1. Introduction

The nature of syntactic representations in simultaneous bilingual children has been the object of a debate ever since systematic investigation of bilingual first language acquisition started in the late 1970s (Genesee, 1989; Taeschner, 1983; Volterra & Taeschner, 1978). The current prevailing understanding is that bilingual children who are regularly exposed to two languages from birth or thereafter have separate syntactic representations for each of their two languages. The bulk of the evidence for this claim comes from studies focusing on cross-linguistic differences in word order where young bilinguals have been shown to use language-specific word order in each of their languages (Meisel, 1989; Meisel, 1994; Paradis & Genesee, 1996). If language A has the word order X1-X2 and language B has the word order X2-X1 and a bilingual child acquiring languages A and B uses the appropriate grammatical word order in each of her languages, then we can conclude that this child has separate syntactic representations for the two languages and that there is no evidence for cross-linguistic influence. More interestingly, however, recent work has started to shed light on the nature of syntactic representations and on the mechanisms of language comprehension and production in cases where there is no such clear-cut opposition between the two languages, but where there is a degree of cross-linguistic overlap (Bernardini, 2003; Nicoladis, 2006; Van der Linden & Blok-Boas, 2005). For example, if language A has both word order X1-X2 and word order X2-X1, and language B only has X1-X2 the prediction is that the word order attested in both languages (X1-X2) will be preferred in the language that has both and it will be extended to contexts in which it is not grammatical or pragmatically acceptable. Evidence to this effect comes from a number of studies on the issue of cross-linguistic influence. Döpke (1998) found that German-English bilingual children overgeneralized the VO order in German, where both VO and OV are possible, under the influence of English where VO is the only possible order. Van der Linden & Blok-Boas (2005) reported that three French-Dutch bilingual children and one Italian-Dutch bilingual child growing up in the Netherlands had a tendency to use the Romance word order (possessee-possessor) in Dutch nominal possessive constructions more often than Dutch monolingual children. Both possessee-possessor and possessor-possessee constructions exist in Dutch while Italian only has the possessee-possessor order. The same bilingual children also used the Dutch word order in their Romance language, an error that is unattested in their monolingual peers. Along similar lines, Bernardini (2003) showed that Swedish-dominant Swedish-Italian bilingual children overused the Swedish Adj-N word order in Italian where the preferred word order is N-Adj but the Adj-N order also exists. In a study of adjective placement in English-French bilingual children, Nicoladis (2006) likewise reported the overgeneralization of the English Adj-N word order in French where both Adj-N and N-Adj exist. More puzzlingly, Nicoladis also found that the bilingual children used the N-Adj in English, although this word order is unattested in the adult language and was used only marginally by monolingual peers. At the clause level, Argyri & Sorace (in press) observed a preference for SV word order in wh-embedded clauses in the Greek of English-dominant English-Greek bilinguals. Both SV and VS are possible word orders in Greek while only SV is attested in English. Once again, the preference for SV is attributed to cross-linguistic influence from English.

In sum, there seems to be an emerging body of evidence suggesting that a degree of cross-linguistic influence is indeed attested in simultaneous bilingual children. Additional support for this hypothesis comes from studies investigating this issue in terms of the interface between syntax and discourse pragmatics (Hulk & Müller, 2000; Paradis & Navarro, 2003; Serratrice, Sorace & Paoli, 2004). More specifically, the argument has been made that constructions whose distribution is constrained by discourse pragmatics are particularly vulnerable to cross-linguistic influence when they partially overlap across languages.

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In this study we explore the issue of cross-linguistic influence in the interpretation of plural noun phrases in English and Italian. Similarly to the studies reporting evidence for a degree of transfer across languages, this study focuses upon a linguistic phenomenon where there is a partial overlap across the two languages. Plural noun phrases in subject position in Italian always require a definite article regardless of their semantic interpretation. By contrast, in English plural noun phrases in subject position can appear with or without a definite article, depending on whether they are interpreted as specific or as generic. The main aim of this study is to examine the degree to which school-age children acquiring English and Italian simultaneously from birth can discriminate between specific and generic readings of plural noun phrases on the basis of the presence of a definite article. Before formulating specific predictions for the present study, we briefly introduce the theoretical linguistic background and review the relevant literature on the cross-linguistic acquisition of articles and the interpretation of generic noun phrases.

