
		Lorenzo		1;08	2
		Veronica		1;07-2;00	3
		Roma		Francesco	1;04-1;08
		Klammer	Delfina	1;08-2;00	5
		Tonelli	Elisa	1;10-2;01	8
			Gregorio	1;07-2;00	8
			Marco	1;05-2;05	27
		Tot	18		159
	NORWEGIAN		Anderssen	Ann	1;08-3;00
		Ina		1;08-3;03	27
		Ole		1;09-2;11	22
		Garmann	Alexander	1;02-1;11	7
			Emilie	1;03-1;08	6
			Iben	1;01-3;10	8
			Johanna	1;02-1;08	7
			Marius	1;03-3;09	8
			Mattis	1;04-1;11	8
			Olav	1;03-1;10	7
			Stella	1;02-1;07	7
		Ringstad	Idun	2;03-2;09	38
			Tuva	1;10-2;08	27
	Ylva		2;01-2;08	75	

Table 4: List of all the corpora used in the study

The search in the corpora was conducted in the following way: we have searched for all forms of possessive pronouns in the two languages (cf. tables 1 and 2). The forms were searched with the CLAN program by using the *kwal* function which outputs utterances that match the searched strings, and then lists all the utterances that contain that string (MacWhinney, 2000b). In the query we have added two lines before and after the keyword in the output (+w2 -w2) and specified whether we wanted to search the child utterances by specifying the child speaker tier (+tCHI) or the adult utterances by excluding the child speaker tier (-tCHI); this way we categorized the utterances by speaker type. The search command is broken down below:

<code>kwal</code>	<code>+smio</code>	<code>+f</code>	<code>+w2</code>	<code>-w2</code>	<code>+tCHI</code>	<code>/-tCHI</code>	<code>@</code>
command	keyword	output_on_file	two_lines_above	two_lines_below	child_utterances/adult_utterances		input_files

For Italian, the ungrammatical forms **sui* (3rd person possessive) e **tui* (2nd person possessive) were also searched for as children might use those instead of the correct terms. The 3rd person plural possessive pronoun *loro* was excluded from the analysis as this possessive pronoun as it can only appear post-nominally and differs from the other possessives for a series of properties; for a detailed analysis about *loro* see Cardinaletti (1998).

The total amount of items searched for amounts to 22 forms for Italian and 18 for Norwegian. The searches yielded a total of 699 collocations of noun and possessive in Italian and 2622 in Norwegian for both speaker types, which is a striking quantitative difference. The corpus also contains possessive productions without a noun and in similar quantities for the two languages: 247 in Italian and 212 in Norwegian (child speakers only). Thus, we must consider that the possessives might be used in different quantities in the two languages. We have checked for this by searching for possessives in the adult corpora of the respective languages. VoLIP (Voghera et al., 2014) is a corpus of Italian spoken language that includes diaphasic, diatopic and diamesic varieties, with a size of 500,000 tokens. A search for each possessive pronoun yielded a total of 2114 tokens which amount to 0.4% of the corpus. For Norwegian, we investigated the NoTa corpus (Bondi Johannessen & Hagen, 2008) which is a spoken corpus from the Oslo area and contains 957,000 tokens. We found 3489 tokens of possessives, which amounts to 0.3% of the corpus. According to this, there do not seem to be differences in the frequency with which the possessives are used in adult spoken languages. Thus, we cannot attribute the difference in quantity of possessives in the CHILDES corpora to varying frequencies in the adult spoken language.

Results

The total number of possessive-noun combinations in Italian corpora was 214 in the child data and 485 in the adult data, in Norwegian there were 739 possessives in the child data and 1883 in the adult data.

Raw numbers

Let's first look at the raw numbers and percentiles divided purely per possessive order, a somewhat similar display to what the previous studies have done. This is illustrated in tables 5 and 6.

ITALIAN	ADULTS	CHILDREN
PRENOMINAL	383 (79%)	168 (79%)
POSTNOMINAL	102 (21%)	46 (21%)
TOTAL	485	214

Table 5: number of possessives divided per structure in Italian corpora

NORWEGIAN	ADULTS	CHILDREN
PRENOMINAL	315 (17%)	199 (27%)
POSTNOMINAL	1568 (83%)	540 (73%)
TOTAL	1883	739

Table 6: number of possessives divided per structure in Norwegian corpora

By looking at the proportions, the Italian children have a strikingly similar distributions of the variants as their caregivers, while the Norwegian children, as already been noticed in Anderssen and Westergaard (2010), use the prenominal, marked, structure slightly more than the adults. However, it is important to note that this disproportion still holds even with the addition of two Norwegian corpora.

