Cross-linguistic influence in mirrored properties:
Possessive structures in Italian and Norwegian
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Abstract

In the current study we analyze the effects of cross-linguistic influence (CLI) in possessive structures on Italian-Norwegian bilingual children. Both chosen languages have the prenominal and postnominal possessive and their use is context dependent. In Italian the prenominal possessive is used for neutral contexts whereas the postnominal possessive signals contrast or emphasis, while the opposite is true for Norwegian. Thus, this property is mirrored in the two languages. This is unlike previous studies on CLI as in the current study both languages have the two surface structures we are focusing on, and thus the potential direction of CLI is not immediately obvious.

Thirty-one Italian-Norwegian children completed an elicitation task which elicited both a neutral and a contrastive setting. The results reveal that while in Norwegian both structures are used, to a varying degree of accuracy, the prenominal possessive prevailed in the Italian responses.

The Italian result is discussed in relation to research on heritage languages, as it seems that the possessives have undergone a simplification and only the unmarked, prenominal, form prevailed. However, this simplified system may still have an influence on Norwegian as we found evidence of CLI at the individual level in the Norwegian data. This is an indication that CLI may still occur even when one of the systems is simplified. The direction of CLI is then more easily predictable as it goes form the more simplified system (with one surface structure) onto the other language, similarly to what previous study on CLI in bilingual children have found.

Keywords: cross-linguistic influence, possessives, heritage language, contrast

1.Introduction

This study investigates the potential effect of crosslinguistic influence (CLI) in mirrored properties of the two languages, Italian and Norwegian, of bilingual children. The property under investigation is the possessive structure, more precisely the two alternates: the prenominal and postnominal possessive.

We take the definition from Hulk and Müller (2001) to describe the effects and predictions of CLI: the occurrence of CLI is dependent on the internal properties of the two languages being acquired. The present study focuses on two points which Hulk and Müller (2001) found relevant for CLI more prone to occur: (i) at the interface between two modules of the grammar, in our specific case, the interface between syntax and pragmatics, and (ii) surface structure overlap between the two languages. Hulk and Müller (2001) claim that the directionality of CLI should not be related to language dominance, but other studies such as Bernardini (2003) and Döpke (1998) have discussed dominance as one of the relevant factors for CLI.

The surface structure overlap entails that when language A has two structures (let's call them α and β) and Language B only one of these two structures (say β), bilingual children overproduce (when compared to monolingual peers) structure β in Language A because of the positive input that they are getting for this structure from two languages, resulting in more evidence than what monolinguals get solely from language A. The linguistic structure is considered being at the interface when the two structures present in one are contextually dependent, i.e. they are both grammatical, but the choice of structure depends on the context (interface with pragmatics) or differs in meaning (interface with semantics).

CLI may also take the shape of *cross-linguistic overcorrection* (Kupisch, 2014). This takes place when bilingual speakers overuse the unique, non-overlapping structure in the language that has both structures, thus overstressing the contrast between the two languages. However, cross-linguistic overcorrection has been reported only for adult bilinguals, whereas children are usually found to be more economical and overuse the structure present in both their languages (Kupisch, 2014).

Studies on heritage languages have described the outcome as a simplification of the system of the heritage language when compared to the input baseline (Montrul, 2010). This simplification usually takes form as a retention of the default and the loss of marked forms. Polinsky and Scontras (2020) synthetize the potential deviation of heritage grammars as and avoidance of ambiguity, shrinkage of structure, and resistance to irregularity. They link the simplification of the heritage grammar to high cognitive demands, specifying how linguistic phenomena at the interface of two language domains require more processing resources when compared to phenomena within a single domain. Thus, interface phenomena, such as the one we are exploring in the current study, are more vulnerable to change in the heritage grammar (p.14). A consequence of this is the shrinking of structure; Montrul (2010) refers to it as *simplification*, and Polinsky and Scontras (2020) state that "heritage speakers diverge from the baseline with grammar that has less structure". Considering that one of the languages of the bilinguals in the current study is their heritage language (Italian), a simplification of the Italian system of possessives may be expected.

The current study investigates what happens when both languages A and B have two structures α and β, and when these are influence by the syntax-pragmatic interface such that the distribution in the two languages is the opposite. More precisely, we are focusing on possessive pronouns in Norwegian and Italian. Norwegian and Italian can both place the possessive before (prenominal) and after (postnominal) the noun. Thus, there is surface structural overlap in the two languages as they both have a prenominal and a postnominal possessive pronoun. Additionally, the choice of pronominal structure is dependent on contextual factors as the contrastive/emphasis setting triggers the marked order of the possessive and the noun in each language. This means that the choice of pronominal structure is part of the syntax-pragmatics interface. Thus, the study of possessive structures in this language combination is ideal for observing CLI, but unlike other studies of this type, the direction of influence based on the language properties in not immediately obvious. Therefore, effects of dominance cannot be excluded a priori. This study builds on the ample preexisting body of research, but it takes a new point of view as the linguistic properties theoretically allow for CLI in either direction.

The paper is structured as follows. In the following section possessive structures in Italian and Norwegian will be presented. In section 3 the current study is outlined followed by a thorough description of the methodology in section 4. In section 5 we present the analysis of the results, which are then discussed in section 6. Section 7 is reserved for the conclusion.

2. Possessive structures in Italian and Norwegian
In this section we will describe the possessives in Italian and Norwegian focusing mainly on contextual use and frequency, though the variants show mirrored properties also for other aspects, not key to this study. After the variants have been described in both languages, an overview of the acquisition of possessives by bilingual children will be provided, followed by a summary of the comparison, thus showing how possessives in these two languages are a mirror-image of one another.

2.1 Possessive structures in Italian
In Italian the possessive pronoun can both precede or follow the noun.

1. a. La mia macchina.   b. La macchina mia.
      the-F my-F car   the-F car my-F
      "My car."   "MY car."

Italian possessives always co-occur with the article, they agree with the noun in gender and number and vary for person. The gender of the possessor is not expressed on the possessive form; thus, the 3rd person possessive does not reflect gender. The full paradigm of Italian possessives is given in table 1.

Person	Singular		Plural	
	Masculine	Feminine	Masculine	Feminine
1st	mio	mia	miei	mie
2nd	tuo	tua	tuoi	tue
3rd	suo	sua	suoi	sue
1st + 2nd	nostro	nostra	nostri	nostre
2nd + 3rd	vostro	vostra	vostri	vostre
3rd + 3rd	loro[1]			

Table 1: Italian possessive pronouns

Contextually, the possessive in (1a) is neutral, while the one in (1b) is focalized and indicates contrast (Cardinaletti & Giusti, 2011) which is the focus in this study. We will thus refer to the prenominal as the unmarked variant of Italian, and to the postnominal as the marked variant. The frequency distribution of the two forms contingent to what we would expect related to the

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[1] The 3rd person possessive does not vary across the paradigm, it also has a special status when it comes to some of the analyses and will thus be excluded from the current study.

markendess of the two forms: the unmarked form (prenominal) is more frequent that the postnominal. 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.