2. The Nominal Mapping Parameter

In a seminal paper Chierchia (1998) framed the empirical observation of cross-linguistic differences in the distribution of definite articles with singular and plural count and mass nouns within the variation of a semantic parameter. According to Chierchia’s hypothesis, formalized in the Nominal Mapping Parameter (NMP), natural languages can be divided into three types according to the different ways in which they refer to kinds. Nouns appear to play a double role inasmuch as they can be predicates (e.g. the predicate “a doctor” in “John is a doctor”) or arguments when they refer to kinds (e.g. the argument “a doctor” in “A doctor rang this morning”). The mapping of the syntactic category Noun onto its semantic interpretation as predicate or argument is constrained cross-linguistically by the language-specific setting of the NMP as [+argument] and [+predicate]. Although in principle four combinations of these two features are possible [+arg, +pred] , [+arg, -pred] [-arg, +pred] [-arg, -pred], the setting in which nouns cannot be mapped onto either predicates or arguments is clearly not a viable option. From the three settings that are actually attested, Chierchia derives cross-linguistic variation in the availability of bare arguments, the extension of all nouns to mass, and the existence of plurals. Languages like Chinese and Japanese, where the setting is [+arg, -pred], are languages where nouns refer to kinds, therefore bare count nouns occur freely as arguments (e.g. “Girl hugs boy”). In these languages all nouns are also mass and therefore plural marking does not exist. The two remaining settings [-arg, +pred] and [+arg, +pred] are the ones that are more closely relevant for the present study as the former is the setting in Italian, Spanish and the rest of the Romance languages, while the latter is the setting in English and in most of the Germanic languages. In a [-arg, +pred] language all nouns are predicates and therefore they require a Determiner to be turned into arguments (e.g. "Ragazza abbraccia ragazzo" Girl hugs boy). There is, however, cross-linguistic variation within the Romance family itself as to the availability of a phonological null Determiner. Languages like Italian and Spanish allow bare NPs in a lexically governed position, while French does not:

(1) a.*Femmes sont arrivées hier soir.
   ‘Women arrived last night.’
   b.*J’ai acheté pommes de terre et pain au marché.
   ‘I bought potatoes and bread at the market.’

(2) a.*Donne sono arrivate ieri sera.
   ‘Women arrived last night.’
   b. Ho comprato patate e pane al mercato.
   ‘(I ) bought potatoes and bread at the market.’

None of the Romance languages allow bare noun phrases with a generic interpretation in a non-governed position, but require the projection of a Determiner in the shape of a definite article.

(3) I dinosauri si sono estinti 65 milioni di anni fa.
   ‘(The) dinosaurs became extinct 65 million years ago.’
(4) Los dinosaurios se extinguieron hace unos 65 millones de años.
(5) Les dinosaures se sont éteints il y a 65 millions d’années.

The definite article is interpreted as $i$, an operator that selects the greatest element from the extension of a predicate but which can be intensionalized, and thus becomes equivalent to the type shifting operator ‘∩’ in generic sentences and with individual level predicates.
With respect to the availability of count and mass nouns, [-arg, +pred] languages are predicted to have both since the mass/count distinction relates to the extension of predicates. It also follows that those nouns that are count can appear with an overt plural marking.

As regards the last class of languages that are identified by the NMP, i.e. [+arg, +pred] languages like English, Chierchia’s proposal is that nouns can either denote kinds (arguments) or predicates. Nouns that denote kinds [+arg] will have mass denotation, as a consequence they will be able to appear as bare NPs in any syntactic position and they will not be marked for plural.

(6) Bread is the staple of my diet.
(7) I eat bread and jam for breakfast.
(8) *Breads are my favourite food.