These raw numbers give us however a very rough estimate of what is going on, and in the following sections, we will delve more closely into the details.

Analysis of the Italian data

The first step was to exclude fixed expressions. In the Italian corpora there are numerous occurrences of *mamma mia* which do not denote possession. These amount to a total of 60 occurrences in the postnominal adult data and one occurrence in the prenominal (*mio dio*- my god). In the child data there are only three such occurrences.

Additionally, there is another limitation regarding the Italian dataset: prepositions. It was already discussed in some previous studies, such as Bernardini (2003), that children make early correct use of possessives with nouns such as *casa* "house" which usually have a postnominal possessive. While it is true that *casa* generally occurs with the postnominal possessive (i.e., *casa mia*), this is not due to the noun itself as both variants are grammatical: *la mia casa* and *la casa mia*, and the choice between the two variants is guided by the contextual principles specified above. The reason why *casa* is

found predominately with the postnominal possessive is due to its frequent co-occurrence with the preposition *a* (to). When these two elements co-occur, the prenominal possessive is ungrammatical: **a mia casa* vs. *a casa mia*. This issue is currently unexplored as to why it happens, and which combinations of prepositions and nouns yield which order⁴. The discussion of these issues is beyond the scope of this study, but we must nevertheless be weary of how to treat those examples as the position of the possessive is dictated by syntax rather than by contextual appropriateness. But not all prepositions have the same effect. The Italian prepositions can be divided into simple prepositions and inflected prepositions. The difference between the two is that the latter are merged with the definite article (i.e., *a+la=alla*). Simple prepositions, such as the ones referred to in Bernardini (2003) (i.e. *a+casa*) can only have the possessive follow it, but with *alla* both orders become available: *alla sua casa/alla casa sua*. We have thus decided to exclude all the occurrences of prepositions which require a fixed possessive structure (n=15 child data, n=17 adult data) which ultimately does not have a heavy impact on the dataset.

When these occurrences with prepositions are excluded from the Italian data, we are left with the following (table 7).

ITALIAN	ADULTS	CHILDREN
PRENOMINAL	382 (92%)	166 (86%)
POSTNOMINAL	25 (8%)	28 (14%)
TOTAL	307	194

Table 7: filtered number of possessives in the Italian corpora

Comparing the data from table 7 to table 5, it becomes evident how the distribution of possessives structures in adult and child data is no longer identical, and we can see a potential overuse of the postnominal order by the children.

However, context is key in this analysis, and we must thus look at these occurrences in relation to the context in which they appear, as the slightly higher proportion of postnominal possessives in the child data could be due to their higher use of contexts that require that order. We will thus divide the possible contexts into two categories, unmarked and marked. The unmarked contexts entail topical and neutral contexts in which the prenominal possessive should be used. The marked contexts denote contrastive, focal, emphatic information or vocatives; here we expect the use of the postnominal form. Examples produced by the children from the corpus for said contexts are provided in (15). The target example is marked with **boldface**.

⁴ For example, like *casa*, the noun *camera* (room) when co-occurring with the preposition *in* behaves like *a+casa*: **in mia camera/in camera mia*; whereas kinship terms combined with the preposition *a* yield the prenominal order and the postnominal order is ungrammatical: *a mia madre/*a madre mia* (to my mother).

(15) CHI: ehh@i (.) ade [//] adesso (.) nasconde la Mina . TOPIC
 Ehh-interjection now hide-3rd.sg the-F Mina
 CHI: e io trovo .
 And I find-1st.sg
 CHI: sì (.) guarda c'è la mia borsetta .
 yes see-IMP is the-F my-F purse-F
 CHI: vuoi vede(re) la **mia borsetta** (.) mammina ?
 want-2nd.sg see the-F my-F purse-F mommy
 How (he/she) hides Mina./and I will find her./yes, there is **my purse**./ Mommy, do
 you want to see my purse?
 Location: Tonelli/Elisa/020123.cha": line 164.

Example (15) is categorized as topic because the purse is what the discourse is about. The child first finds the purse, then she shows it to the mother and asks her if she wants to see the purse.