2.2. Possessive structures in Norwegian

As in Italian, in Norwegian the possessive pronoun can also precede or follow the noun.

4. a. Bilen   min.   b. Min bil.
      car-the my   my car
   "MY car"   "My car"

In Norwegian, differently form Italian, only the postnominal possessive co-occurs with the article, and the prenominal structure is bare (Westergaard & Anderssen, 2015).

The Norwegian possessive agrees in gender and number with the noun, but there is no gender marking in the plural forms. The 3rd person pronoun reflects the gender of the possessor (his vs. hers) but not of the possessed object, and it also has a reflexive pronoun. The paradigm of possessive pronouns in Norwegian is presented in table 2.

	Masculine	Feminine	Neuter	Plural
1st	min	mi	mitt	mine
2nd	din	di	ditt	dine
3rd reflexive	sin	si	sitt	sine
3rd M	hans			
3rd F	hennes			
1st + 2nd	vår		vårt	våre
2nd + 3rd	deres			
3rd + 3rd				

Table 2: Norwegian possessive pronouns

In terms of contextual use, the postnominal possessive is used in topical contexts and it is considered the unmarked form (Lødrup, 2011), while the prenominal possessive is used to signal contrast and emphasis (Anderssen & Westergaard, 2010). Thus, the postnominal will be referred to as the unmarked variant, whereas the prenominal is the marked variant in Norwegian. Again, contextual markedness relates to frequency, and consequently the postnominal possessive is the more frequent variant: Westergaard (2015) reports a 73% usage of the postnominal variant in her investigation of the NoTa-Norwegian Spoken Corpus (Bondi Johannessen & Hagen, 2008).

2.3 Acquisition of Possessive structures in Italian/Norwegian bilingual children

In this section we will report the studies that investigated the acquisition of possessive structures by bilingual children that have either Italian or Norwegian as one of the languages.

Bernardini (2003) compared the acquisition of word order in the Italian DP of Italian-Swedish bilingual children. In Swedish the possessive can only precede the noun (i.e. *min bok* "my book") and the article is absent in the possessive structure. Utterances from one Swedish-dominant and one Italian-dominant child were analyzed. The study found that both children started out with the prenominal possessive. This could be an effect of CLI, clearly unrelated to dominance, as the prenominal possessive is the surface structure overlap. However, dominance has an effect as the Italian-dominant child paired with the Italian monolinguals with a similar distribution of possessive structures, whereas the Swedish-dominant child did not produce postnominal possessives at all, as was found for the Swedish L2 learners of Italian in the same study. This entails that dominance plays a role in CLI but its effect is still guided by the properties of individual languages. The CLI from Swedish to Italian consists of the lack of production postnominal possessives in Italian, a structure not attested in the child's dominant language.

Westergaard and Anderssen (2015) analyzed the corpora of two Norwegian-English bilinguals. The children were growing up in Norway and had English as their home language. English only has the prenominal possessive. The authors find that the bilingual children have a stronger and a longer preference for this structure than monolinguals, which is likely enhanced by the fact that English only has this variant (Westergaard & Anderssen, 2015, p. p.33).

From these studies we can conclude that Italian and Norwegian possessive structures are indeed prone to CLI, and thus investigating how these structures might influence each other in Italian-Norwegian bilinguals can reveal more about the inner workings of CLI.

2.4 Summary
Here we will compare side by side the properties discussed in the previous sections.

	Italian		Norwegian	
	Pre-nominal	Post-nominal	Pre-nominal	Post-nominal
Example	La mia macchina The my car	La macchina mia The car my	Min bil My car	Bilen min Car-the my
Markedness (contextual)	Unmarked	Marked	Marked	Unmarked
Frequency	More (86%)	Less	Less	More (73%)
Bilingual acquisition[2]	preferred		preferred	

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

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[2] The Italian bilinguals were learning also Swedish, the Norwegian bilinguals were learning English - both languages have only the prenominal possessive.

We can see that all the properties are mirrored except for how possessives are acquired in bilingual children. This is because the effects of CLI are due to the combination of languages and for these bilinguals language B only had the prenominal which resulted in a preference for the overlapping structure. This overview of properties provides a solid empirical and theoretical foundation for our predictions, to which we return in the next section. The possessives in the two languages are also opposite when it comes to derivation[3], but as this was not a key component in our task, we have decided to exclude it form the outline and subsequent discussion.

3. The current study

In the current study we explore how languages influence each other when both have two surface structures, but with opposite pragmatic implications. This combination of factors should result in CLI, but it is currently theoretically unexplored which effects this would entail. Our research questions are thus (i) how CLI occurs in properties which are mirrored across the two languages of a bilingual child and (ii) what implications this has for current theoretical perspectives.

Thus, let's hypothesize what CLI might look like given the described properties of these languages. The manifestation of CLI form Norwegian to Italian would be manifested as a more frequent production of the postnominal possessive, since the postnominal is more frequent in Norwegian and the prenominal is unmarked in Italian, and can thus also be used in contrastive uses, and it is thus ambiguous[4]. The CLI from Italian to Norwegian would be manifested as a more frequent production of the prenominal possessive in Norwegian, for the same reasons. However, since this is a complex combination of factors, other outcomes are possible. Below we describe the theoretically possible outcomes in relation to previous findings and explain what each can tell us about the acquisition process of a bilingual[5].

1. CLI based on dominance
Since based on the linguistic properties CLI is possible both form Norwegian to Italian and vice versa, we could notice the effects of CLI from the dominant to the weaker language.

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[3] In Italian the postnominal possessive is considered basic and the prenominal is derived Cardinaletti, A. (1998). On the deficient/strong opposition in possessive systems. *Possessors, predicates and movement in the determiner phrase, 22*, 17-53. , whereas in Norwegian the prenominal variant is basic and the postnominal one is derived Julien, M. (2005). *Nominal phrases from a Scandinavian perspective*. J. Benjamins Pub. .

[4] Ambiguity is the surface-structure is also an element that contributes to CLI according to Müller, N., Hulk, A. J. B. L., & cognition. (2001). Crosslinguistic influence in bilingual language acquisition: Italian and French as recipient languages. *4*(1), 1-21.

[5] We are aware that there are other possible outcomes, but considering the theoretical and experimental literature, we find those unlikely. This include that the children will be target-like in both languages. This is unlikely as it takes longer to acquire pragmatics than syntax. Another possible outcome is for children to have the same surface distribution of variants across the two languages, entailing full transfer of properties from one language to another and that the pragmatics of the language transferred into is completely infelicitous. CLI has an increased frequency effect on one of the variants, but it does not imply full transfer of the surface structure from one language to another. And lastly, the possibility of CLI which not based on dominance, thus from the weaker to the stronger language. We find this unlikely since the properties of the two languages under investigation do not favor a single direction for CLI, and it is thus unlikely that the weaker language could be a source of CLI.