Nouns that denote predicates will have count denotation. As such they won’t be able to appear as bare arguments in the singular, and they will take plural marking.

(9) *Chair is next to the table.
(10) I moved the chairs into the room next door.

Bare plural arguments do however exist in English, they appear in generic sentences, with individual level predicates, and they are allowed in any syntactic position, unlike in Italian and Spanish where they are restricted to lexically-governed argumental positions.

(11) Dogs are friendly animals.
(12) I like dogs.

The presence of bare plural nouns in English rests on the availability of the type shifter ‘∩’ which can freely apply to plural nouns to yield a kind as in (11) and (12). Because a kind is the totality of its instances it follows that the type shifting operation can apply only to plural nouns and not to singular nouns. Singular count nouns only identify a part and not the totality of the plurality they belong to. Note, however, that English also has definite articles; therefore in principle an intensionalization of the definite article in appropriate semantic contexts should be possible in the same way as it is possible in Romance languages. Contrary to this prediction the sentence in (13) is indeed ungrammatical.

(13) *The dinosaurs have become extinct 65 million years ago.

Chierchia’s solution to this conundrum is to appeal to the economy-based constraint of ‘Avoid Structure’. Unlike Romance languages, which have no option but to resort to the intensionalization of the definite article, English does have a type shifting operation that applies to bare nouns to turn them into arguments in generic sentences and with individual level predicates. Because this type shifter can apply as early as the NP level, and it can generate the required semantic interpretation without the extra projection of a Determiner, this solution is preferable in terms of economy considerations and it therefore blocks the use of the definite article.

4. Monolingual children’s comprehension of plural generic noun phrases in English and in Romance languages

The NMP offers a theoretical account of cross-linguistic differences in the distribution of bare and definite plural noun phrases with a generic interpretation, but what is the evidence that children appreciate this morphosyntactic cue in their comprehension of generics?

Gelman & Raman (2003) tested monolingual English-speaking two-, three- and four-year-olds’ sensitivity to the morphosyntactic determiner cue and to the pragmatic anaphoric cue. In a first set of experiments they showed that four-year-old children were as successful as adults in interpreting bare plural noun phrases as generic (e.g. “Do birds fly?”) and plural noun phrases including a definite article as non-generic (e.g. “Do the birds fly?”). Two- and three-year-olds showed evidence that they interpreted the presence/absence of the definite article with a plural noun phrase as a marker of specificity/genericity. In a second study Gelman & Raman (2003) demonstrated that the pragmatic cue was also exploited effectively by three- and four-year-olds to distinguish between a generic and a non-generic interpretation of the plural pronoun in question, but not by the younger children. When the adults and
the older children were shown a picture with two non prototypical exemplars (e.g. two white apples) and they were asked a question including a plural pronoun (e.g. “What colour are they?”) they tended to give non-generic responses (e.g. “White”). When the same question was asked in the presence of a singular non prototypical exemplar (e.g. one white apple) they consistently interpreted the plural pronoun as referring to the class in general rather than to the specific instance in the picture and they responded accordingly (e.g. “Red/green/yellow”). Two-year-olds, by contrast, did not reliably distinguish between a generic and a non-generic interpretation when they had to exploit the anaphoric cue.