(16) CHI: la strega viene quando (.) l' ora di dormire . NEUTRAL
 the-F witch comes when the-F hour of sleeping
 CHI: c' (.) la strega **nella mia casa** , buttala via entra
 Is the-F which-F in.the-F my-F house-F throw.her-imp away enter-imp
 CHI: dalla casa con la porta (.) entra dalla porta ee +...
 from.the-F house-F with the-F door-F enter from-the-F door-F
 CHI: e buttala via dalla finestra .
 And throw.her-imp away from-the-F window-F
 The witch comes when it is bedtime./There is the witch **in my house**, throw her
 out, come in/ from the house with the door, enter through the door./ and throw her
 out form the window.
 Location: Antelmi/020619.cha": line 348.

The possessive in (16) is considered neutral as the topic is the witch (*strega*) and the target *nella mia casa* (in my house) is only the location, it is not what is being talked about.

(17) CHI: questo è un treno lungo . CONTRAST
 this-M is a-M train-M long-M
 MOT: lungo lungo .
 long-M long-M
 CHI: come quello della nonna , questo è della nonna .
 Like that-M of.the-F grandma-F this-M is of.the-F grandma-F
 MOT: quale nonna ?
 Which grandma

CHI: questo è [/] è **il treno tuo** , va a Roma .

This-M is. Is the-M train-M your-M goes-3rd.sg to Rome

MOT: questo è il treno mio ?

This-M is. the-M train-M my-M

MOT: che va a Roma .

that goes-3rd.sg to Rome

This is a long train/ Very long/ Like the one that is grandma's, this one is grandma's/ Which grandma?/ This one is **your train**, it is going to Rome./ This is my train?/ That goes to Rome.

Location: Calambrone/Guglielmo/020725.cha": line 981.

The example in (17) is a clear example of a contrast. The child is describing a train, and then says that another train belongs to the listener, so there is a contrast between the speaker's and the listener's train.

(18) CHI: e il pastorino ha un casco . EMPHASIS

and the-M shepherd-M has-3rd.sg a-M helmet-M

MOT: c' ha il casco ?

Has-3rd.sg the-M helmet-M

MOT: forse va in moto , eh ?

Maybe goes-3rd.sg in motorbike eh-interjection

CHI: dov' è **la moto sua** ?

Where is the-F motorbike-F his-F

MOT: la moto sua non c' è !

The-F motorbike-F his-F NEG is

CHI: e allora ?

And then

CHI: come fa ?

How does-3rd.sg

MOT: eh !

Eh-interjection

MOT: come fa !

How does-3rd.sg

MOT: l' ha portata a riparare dal meccanico .

It had-AUX brought-3rd.sg to repair at.the-M mechanic-M

The shepherd has a helmet/ He has a helmet?/ Maybe he is going by motorbike?/ Where is **his motorbike**?/ His motorbike is not here!/ how does he go?/ How does he go!/ He brought it to the mechanic to be repaired.

Location: Calambrone/Guglielmo/020906.cha": line 502.

For an example with emphasis, see (18) where the mother and child are discussing a shepherd figurine: he has a helmet on, but there is no motorbike. Thus, motorbike is emphasized in this context.

(19) OBS: una scarpa ? FOCUS
 a-F shoe-F
 OBS: e di chi è ?
 And of who is
 CHI: è mia !
 Is my-F
 CHI: è tua pè **tappa tua** [: scarpa tua].
 Is your-F ? shoe-F your-F
 OBS: ma non è un pochino piccola ?
 But NEG is a bit small-F
 CHI: eh ?
 eh
 OBS: è piccolina quella là .
 Is small-F that-F there
 A shoe?/ and whose is it?/ it is mine!/ it is yours, **your shoe**. / but isn't it a bit small?
 /what?/ That one is small.
 Location: Calambrone/Rosa/020629.cha": line 261.

Example (19) is in focus because the observer (OBS) asks whose shoe that is requiring the possessive to be in focal position.

(20) CHI: mamma , tieni un attimino mia bambina . VOCATIVE
 mommy hold-imp a moment-dim my-F girl-F
 CHI: ecco , ora dammela .
 allright now give.me.her-imp
 CHI: aiuto , mamma prendi .
 help mommy take-imp
 CHI: bididibodidibu .
 #babbling
 CHI: (as)petta bambina , **tu bambina mia** .
 Wait-imp girl you girl-F my-F
 Mom, hold my baby for a moment./ there, now give her to me./ help mommy,
 take./ Wait baby, **you my baby**.
 Location: Antelmi/030409.cha": line 885.

In (20) the target possessive is a vocative. The girl (*bambina*) is also the topic of this segment, but in that specific instance the target child calls out to her (*tu bambina mia*) and thus the postnominal possessive is used.