2. Cross-linguistic overcorrection

The children use the unmarked variant (prenominal in Italian, postnominal in Norwegian) for both types of contexts. This outcome would entail children pose a strong differentiation of the two languages. Cross-linguistic overcorrection was described for adult bilinguals

3. Simplification of a system

Children will simplify the system of their heritage language. This process usually witnesses the loss of the marked form, which should result in the loss of the postnominal in Italian (since most children in our study are heritage speakers of Italian living in Norway)

4. Methodology

We conducted an elicitation task to elicit the possessive variants in neutral and contrastive contexts. The task included two parts (i) the cross-linguistic task (CLT) designed by the COST project and (ii) the possessives elicitation task, the latter designed specifically for the purposes of this study. First we tested the children with the CLT (Haman et al., 2015) in the appropriate language (Roch et al., 2015; Simonsen et al., 2012). The reason for this was twofold: it helped put the child in an Italian/Norwegian setting, but it also provided a baseline for the comprehension and production in each language. We then proceeded to the elicitation task, which is the core task of this study.

4.1 Participants

The participants were 31 bilingual children who spoke Italian and Norwegian, some of them (n=4) also had a third language. The age range was from 4;1-10;0, and there were 16 boys and 15 girls. The participants were recruited through personal communication and through social media on various parent groups. Despite our efforts, only three participants resided in Italy, and all of these had Norwegian mothers and an Italian father. The parents were asked to sign an information and consent form, complete the BiLEC questionnaire (Unsworth, 2013) and to assign an ID to the child which would be used throughout the task[6] before the testing started, and the children received a gift card in the value of NOK 100 or EUR 10 upon completion. An overview of the participants is provided in table 4.

There were also 27 bilingual controls who spoke one of the target languages in addition to English. These were divided in two groups: Italian-English controls (n=12, ages 4;0-7;5) and Norwegian-English controls (n=15, ages 4,4-9;8). The parents of the controls were also required to sign the consent form, complete the BiLEC, and assign an ID to the child. These children completed only half of the task; they were not tested in English. They received a gift card in the value of NOK 100 or GBP 8. Initially we tried to recruit all the controls from an English-speaking country, so that the target language would have the same status (home language) in the whole group. But unfortunately, the recruiting methods we used were found to be unsuccessful for Norwegians living in the UK, and we have thus also recruited children in Norway born from one or two British parents (n=10). This of course changes the status of the target language, as Norwegian is the majority language for those children.

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[6] The children were tested on another task which is not described in the current paper.

4.2 The CLTs

The CLTs are designed specifically for testing vocabulary skills of bilingual children, and have been developed for both Italian (Roch et al., 2015) and Norwegian (Simonsen et al., 2012). Each task consists of four parts: comprehension of nouns, comprehension of verbs, production of nouns, and production of verbs. In the comprehension sections, the children are shown four images of either objects or actions and are asked *"Where is X"* or *"Who is X-ing?"* and are prompted to point to one of the images. In the production section, only one image is shown, and the children are asked to say what it is for nouns, or what is happening in case of verbs.

Since this was only the preliminary part for our core task, administering the full task would have been too time consuming, and we risked using the whole concentration span of the child before getting to our main task. We have thus decided to administer only half of the CLT: comprehension nouns & production verbs or comprehension verbs & production nouns. The children were administered opposite tasks in Italian and Norwegian, thus if the child did comprehension nouns & production verbs in Italian, they were shown comprehension verbs & production nouns in Norwegian.

All the items in the CLT are categorized based on age of acquisition (AoA) and phonological complexity, the combinations of which yield four types of items. The items are scored based on these properties: 1 for simple items acquired early, 2 for simple items acquired late, 3 for complex items acquired early, and 4 for complex items acquired late. Since we were interested in productivity rather the correct pronunciation of the items, we have altered the scoring values of the items so that AoA would have more weight: the complex items acquired early are thus scored as 2, and the simple items acquired late are scored as 3. The mean of these scores was then used in the statistical analysis.

4.3 The elicitation task

4.3.1 Materials

The task consisted of two power point presentations, one for each language, consisting of animations in which characters depicting 1st, 2nd, and 3rd person were shown doing actions and interacting with objects. Since the goal was to elicit a full array of possessives, we had to assign a character for the participant, the experimenter, and another friend (two in Norwegian, because the 3rd person possessive is gendered). The character for the participant had two versions, boy and girl, so that it was the same gender as the child. The experimenter character was different for the Italian and Norwegian version of the task, as the experimenter administering the task was a different person for the two languages. All the images used in this task were downloaded from Vecteezy[7] with a pro license.

The Italian version of the task had 9 target scenes (3 for each character) and each scenes depicted first a neutral condition (character interacting with their own object) and then a contrast condition (character interacting with someone else's object). The Norwegian version had 12 target scenes because the 3rd person possessive is marked for gender of the possessor. The presentation for each language had an equal number of fillers, which made the Norwegian version longer. The full list of items used in the task is displayed in the appendix.

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[7] https://www.vecteezy.com/

4.3.2 Design

The task was designed to elicit the full array of possessive constructions in pragmatic conditions that should yield different possessive variants in each language. Each target scene had an introductory slide, on which two characters were present along with the items that belonged to them (fig.1). The scene then proceeded with only one of the characters being in a room, and after a few slides they interacted with their own object (fig 2), something that happened to said object - it was broken or dirty, or hard to reach (fig 3), which than caused the character to use the object of the other character present in the introductory scene (fig 4).

The filler scenes also had an introductory slide depicting two characters and some objects. The scene proceeded with the two characters using the presented objects together, possession was not prompted or elicited.

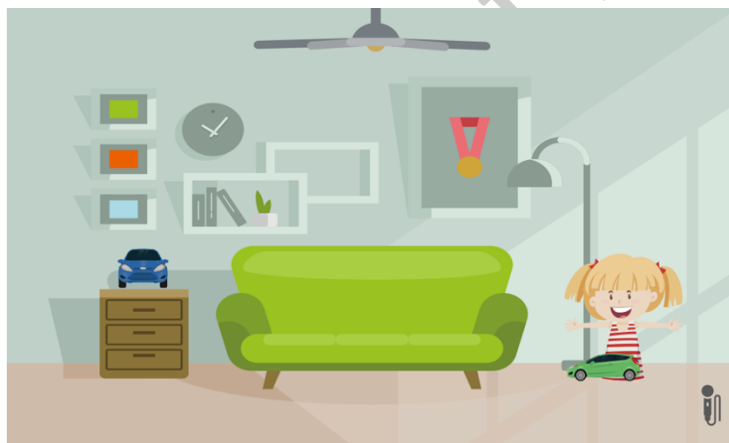Figure 1: introductory slide for a target condition with 1st and 2nd person