Capitalizing on Gelman & Raman’s (2003) work, Pérez-Leroux, Munn, Schmitt & Delrish (2004), assessed pre-school children’s sensitivity to the determiner and the tense morphosyntactic cues in the generic/non-generic interpretation of plural noun phrases cross-linguistically in English and in Spanish. Pérez-Leroux et al. (2004) note that although the English-speaking children in Gelman & Raman’s studies were significantly more likely to give a generic interpretation with the generic wording (bare plural NPs) than with the non-generic wording (definite plural DPs), nevertheless there was a residual proportion of responses where the children extended the generic interpretation when presented with definite plural DPs. Pérez-Leroux et al. (2004) claim that this is to be expected if, as proposed by Chierchia (1998), the semantics of the definite article is the same in Germanic and Romance languages, and if the only reason why the generic interpretation cannot be extended to definite plural NPs in English is the availability of a more economical type shifting operation that allows bare NPs as arguments. Pérez-Leroux et al.’s hypothesis is therefore that English-speaking children have to learn to restrict the interpretation of definite plural DPs to the non-generic reading as the result of competition from the availability of the more economical bare plural NPs. The results of two experiments with monolingual English-speaking and monolingual Spanish-speaking pre-school and school-age children show much higher generic responses with definite plural DPs (between 40-80%) than in the Gelman & Raman’s (2003) study where the authors reported rates of generic responses to definite plural DPs between 8% and 15%. This obvious discrepancy in the rate of generic readings with non-generic wording is probably due to important methodological differences between the two studies. Firstly, the number of participants in each age group in the Pérez-Leroux et al.’s (2004) experiments is considerably smaller than in the Gelman & Raman’s (2003) experiments. In the Gelman & Raman’s studies there were never fewer than sixteen children per group, while in the Pérez-Leroux et al.’s experiments there were a maximum of eleven participants per group and as little as six in one of them. Mean proportions calculated over a smaller number of individual observations risk to be more skewed. In addition, as partially acknowledged by Pérez-Leroux et al. themselves, the presentation of a short narrative before the target question in their study may be responsible for the large number of generic responses. In the Gelman & Raman’s (2003) study the participants were shown a picture (for example a picture of two penguins) and were told “Here are two birds. Now I’m going to ask you a question about the birds/about birds. Can the birds fly?/Can birds fly?”. By contrast, the animal characters in the Pérez-Leroux et al.’s stories were named first “Zippy the zebra and Suzy the zebra are spotted”. A third character, for example a giraffe, wonders why they look so different, and then the children were asked a generic question “Do zebras have spots?” or a non-generic question “Do the zebras have spot?”. Since the animals were initially introduced by name, it would have been pragmatically more appropriate to use their names for subsequent specific reference. The use of a noun phrase is a more marked choice and, regardless of the presence of the article, children may have interpreted the experimenter’s intention to refer to zebras more in general rather than specifically to Zippy and Suzy. When first name mention was omitted in a second experiment where definite plural DPs appeared either in the present or in the past tense the mean proportion of generic responses to definite plural DPs decreased, although it was still around 40% for the group of 10 monolingual English-speaking children included (3;0-5;2). No effect of the tense morphosyntactic cue was observed for this small group of children.

The performance of the Spanish-speaking children in Pérez-Leroux et al.’s second set of experiments showed that in the presence of a definite plural DP which can have both a generic and a non-generic interpretation in the language, three- to five-year-olds and six-year-olds opted for the generic interpretation in the vast majority of cases. Interestingly, although this tendency remained high it diminished significantly when the question containing the plural definite DP was in the past tense (“¿Los tigres comían carne?”/Did tigers eat meat?). Unlike the English-speaking children, the Spanish-speaking children in this study were able to interpret an imperfective past tense form of a natural kind in current existence as a cue to the non-generic reading.

Although Romance languages like Spanish do not have a dichotomy between plural definite DPs with a specific reading and bare plural NPs with a generic reading in subject position, these two options are indeed available in object position. Gavarró, Pérez-Leroux & Roeper (2006) conducted an experiment with monolingual Catalan-speaking three- four- and five-year-olds to assess to what extent children differentiate between the specific and the generic reading of a noun phrase in object position on the basis of the presence/absence of the definite article. The participants were shown four short cartoon stories with two characters, one looking for something specific (e.g. a
5. Aims of the study

In a number of recent studies cross-linguistic influence has been reported in situations where the two languages are in a subset-superset relationship with respect to a given construction. If a language has two options (e.g. null and overt pronominal subjects in English), the option that is common to both languages (e.g. overt pronominal subjects) has been observed to extend to inappropriate contexts in the language that has both (e.g. overt pronominal subjects are used in Italian where null subjects would be more pragmatically felicitous) (Montrul, 2004; Tsimpli, Sorace, Heycock & Filiaci, 2005; Sorace & Filiaci, 2006; Serratrice, in press). By this rationale, we should predict that the directionality of cross-linguistic influence for the distribution of definite articles with plural noun phrases should go from Italian (only definite articles with plural noun phrases) to English (both definite plural DPs and bare plural NPs) where definite plural DPs should become acceptable with a generic reading. This is in line with Hulk & Müller’s (2000) original cross-linguistic influence hypothesis.