Observing the data through the lens of context will reveal if the children deviate from target structures or if they simply use more marked contexts and therefore (correctly) use more postnominal possessives. This distribution of occurrences is presented in table 8, where the contextually appropriate uses marked in **boldface**.

	ADULTS		CHILDREN	
	Unmarked	Marked	Unmarked	Marked
PRENOMINAL	371 (99%)	11 (33%)	163 (94%)	3 (17%)
POSTNOMINAL	2 (1%)	22 (66%)	11 (6%)	15 (83%)
TOTAL	373	33	176	18

Table 8: Distribution of possessives in Italian corpora in relation to context

Note that the adults use the prenominal possessive in marked contexts a third of the time. The data points are not numerous, but this is an indication that the prenominal, which is the unmarked variant, can be extended to marked contexts, unfortunately we do not have insight in how the possessive was accented in these occurrences. We also see that children overextend the unmarked form less than adults.

To check if the use of the pre- and post-nominal possessive are distributed differently in relation to context, we ran a generalized linear model in R with the structure value (0 for prenominal and 1 for postnominal) as the dependent variable, and speaker type (adult vs. child) and context markedness (unmarked vs. marked) as the independent variables. The model checked for interaction between speaker and context. The intercept is set to prenominal, adult, and unmarked. The summary of the results is displayed in table 9⁵.

	ESTIMATE	SE	T-VALUE	P-VALUE	SIGNIFICANCE
INTERCEPT	0.005362	0.009993	0.537	0.59178	/
CHILD	0.057856	0.017719	3.265	0.00116	**
MARKED	0.661305	0.035053	18.866	2e ⁻¹⁶	***
CHILD&MARKED	0.108810	0.059265	1.836	0.06686	.

⁵ The values of the intercept are not where we should focus our attention, as these provide only a baseline upon which other comparisons are made.

Table 9: summary of glm on Italian data with structure as the dependent variable

In the second line adult and children usage are compared and the data indicates that children use significantly more postnominals than adults in the unmarked context. Nevertheless, as highly significant this result may appear based on the p-value, the effect size is minimal. A possible reason for the small effect size is the quantity of data points in the child data, especially in the postnominal order. In the third row of the model, we can see that adults use significantly more postnominals in the marked context than they do in the unmarked context, which is what we would expect. Here we find an effect size in the medium range, which gives us a strong ground to claim that adults indeed use the two possessive orders differently based on the context. Regrettably, the model did not find an interaction between speaker usage and context. This entails that the structure is not affected differently by the way adults and children use context.

To get a full overview of the data, we have computed another model with context markendess as the dependent variable (0 for unmarked and 1 for marked). Structure (prenominal vs. postnominal) and speaker type (adults vs. child) were set as dependent variables, with the intercept being unmarked, prenominal, and adult. Again, we checked for an interaction between structure and speaker type. The model is summarized in table 10.

	ESTIMATE	SE	T-VALUE	P-VALUE	SIGNIFICANCE
INTERCEPT	0.028796	0.009804	2.937	0.00344	**
CHILD	-0.010724	0.017812	-0.602	0.54739	/
POSTNOMINAL	0.887871	0.040322	22.019	2e ⁻¹⁶	***
CHILD&POSTNOMINAL	-0.329020	0.057089	-5.763	1.33e ⁻⁰⁸	***

Table 10: summary of glm on Italian data with context as the dependent variable

This model shows the children have more unmarked contexts with the prenominal possessive than adults, but not significantly (row 2). The third line of the model tells us that adults use more postnominal structures in marked contexts, as we would expect them to. Lastly, the model reveals that there is indeed an interaction between the speaker type and how the structures are used in the different contexts, thus context affects adults and children differently when it comes to production of possessive structures, and children use the postnominal more than adults in unmarked contexts.

These models together suggest that Italian children are not target-like in their possessive productions as they differ from adults in some key factors. Firstly, as we can see from the structure model (table 9) children produce more postnominal possessives than adults. We have speculated on how this may relate to the children's more frequent use of the marked context, but the context model shows how children do not use either context more frequently than the adults (row 2 in table 10). Consequently, it follows that

the higher use of postnominal possessives is simply a case of overuse. This is confirmed by the interaction of speaker type and possessive structure use in the context-model.

Thus, the current investigation has proven how important it is to investigate contextual use, as the raw frequencies provide a rather limited picture of the children's productions.