Figure 2: scene eliciting a neutral condition

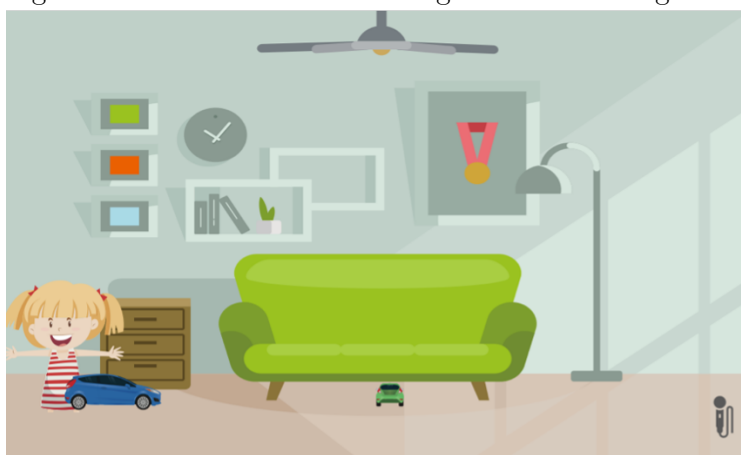Figure 3: scene in which the acting character's car goes under the couch

Figure 4: scene in which the character uses the object of the other character present in the introductory slide

This is a within-group design as the target participants did the task in both Italian and Norwegian.

4.3.3. Procedure

The experiments were conducted on Zoom due to Covid-19 restrictions. This has however allowed us to sample from more cities in Norway and the few participants in Italy. The CLT task was always the first, to make sure that the child is in the setting of the target language. The experimenter shared the screen with the participant, showing the relevant page of the CLT. The comprehension part of the task was a bit more difficult to administer online as we were not able to see where the child was pointing, so the children were instructed to say the number of the image, as the images in the CLT task are numbered 1-4. This was not an issue since most of the children knew the numbers, but sometimes the parents helped and would say the number of the image the child was pointing at. It took 3-7 minutes to complete the CLT task. The interaction was recorded through Zoom, set up in such a way to record only the shared screen and not the faces of the participant and experimenter. When the CLT task was completed, the recording was interrupted to obtain separate video files at the end of the Zoom meeting.

The elicitation task started by showing the child a telescope in the Italian version and a mirror in the Norwegian version of the task. The experimenter explained how this object is

magic and will take us to the land of drawings, where we are also drawings. The characters for 1st (participant), 2nd (experimenter), and 3rd (friend) were then presented to the child. This way the child could relate with one of the characters, and could relate the experimenter with another character, which allowed us to elicit 1st and 2nd person possessive pronouns. This worked extremely well, and the children had no problem to identify with the assigned character. Before the beginning of the task there were two practice scenes in which each character was shown with an object that belonged to them. One of the characters than played with their own object and the child was asked to describe the scene, then the same character played with someone else's object and the child was asked to describe what was happening. The practice scene allowed us to explain to the child what was the description we were looking for, and we could say how the answer needs to say not only what the object is, but also who it belongs to. It was crucial not to prime the child with either structure. Then the task started, with a filler scene in both languages. In the introduction slide of the target scenes the experimenter introduced the scene as "look this is you and me, the blue toys are yours and the green toys are mine. And what do we have here? Each of us has a pane a car and a truck, but the blue toys are yours and the green toys are mine" (cf. fig1). It was of crucial importance for the experimenter not to use a possessive structure, which is why the possessive pronoun was used predicatively, as can be seen in the example above. After few initial participants, we added objects in the introductory slide, as having just the target object often resulted in omission of the noun in the target slide, as the object was already established as common ground. It took around 15 minutes to complete the elicitation task.

4.3.4 Scoring

The answers to the target slides (2 per each scene) were transcribed and categorized like so: Postnominal, Prenominal, Noun omission, Preposition, predicative, sin-structure, Prenominal-emphasis, postnominal-emphasis, and null. The first two categories were the structures we wanted to elicit and upon which the main data analysis will be based on; Noun omission occurred when the child only specified the possessive, this is a grammatical variant but unfortunately cannot tell us about the relative order of the possessive and the noun; the preposition answer included the *of-genitive* which can be used only postnominally in the two languages (*il libro del bambino/boka til han*- the book of the boy/of him); the predicative included a relative clause with a predicative relation (*boka som er hans*- the book that is his); the sin-structure is specific for denoting possession in Norwegian (*hans sin bok*- his *sin* book) the sin particle follows the possessor and the order between possessor and possessee is fixed; The emphatic answers included an emphatic stress on the possessive and allow the speaker to signal contrast when using the unmarked order, thus answers with an emphasized unmarked word order in the contrast conditions are pragmatically felicitous; null answers included both no answers and answers which did not include any kind of possessive. Most of these answer types were not the answers we were looking for, but they can give us insight into children's understanding of these conditions. The summary of the answers is presented in table 4.

Answer	Italian		Norwegian	
	neutral	contrast	neutral	contrast
Null	87	65	119	65

NounOm	5	29	5	38
PP	6	31	0	16
Predicative	0	0	4	3
Sin-structure	0	0	10	34
PreN	166	109	58	161
PostN-Emph	0	0	6	19
PostN	13	22	168	38
PreN-Emph	1	21	0	0

Table 4: Summary of responses for the elicitation task

5. Results

We will base out main statistical analysis on the syntactic variants of prenominal and postnominal possessive of which we have obtained a total of 312 target answers for the Italian task and 363 for the Norwegian task[8]. Since our goal is to observe the syntactic marking of these variants the answer types with both a prosodic and syntactic marking were added to this dataset. In figure 5 the distribution of the two structures is showed, divided per condition and per language.
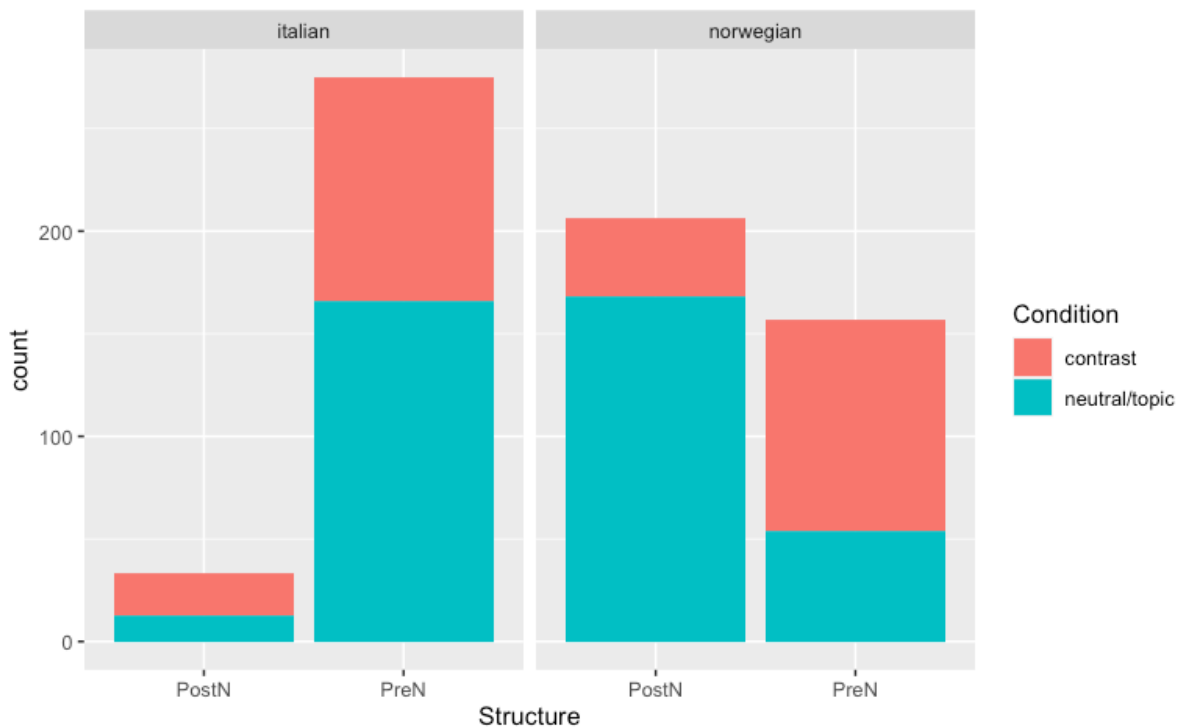