Analysis of the Norwegian data

The data set of Norwegian that was available to us had more datapoints than the Italian set and suffered less data-loss. We have excluded from the count the noun-applicable data points which consisted of lyrics or reading from books as these do not reflect the ongoing contextual situation, fixed-expressions that include possessives, and occurrences with a non-intelligible referent. Some files (n=11) from the child Ole from the Anderssen corpus (Anderssen, 2006) contained only the transcriptions from the child; these are excluded from our further analyses as it is not possible to infer the context.

The updated distribution of occurrences is presented in table 11.

NORWEGIAN	ADULTS	CHILDREN
PRENOMINAL	254 (14%)	158 (25%)
POSTNOMINAL	1542 (86%)	475 (75%)
TOTAL	1796	633

Table 11: filtered number of possessives in the Norwegian corpora

In table 11 we have divided the variants based on the context in which they appear. We have divided the context between unmarked, which includes topic and neutral contexts (21 and 22), and Marked which includes contrast, emphasis, vocatives, and focus (23-27). Recall that in Norwegian the unmarked contexts should yield a postnominal possessive (e.g. *bilen min*), conversely the marked contexts should yield a prenominal possessive (*min bil*).

- (21) INV: får eg se bandasjen? TOPIC
 Got I see bandage-the
 (...)

 INA: da får du se bandasjen.
 Then got you see bandage-the
 CHI: da får æ kle på av da.
 Then got I clothes off on then
 INV: ja du må kle på [//] av og på.
 Yes you must clothes off on and off
 CHI: ja.
 yes
 INV: ja.

yes
CHI: da må vi se **bandasjen min** da.
Then must we see bandage-the my then

INV: ja.
yes

Can I see the band aid?/ There, you have seen the band aid./ I have pulled my clothes off it./ Yes./Yes./ Then we must see **my band aid**./Yes.

Location: Anderssen/INA/Ina17.cha": line 545.

(23) CHI: vet du ka æ har fått hos **mammaen min**? NEUTRAL

Know you what I have got at mother-the mine

INV: nei ka du har fått hos mammaen din?

No what you have got at mother-the your

CHI: solbrilla.
sunglasses

Do you know what I got when I went to **my mother**?/ No, what did you get from your mother?/ Sunglasses.

Location: Anderssen/ANN/Ann16.cha": line 129.

The example in (22) is classified as topic because the bandage is what is being talked about in the discourse; whereas (23) is classified as neutral because the sunglasses are the topic and the mother is merely the patient from whom the sunglasses have been taken.

(24) CHI: kan du tælle fingran mine ? CONTRAST

Can you count fingers my

FAT: ja jeg kan telle du må telle tror jæ@d [: jeg] .

Yes I can count you must count believe I

CHI: jeg kan telle **dine fingre** .

I can count your fingers

FAT: ja okei .

Yes ok

Can you count my fingers?/ Yes I can count, but you should be the one counting I think/I can count **your fingers**./ Yes ok./

Location: Ringstad/Idun/020812.cha": line 80.

In (24) there is a clear contrast, and we can see the child transitioning from an unmarked word order to the prenominal one: the child asks the father if he can count her and tells proceeds telling him that he can count her fingers.

(25) CHI: xxx hente nokka. EMPHASIS

Get something
 CHI: xxx bare hente nokka.
 Only get something
 CHI: et skrujern.
 A screwdriver
 INV: skal du hente et skrujern?
 Shall you get a screwdriver
 CHI: **mitt skrujern.**
 My screwdriver
 INV: ditt skrujern.
 Your screwdriver
 (I need to) get something./ just go get something./ a screwdriver/ Are you going to
 get a screwdriver?/ **my screwdriver.**/ your screwdriver.
 Location: Anderssen/OLE/Ole21.cha": line 781.

Similarly, (25) involves emphasis because the child first mentions that he will go fetch a screwdriver and then specifies that it will be his screwdriver; the example here is emphatic because it is not contrasted next to somebody else's screwdriver, but the possession is nevertheless emphasized.

(26) YLV: du **din tulling** . VOCATIVE
 You your fool
 YLV: grrrrrr .
 MOT: tulla du me vanne ditt ?
 Fool you with water your
 You **your silly**/ are you teasing me with your water?
 Location: Ringstad/Ylva/020206.cha": line 864.

Example (26) is a vocative because the child is referring to the mother and calling her silly (where *tulling* "silly" is a noun).

(27) MOT: kemmes seng skal du sove i i natt? FOCUS
 Whose bed shall you sleep in tonight
 CHI: **min seng.**
 My bed
 MOT: i din seng?
 In your bed
 CHI: nei.
 no
 MOT: ja kem si seng?
 Yes who REFL bed

CHI: Ann xx.

In who's bed will you sleep tonight?/ **My bed.**/ In your bed?/No./ Yes in who's bed?/ Ann's.

Location: Anderssen/ANN/Ann04.cha": line 461.

Lastly, example (27) is focus because it is the possession that is the focal information as it is explicitly being asked about: the mother asks the child specifically in whose bed she will be sleeping.

The occurrences divided by speaker, structure and context are displayed in table 12. The contextually felicitous variants are marked in **boldface**.

	ADULTS		CHILDREN	
	Unmarked	Marked	Unmarked	Marked
PRENOMINAL	28 (2%)	224 (98%)	53 (10%)	106 (96%)
POSTNOMINAL	1539 (98%)	5 (2%)	469 (90%)	5 (4%)
TOTAL	1567	229	522	111

Table 12: Distribution of possessives in Norwegian corpora in relation to context

We can see that even when context is taken into consideration, children tend to overuse the prenominal possessive. However, the adults are also not acting fully as expected as their accuracy is at 98% in both marked and unmarked contexts. This could either be the cause of adults being affected by child language in the conversation, or perhaps the current descriptions of the distribution of the two variants should be revisited.

We conducted the same type of statistical analysis for the Norwegian data, but here we set the value of the postnominal possessive to be the default (0 for postnominal, 1 for prenominal), as it is the form used in unmarked contexts. So, in the structure model, we set the structure to be the dependent variable, with speaker type (adult vs. child) and context (unmarked vs. marked) as independent variables. The intercept is set to adult and unmarked; the model is summarized in table 13.

	ESTIMATE	SE	T-VALUE	P-VALUE	SIGNIFICANCE
INTERCEPT	0.017869	0.004724	3.783	0.000159	***
CHILD	0.083664	0.009449	8.854	2e ⁻¹⁶	***
MARKED	0.960297	0.013228	72.594	2e ⁻¹⁶	***
CHILD&MARKED	-0.106875	0.023600	-4.529	6.22e ⁻⁰⁶	***

Table 13: summary of glm on Norwegian data with structure as the dependent variable

The model finds, as the previous studies already indicated, that children use significantly more prenominal structures than the adults in unmarked contexts. As in the Italian data,

this result is statistically significant, but it has a very low effect size. Again, the reason for this might be that there are fewer data points for the child than for the adult data. In the third row of the model, it is shown how in marked contexts, as expected, adult use significantly more prenominal possessives. The effect size here is also large, which means that the result obtained here is very relevant. The interaction in the last line indicates how the structure is affected differently by context in children and adults. Based on these results children use more postnominals in marked contexts, which is something we would expect if they were pragmatically economical. This result might also be caused by how the data is distributed and by the fact that there are very few non target-like occurrences in the marked contexts for both types of speakers. The interaction means that the structures are affected differently by context, and given how the model is set, it can only clearly tell us about the structures used in the marked contexts, which does not exclude the possibility of structure being affected differently also in unmarked contexts between the two speaker types. For this, we will have to look at the context model.

In the context model, markedness is the dependent variable (unmarked vs. marked) and speaker type (adult vs. child) and structure (postnominal vs. prenominal) as independent variables. The summary is presented in table 14.

	ESTIMATE	SE	T-VALUE	P-VALUE	SIGNIFICANCE
INTERCEPT	0.003238	0.004329	-0.748	0.454	/
CHILD	0.007310	0.008931	0.818	0.413	/
PRENOMINAL	0.885651	0.011556	76.642	2e ⁻¹⁶	***
CHILD&PRENOMINAL	-0.229532	0.019404	-11.829	2e ⁻¹⁶	***

Table 14: summary of glm on Norwegian data with context as the dependent variable

The model shows that children do not use unmarked and marked contexts in different proportions than adults (row 2). Combining this with the result from the structure model in which we have seen that children use significantly more pronominals, could indicate the overproduction of prenominal discussed in the previous literature. As expected, we also see how adults use significantly more prenominal possessives in marked contexts, and like in the previous models, the indicated result has a large effect size. The last line indicates that there is a strong interaction between speaker type and structural choice in the different contexts, more precisely, children use significantly more prenominals than adults in unmarked contexts. Thus, we hereby confirm the overuse of the prenominal elaborated and discussed by Anderssen and Westergaard (2010) by using a larger dataset and with a more attention to the contextual usage. The implications of these findings will be discussed in the following section.