Figure 5: the distribution of the variants divided per condition and language

The most striking difference between the two languages is how these bilinguals used almost exclusively one of the structures in Italian, the unmarked prenominal one, whereas they used both structures in Norwegian. In Norwegian the postnominal is used more than the

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[8] Recall that Norwegian had 12 target scenes and Italian 9

prenominal, which is not unexpected as the unmarked variant can be extended to be used in marked contexts, but there is still considerable use of the Prenominal variant.

The Italian system seems to be simplified, with a strong preference for the use of the prenominal. This cannot be attributed to CLI from Norwegian as we would expect the exposure to Norwegian to enhance the use of the postnominal variant, and it is obvious that this does not happen. Thus, this may be attributed to pragmatic economy as the children are using the unmarked form which can be extended to marked contexts, usually with a specific intonational contour, which is not the case for these instances. We have also marked the prenominals with emphasis, but these are a separate category in the scoring she and are not included in figure 5.

In Norwegian the postnominal variant is used more frequently, sometimes extended to neutral contexts. Unlike in Italian, the children used the marked prenominal variant. The use of this variant was pragmatically appropriate as it was used in the contrast condition, but also in the neutral condition, which is pragmatically inappropriate in Norwegian.

Thus, the potential CLI can be observed in the use of the prenominal variant in neutral contexts in Norwegian; but also, to a lesser degree, in the postnominal use in neutral contexts in Italian. We will thus argue that CLI can be bi-directional within the same property when the surface structure of both languages allows for this. The lower degree to which this happens in Italian is likely due to the sporadic use of the postnominal variant altogether in the Italian task.

For the statistical modelling which will be described in the following sections, we have coded the unmarked variant as 0 (prenominal for Italian, postnominal for Norwegian) and the marked variant as 1 (postnominal for Italian, prenominal for Norwegian). This way, when both languages are included in a model, we obtain more comparable results in terms of unmarked and marked variants.

5.1 Analysis of the controls

We will start the analysis by looking into our control groups. We will do so to identify whether the investigated linguistic phenomenon is prone to CLI. Our controls were Italian-English and Norwegian-English bilinguals, and the CLI effect should be different in those languages as English only has the prenominal possessive (e.g *my car, *car my*) which is the unmarked form in Italian but the marked form in Norwegian. Thus, we should expect a high production of pronominals in the English-Italian bilinguals, this is effect is expected to hold less for the English-Norwegian bilinguals. The responses from the controls are displayed in table 5.

Structure	English-Italian		English-Norwegian	
	Neutral	Contrast	Neutral	Contrast
PreN	64	55	38	85
PostN	2	1	56	9

Table 5: Responses of the control groups

As predicted, English causes CLI in the possessive use of these bilinguals, and this effect is different between the two groups. A generalized linear model (glm) was plotted on the responses of the controls, with the structural marking as the dependent variable and the condition (neutral

vs. contrast) and control group (Italian vs. Norwegian) as independent variables. The neutral condition and the Italian controls were set as the intercept. The results of the model reveal how the two groups are significantly different (p<0.001) as the Norwegian controls used more marked structures. The Italian controls used only the prenominal (unmarked) structure is all conditions, as the use did not vary across conditions. We also found an interaction between groups and condition as the Norwegian controls used the marked structure significantly more in the contrastive context (p<0.05), which is pragmatically felicitous. Thus, due to CLI form English, the Italian group used the prenominal possessive uniformly in the task, whereas the Norwegian group still retains some distinction of the two variants. We can thus see that possessive structures are a domain vulnerable to CLI and can proceed with our analysis on the target bilinguals.

5.2 Analysis of the targets

We plotted a generalized linear model (glm) with interaction, Structure marking (0 vs. 1) as the dependent variable and condition (neutral vs. contrast) and language (Italian vs. Norwegian) as independent variables. The neutral condition and the Italian task were set as the intercept. We will refer to this model as our BaseModel. The model found that in Italian the children use significantly more postnominals in the contrast condition (p<0.05) which indicates these bilinguals have a grasp of the pragmatic use of the variants. The model also found that in Norwegian use more marked forms (postnominals) in the neutral context (p<0.001), and this could be simply due to the more varied use of the variants in the Norwegian task. Lastly, the model showed a strong interaction of condition and language (p<0.001), signaling how these bilinguals use the two variants differently in the two conditions dependent on language by using more marked forms in the contrast conditions in Norwegian, thus being more target-like.

However, we want to discover if there are factors which drive these differences and we have thus added each potentially relevant factor to our BaseModel. Factors like residency, the language or education of the parents did not surface as significant variables for the observed responses, and we will thus not focus on these any further. A possible reason why residency, whether the children were residing in Norway or Italy at the time of testing, was not found to have a significant effect is because we only had three participants residing in Italy, which is a very small number to show significant differences within the dataset.

5.3 Analysis of dominance

To assess the dominance of each child, we compared the CLT scores for each language. We are aware how a simple result from a lexical task such as CLT cannot provide a detailed overview of the child's knowledge and proficiency in each language, but we merely consider this an indication of dominance, which we will try to correlate to the results obtained by the elicitation task. We thus obtained a dominance value by subtracting the result from the Italian CLT from the result of the Norwegian CLT: a positive result suggest dominance in Norwegian, a negative one suggest dominance in Italian. The values ranged from -0.6 to 0.8, and we defined the children whose score ranged from -0.2 to 0.2 as balanced for the purposes of this task.

We then ran a *glm* on the base model by adding dominance (DomIT, Balanced, DomNO) as the independent variable to our BaseModel. The results were very complex including

interactions from the three independent variables, and we thus ran separate models per language. The neutral condition and balanced bilinguals were set as the intercept for both models.