Discussion

With this exploration of corpora, we have set out to investigate which principles underly the acquisition of the two possessive structures. We have investigated this by looking into adult and child productions of pre-and post-nominal possessives in Italian and Norwegian. Our research questions were the following:

- (1) Are Italian children as target-like as previously described?
- (2) Can the overuse of the marked form observed in Norwegian children be explained by context-use?
- (3) Are the same principles guiding acquisition in the two languages?
- (4) What can these data tell us about the acquisition of contextual variants and the processes that affect them?

For coherence purposes and an easier crosslinguistic discussion, we will refer to the two possessive variants as the unmarked form and the marked form which will refer respectively to the prenominal and postnominal forms in Italian, and the postnominal and prenominal forms in Norwegian.

The Italian children

Our first research question was about the Italian children. The Italian children have been previously reported to be target-like in the production of the possessive variants because the proportion in which the variants were used was the same in the child and adult productions. The analysis here was expanded to all available corpora on CHILDES (MacWhinney, 2000a) and indeed found that the children and adults use the variants to the same extent. Nonetheless, when the productions were classified into unmarked and marked contexts, differences between the two types of speakers emerged. Our analyses suggest that the children overuse the marked form (structure model) and we found an interaction between speaker type and structure use indicating that structure is used differently in adults and children, with children significantly overusing the marked structure in unmarked contexts (context model). This result conflicts with previous studies on Italian monolingual acquisition of possessives, and it is due to our meticulous consideration of the contextual use of the variants. Thus, we conclude that Italian children are not fully target-like in their possessive variants as it has been previously claimed (Antelmi, 1997; Bernardini, 2003; Cardinaletti & Giusti, 2011).

A closer look to context in the Norwegian dataset

For our second research question we took a closer look of the contexts in which the two possessive variants were used in the child data. Norwegian children overuse the marked possessive, this has already been discussed in previous studies (Anderssen & Westergaard, 2010). Our aim here was to check whether the overuse of the marked possessive could be related to a more frequent use of the marked context, in which case it would not be considered a non-target like use. Our analyses show that this is not the case, as children use significantly more marked possessives (structure model) but the

proportion of the contextual usage does not differ from the adult one (context model). Moreover, we found an interaction in both models which indicates that structure is used differently in the two contexts and that context has a different effect on structure use in adults and children. It is also obvious from the context model that children use more marked possessives in unmarked contexts. We thus confirm that Norwegian children are not fully target-like as they overused the prenominal possessive in unmarked contexts.

Overuse of the marked variant

From the answers to our language-specific research questions, we find out that children overuse the marked form in unmarked contexts in both languages.

Recall that the marked form in each of those languages is also the one considered to be basic. Conversely, the unmarked form is more frequent, but since this form is clearly not the overused one, we can exclude frequency as the main factor guiding the acquisition of these variants. The unmarked variant can in both languages be, with specific prosodic contours, used to express contrast or emphasis. It would thus not be pragmatically inappropriate to overextend the unmarked variant to marked contexts. Since our results show that children do not do this, we thus conclude that pragmatic economy does not guide acquisition. Bearing in mind that the children use more unmarked forms overall, we find marked forms used in unmarked contexts more often than the other way around. The children in both languages are sensitive to the contextual use of the variants because they use the unmarked form more often overall, but they deviate by overextending the marked form to unmarked contexts. So, what could be the reasons for this and what can this tell us more generally about the acquisition of derivation and markedness? The overuse of the marked/basic form can be attributed either to economy or to markedness; these are discussed in turn in the following sections.

Economy

Children are known to be economical in their productions (Westergaard, 2009), i.e. no structure building and no movement more than the input provides evidence for (Westergaard, 2009; Westergaard & Bentzen, 2011); Snyder (2007) refers to this as *grammatical conservatism*. Thus, economy of movement could explain the overproduction of the marked structure in both Norwegian and Italian children, as the marked structures discussed in this study do not involve movement (or involve less movement). This possibility is further corroborated by the fact that syntactic movement is not consistently applied at the earliest stage when there are two grammatical word orders and the choice between these variants is dependent on information structure, such as lack of scrambling (Mykhaylyk et al., 2013; Schaeffer, 2000), non-target like article use (Schaeffer & Matthewson, 2005), or the use of the dative alternation (Anderssen et al., 2014). As has been extensively argued throughout this study, the choice between prenominal and postnominal possessive is a pragmatic one. Thus, there are theoretical grounds to assume that Italian children, along with Norwegian as argued

by Anderssen and Westergaard (2010), are economical in their productions which causes them to not move the possessive consistently, resulting in the overuse of the marked structure.

Saliency of markedness

Another way of looking at the overuse found in the current study is from the point of view of markedness. And this in turn offers two ways of looking at what is happening. Either (i) marked structures are more salient in the input, be it contextually or for the prosodic contour, and thus more easily accessible to the child; or (ii) children are not yet tuned in to the common ground and will thus use the marked structure if something is marked for them, but not necessarily marked to the interlocutor.

We may ponder whether the saliency in the context and perhaps also the prosodic contour in which the marked constructions are uttered make them more evident and thus more easily learnable for the child. But no studies have investigated the saliency of markedness in this way.

In our dataset, we can check if there are cases in which the noun that the possessor is modifying is by any means salient. This means that the NP is to some extent salient, ergo marked, even if the markedness is not on the possessive itself. If children use the marked possessive in these cases, this would entail that they are attentive to saliency and overextend the saliency of the noun to the possessive, resulting in the use of the marked structure. We can find three of those cases in the Italian data, from three different children. One of these is displayed in (28) below. The interlocutor asks the child who is ill, putting the answer NP in focus, thus making it salient; the child replies with a postnominal structure.

(28) INV: è arrivato il dottore ?
Has-AUX arrived the doctor

INV: ma chi è che sta male ?
But who is that stays bad

CHI: babbo mio .
Father my

INV: c' ha l' influenza ?
has the flu

Location: Calambrone/Rosa/021112.cha": line 439.

However, children do not always do this as they are cases of prenominal possessives used with the noun being in focus, or salient in some other way. See (29) as the context is quite similar as in the example above.

(29) MOT: chi era che stava arrivando ?
Who was that stayed coming

CHI: il mio papà .

The my father

MOT: il tuo papà .

The your father

Location: Tonelli/Marco/020510.cha": line 657.

From the examples in (28) and (29) it seems that focus and saliency of the noun do not always result in the use of the marked structure.

We were unable to find equivalent examples in the Norwegian corpora, examples in which the NP was in focus and there was a reply with a prenominal possessive. This makes saliency of markeness an unlikely explanation of our data.

Another other possible explanation related to markedness is that of a shared common ground (Schaeffer & Matthewson, 2005). This perspective entails that children's attentiveness to context is still not strong enough to account for the listener's perspective every time. Schaeffer and Matthewson (2005) observed the lack of systematic distinction between one's own and the interlocutor's beliefs in children's article use. The authors argue that this happens because of the lack of a pragmatic concept in children, and claim that other areas of the grammar are affected by this. They refer to this phenomenon as the *concept of non-shared assumptions*. Since the choice of possessive structure in Italian and Norwegian is a pragmatic one, the children's concept on non-shared assumption might cause them to consider what is marked for them to be marked in the conversation, thus resulting in a marked structure.

However, in both languages, the unmarked structure is appropriate also in the marked contexts, that is, with a particular prosodic contour. So, from this perspective, it would be more economical (pragmatic economy) to always use the unmarked structure, until they tune in to the fine-grained contextual distinctions. Children do not do this, as we only see evidence for syntactic economy. But this does not preclude a lack of common ground to have an impact, as it is difficult to separate the two factors in this dataset.

Conclusions

In the current study we aimed to reveal if the same factors influence both Italian and Norwegian child language. These languages are mirror-images of one another when it comes to possessive structures; thus, if the same factors guide acquisition, we expect to see mirror-imaged results. And this is indeed what we find: the non-derived but marked structure being overextended to unmarked contexts by both Italian and Norwegian children. This means that children pay attention to more than the surface structure, and the fact that we find mirror-imaged results entails that language acquisition is guided by internal properties of the language, thus children are sensitive to these.

We may exclude frequency as the main factor, as it is the less frequent variant that is overproduced: postnominal for Italian, prenominal for Norwegian. Children are

also not guided by markedness, i.e. they do not extend the unmarked variant to marked contexts.

However, children are attentive to context as most of the production is target-like. But when compared to the adult speakers in the corpora, both language groups produce significantly more marked structures in unmarked contexts than the adults.

Considering the similarities between the two languages, the status of economy in language acquisition is consolidated when it comes to syntactic structure, as we find that the basic, marked, alternative is overused. If pragmatics was the determining factor the unmarked, derived, order should be preferred, and pragmatically economical. But this is not what we found, indicating thus that syntactic economy can explain the data that we have observed with the best precision.

Syntactic economy seems to be a persistent factor in child language acquisition, as it is a strategy employed by children cross-linguistically. It thus seems a more relevant predictor than frequency and pragmatic economy when it comes to grammatical alternates whose choice of use is dependent on contextual factors.

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