The Italian model revealed no significant difference in the children's responses based on their dominance. This may be because there was little variation in the responses of the Italian task, with most responses being the prenominal possessive.

The Norwegian model found a marginal significance (p<0.1) between balanced and Italian-dominant participants as the latter one use more prenominal possessive in neutral conditions than the balanced participants. Moreover, the Norwegian dominant participants used more postnominal structures in neutral conditions than the balanced participants (p<0.05). The models also found an interaction by condition and Norwegian dominant participants as they use significantly more postnominal possessives in the contrast condition when compared to the balanced group. We can thus see dominance as a progression in the responses, as the children seem to be more target-like in Norwegian as their Norwegian dominance/proficiency increases. This is displayed in figure 6.
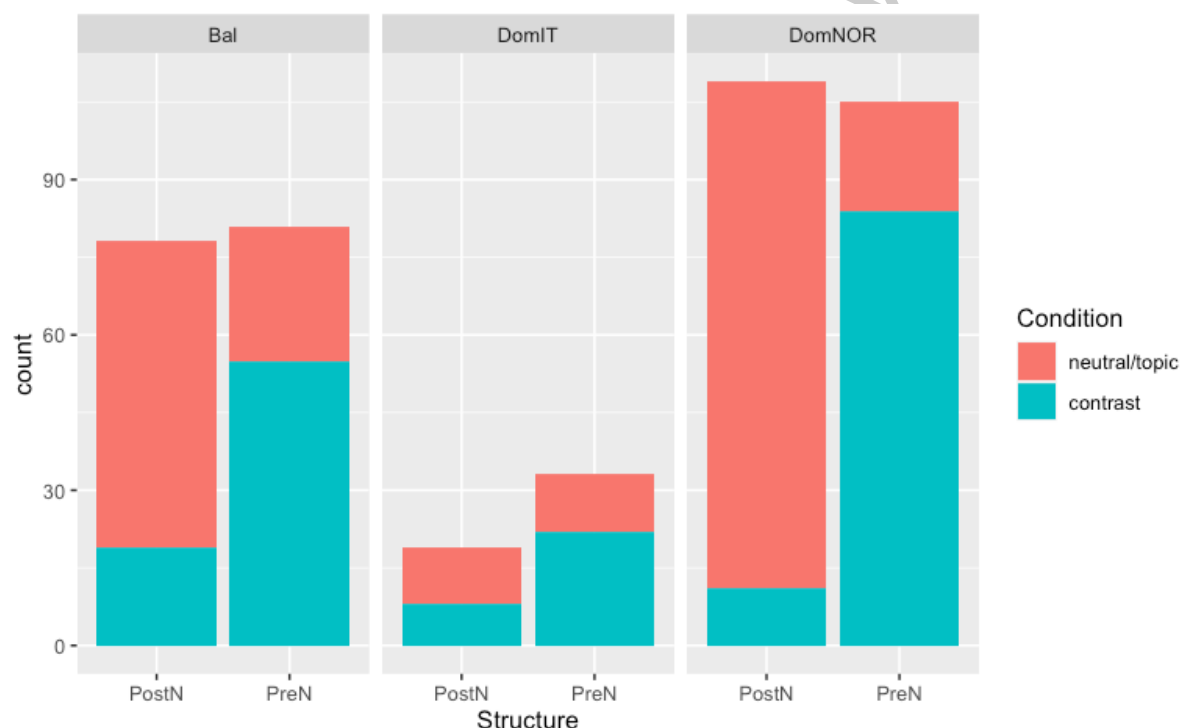

Figure 6: use of the two variants based on language dominance divided per condition

5.4 Age

The models, one for each language, were plotted by adding age as an independent variable to our BaseModel. Age was plotted as a continuous variable and the model was set to show an interaction between age and condition. There was no significance in the Italian model entailing that age is not a relevant factor for the contextual use of the possessive variants in the Italian task. Thus, there is no observable development for this linguistic phenomenon in our dataset. This is displayed in figure 7. To gain a better overview of the data, age is treated as a categorical variable in the figure. The Norwegian model showed a significant interaction of age and

condition (p<0.05), as children sue more postnominal variables in contrastive contexts as they get older. This is displayed in figure 8.
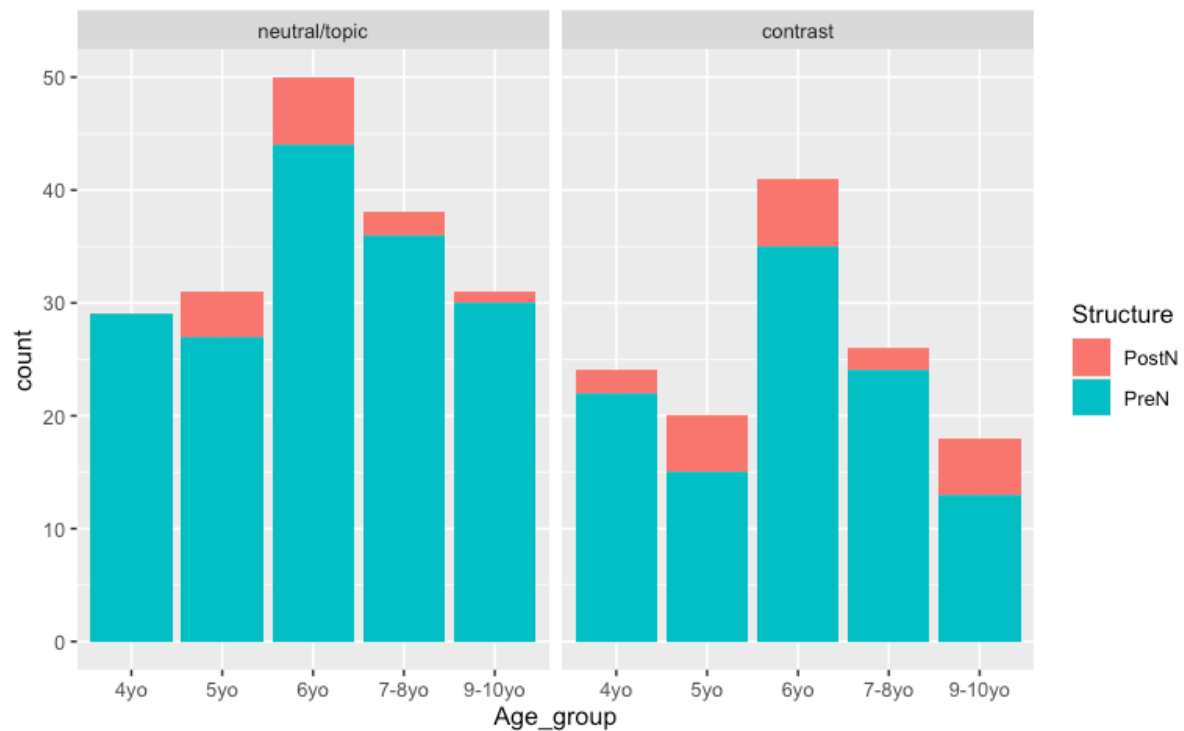

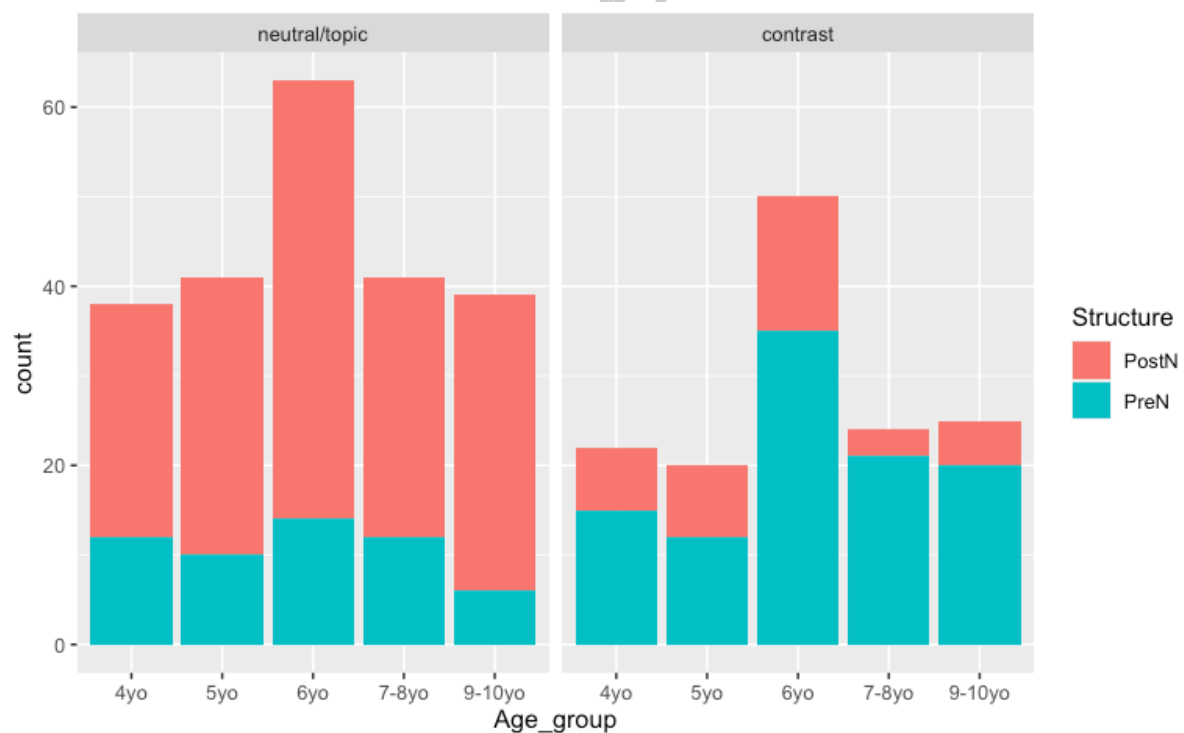Figure 7: use of variants in each age group in Italian

Figure 8: use of variants in each age group in Norwegian

It is rather unusual that there is no obvious developmental pattern in these children. But this could entail that the contextual use of the two variants is acquired before the age of four, the

result is simply not target-like. However, the graph in figure 8 is at a group level and does not account for individual variation, which we will investigate in the following section.

5.5 Individual variation

So far, we have analyzed the data at the group level, dividing the tasks per language. However, there is a lot of individual variation in the responses. We have thus classified the children based on their responses in each language. The variants were scored based on the language with the unmarked variant being scored as a 0 and the marked variant as a 1. We thus calculated the means of variant use per participant, separated for each language. Thus, if a child has a mean use of 0, this means that they use only what is the neutral variant in that language.

As we already know, in Italian there was little variation based on the condition and the children had a strong overuse of the prenominal variant. We have thus categorized the children in exclusive users of prenominal (score=0), children that mostly use prenominal (score 0.01-0.25), children who vary their use (score 0.25-0,75). In the Italian task there were no children who scored higher than 0.57, thus there were no children that used the postnominal variant most of the time. The categorization of the responses in the Norwegian task was more complex as we had to categorize the children based on their responses across the two conditions. An overview of the classification is provided in table 6.

Italian		Norwegian	
Only PreN	15	Target-like	3
Mostly PreN	7	Target-like (neutral)	8
Varied	7	Target-like (contrast)	11
NA	2	Opposite	3
		Chance	2
		NA	3

Table 6: Classification of children based on their responses

No correlation was found between the responses in one language and the responses in the other. However, effects of CLI can be seen in some participants when we look closely into their responses. For example, the participants classified as target-like in the contrast condition in Norwegian are found to overuse the prenominal possessive also in the neutral condition, and we could argue that this is a CLI effect from Italian. The children found to have an opposite system in Norwegian, i.e. using more prenominal in the neutral condition and using more postnominal in contrasts were in fact the children residing in Italy (n=2).

Also, by looking at the data at the individual level, we can see a different picture than from the group-level graph in figure 8: while the Italian system is obviously simplified with the majority of children (n=15) using exclusively the prenominal variant, but in Norwegian the children are becoming target like. We can consider target-like the children in table 8 labelled as target-like (n=3), but also the children labelled as target-like for the neutral condition (n=8), because these children use the postnominal variant also for contrastive conditions, which is not pragmatically infelicitous as the unmarked variant can be extended to marked contexts. Thus, half of our participants do reach a target-like level in Norwegian.

5.6 Comparison with controls

We have compared the responses obtained from the target children with the ones from the controls. This comparison allows us to observe how the different language features can affect the outcome. We thus set to glms, one comparing the Italian responses of the target group with the Italian controls, and another comparing the Norwegian responses with the Norwegian controls. As in the previous model, structure marking was the dependent variable, and condition and group (target vs. control) were set as independent variables. No significance difference between the groups was found for the Italian data, but the Italian controls use more prenominal in both conditions. Thus, Italian pronominals seem to be affected the same way, regardless of the other language of the bilinguals, we will elaborate on the possible reasons in the discussion.

In the Norwegian data we found a clear difference between the target and the controls, as the latter use significantly more prenominal in the neutral condition (p<0.01), but no interaction has been found for group and condition, meaning that these two groups use the two variants in roughly the same way in the two conditions. This result is in line with previous studies conducted on English-Norwegian bilinguals (Westergaard & Anderssen, 2015).

Since the participants in the English-Norwegian control group were recruited both in the UK (from Norwegian parents) and in Norway (from one or two English-speaking parents) we also designed a model where residency is accounted for by adding it as an independent variable to the previously reported model. Interestingly, in this model the significant difference between targets and controls is lost (although the controls still use more pronominals), but what is significant is the residence: participants residing in the UK have a much higher use of prenominal in the neutral condition (p<0.01). Thus, it is not only the combination of languages but their status in the community that plays a big role, which links to the research conducted in the field of heritage languages as both Italian and Norwegian are prone to undergoing simplification, but only if these are the heritage language of a bilingual.

6. Discussion

This study investigated the potential effects of CLI in a complex linguistic situation in which both languages of the bilingual child had two surface structures for expressing the possessive relation, but the contextual use in each language was the mirror image of the other. Since CLI usually occurs from the language with one surface structure onto the language with two surface structures, the directionality of CLI in the Italian-Norwegian combination was not predictable based on results from previous research, which relates to our first research question: *how does CLI occur in properties which are mirrored across the two languages of a bilingual child?* For this we have proposed three possible outcomes: CLI based on dominance, cross-linguistic overcorrection, or simplification of the system of the heritage language. These outcomes link to our second research question: *what implications does this have for current theoretical perspectives?*

First, we should specify how we believe that the discussed outcomes are related to CLI and the syntax-pragmatics interface and not to a failed understanding of the context presented in the scenes of the task. We can conclude this based on the responses used in the two

conditions, as noun omissions and emphasis of the unmarked variant are used mostly in the contrast condition (cf. table 4), in which they are also pragmatically felicitous.

While there were no signs of crosslinguistic overcorrection in our data, as the children used both structures in Norwegian. This is not surprising as this type of outcome was found in adult bilinguals, rather than in children (Kupisch, 2014). But dominance and ambient language can explain the extent of our data. Firstly, we deem the finding of the Italian system interesting as we found an overwhelming use of the prenominal possessive, and this was not contingent on factors such as having both or only one Italian parent, the parents' education, or on the place of birth. Thus, the Italian data seem to fit what research on heritage languages has found: a simplification of the heritage system. Simplification of the heritage system has been reported in many domains, such as gender (Montrul, 2010) and case (Polinsky & Kagan, 2007). Possessive variants are also vulnerable, as crosslinguistic overcorrection was found in elderly heritage speakers of Norwegian living in the US (Anderssen et al., 2018). The authors refer to this as crosslinguistic overcorrection as the speakers used the maximally different variant from English (i.e., the postnominal possessive), but we can see the overcorrection as a simplification of the Norwegian system to the postnominal variant (contextually unmarked). The simplification process usually affects the heritage language so that the default/unmarked feature prevails. Thus in Anderssen et al. (2018) it is the postnominal possessive in Norwegian that prevails, but in the case of the current study it is the the prenominal possessive in Italian, since it is the unmarked and more widely contextually applicable variant. We only tested a handful of bilinguals residing in Italy (n=3), and this was not enough to see substantial differences to the Italian system. A future direction would be to try and find more bilinguals residing in Italy to see whether Norwegian would be vulnerable to the same extent. The obtained results are in line with the Bernardini (2003) outlined in section 2.3. Recall, Bernardini (2003) found that the Swedish-dominant child produced only the prenominal (overlapping) possessive in Italian and discussed this in terms of CLI from the dominant language. However, the child was living in Sweden, which means that Italian was the heritage language, and we can see that it has undergone simplification, similarly to what happens with the bilingual children in our study.

This finding related to the status of the heritage language is corroborated by our controls: the English-Norwegian bilinguals showed a higher use of prenominal possessives than our targets, a clear effect of English. However, once we accounted for residency (UK vs. Norway) in our analysis, the Italian-Norwegian and English-Norwegian children residing in Norway were not as different. The may difference was with the English-Norwegian bilinguals residing in the UK, where Norwegian is the heritage language. This shows that possessives are indeed prone to CLI, but this is more evident when the language that has the linguistic potential to be influenced (two surface structures) is the heritage language. We did not have any participants who were English-Italian bilinguals residing in Italy, in which case we may expect a lesser effect on Italian, but the direction of CLI should nevertheless be the same, from English to Italian.

Dominance was found to have an effect, but only on Norwegian, since the Italian system was too simplified in our participants for there to be observable differences. Dominance, as expected, was positively correlated with the reposes in Norwegian: Italian-dominant children were the least accurate, balanced children were more accurate, and Norwegian-dominant children had the most accurate responses. Thus, dominance has an effect, but it cannot influence an already simplified system, such as the heritage language. It is surprising that there

were children within our participants who can be defined as Italian-dominant by their CLT score, but they also have a simplified Italian system. We are aware that dominance is a complex phenomenon, and it cannot be deduced by a simple vocabulary test as the CLT, but it is thus also not contradictory that Italian-dominant children had a simplified system in their Italian, as our measure for dominance was only vocabulary-based which may be less vulnerable than syntax and pragmatics.

However, we do claim that there were effects of CLI on the Norwegian responses, as there were participants (n=11) who were target-like in the contrast condition (prenominal) and were found to have an overuse of said structure in the neutral condition, which would be pragmatically infelicitous, but linguistically in line to what we would expect to be an effect of Italian in Norwegian. Thus, even if the Italian system is simplified, it can still have an active effect on Norwegian.

Thus, our two research questions should be answers simultaneously, as the simplification that Italian seems to undergo due to its status of heritage language directly influences the outcome of CLI. Thus, CLI is not driven by exclusively linguistic factors, the two languages of the bilingual seem to first abide by the triggers caused by heritage language status, and to make predictions we must consider the simplified system of one of the languages. We have seen that once we know that a grammatical system has been simplified in relation to the baseline, CLI is manifested as it would be predicted by previous studies in which one language has one surface structure and the other one has two, and it is the simpler language that influences the language with two structures in the form of more frequent overuse of the overlapping structure. However, due to the simplification of the heritage languages, we are not able to give a definitive answer of the dynamics of CLI with mirrored properties, as the properties were no longer mirrored in our participants. To answer this, we would have to find mirrored properties in two languages of bilinguals which have an equal status in the society thusly avoiding the simplification effect or investigate mirrored properties which are not vulnerable in heritage languages.

7. Conclusion

This study finds how the heritage language develops differently form the ambient language, as the Italian system had overgone a simplification regardless of the extent to which it was used in the home. This is a relevant finding as we discovered that possessive structures (when the language has alternates) are a vulnerable domain for these speakers. The relevance of the status of heritage language is corroborated by the comparison of the Norwegian reposes of English-Norwegian controls, as the children residing in Norway paired up with the Italian-Norwegian bilinguals, but the controls residing in the UK were more strongly influenced by English.

We were not able to find CLI in an already simplified system. However, the Norwegian responses were affected by dominance, as these were influenced by the combined CLT score. Thus, we claim that CLI is possible also with mirrored properties, but other factors come into play. Firstly, the status of each of the languages is relevant, as it may cause simplification and we cannot observe CLI on an already simplified system. Thus, CLI can only be visible in the non-simplified system, and thus the direction will be from simplified to intact, abiding the predictions for CLI. Secondly, factors like dominance may influence the accuracy of the non-simplified system. So, even if the heritage language undergoes a simplification, its influence is

still very present on the ambient language, and this will depend on both linguistic features and dominance.

Data Availability statement

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

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