There is however another alternative: it is possible that cross-linguistic influence is driven by more abstract economy considerations. If this hypothesis is correct we would expect the opposite pattern: cross-linguistic influence from English to Italian. English has the opportunity to give bare plural noun phrases kind reference through type shifting, a more economical operation than the projection of an extra Determiner. If economy consideration underlie cross-linguistic influence then the more economical option to achieve a generic reading should, at least occasionally, be preferred in Italian over the more costly projection of a DP.

Regardless of which of the two alternative proposals, the subset-superset hypothesis or the economy hypothesis, proves to be a better fit to the data, the input variable is likely to be playing a role in the magnitude of the cross-linguistic influence. If the subset-superset hypothesis is along the right lines we would expect a larger effect in the English of English-Italian bilinguals raised in Italy who will inevitably get more input in Italian and therefore would receive more evidence for the availability of a generic reading with plural definite DPs. Conversely, if cross-linguistic influence is driven by economy consideration we expect that English-Italian bilingual children raised in
the UK would show a significantly larger acceptance rate of bare plural NPs with a generic reading in Italian than their counterparts living in Italy.

In this study we also wanted to explore to what extent the performance of bilingual children is indeed an effect of the typological differences between the two languages that they are acquiring rather than the effect of having to learn two languages rather than one. To ascertain the role of typology vs. bilingualism we therefore included an additional group of age-matched Spanish-Italian bilinguals who are acquiring two languages that behave in the same way with respect to the distribution of definite plural DPs and their specific and generic interpretation. If the typological difference between Italian and English is the cause of cross-linguistic influence, we expect that the English-Italian bilinguals should behave significantly differently both from the monolingual Italian peers and the Spanish-Italian bilinguals, and no significant differences should be observed between the latter two groups. If, conversely, learning any two languages simultaneously is going to significantly affect the performance of bilingual children compared to their monolingual peers, we would not expect significant differences between the bilingual groups, regardless of language combination. At the same time we would expect them to be significantly different from their monolingual Italian peers.

Lastly, we considered the effect of age on performance. If a significant gap between bilingual and monolingual children exists at a given point in time we wanted to find out whether it is likely to narrow over time, so that older bilingual children behave more like their monolingual peers than do younger bilinguals.

6. Participants

A total of 167 children between the ages of 6;2 and 10;8, 30 monolingual English-speaking adults and 30 monolingual Italian-speaking adults participated in the two studies. There were two groups of English-Italian bilingual children, one group living in the UK (N = 20) and one group living in Italy (N = 39), a group of Spanish-Italian bilingual children living in Spain (N = 31), a group of monolingual English-speaking children in the UK (N = 39) and a group of monolingual Italian-speaking children in Italy (N = 38). Details for the child participants are provided in Table 1.

Table 1. Mean age, S.D. and age range of child participants

<table>
<thead>
<tr>
<th>Group</th>
<th>Number</th>
<th>Mean age</th>
<th>SD</th>
<th>Age Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>English-Italian (I)</td>
<td>20</td>
<td>8;2</td>
<td>1;2</td>
<td>6;2-10;2</td>
</tr>
<tr>
<td>English-Italian (UK)</td>
<td>39</td>
<td>8;0</td>
<td>1;3</td>
<td>6;3-10;2</td>
</tr>
<tr>
<td>Spanish-Italian</td>
<td>31</td>
<td>8;1</td>
<td>1;2</td>
<td>6;4-10;1</td>
</tr>
<tr>
<td>Italian-speaking monolinguals</td>
<td>38</td>
<td>8;2</td>
<td>1;2</td>
<td>6;5-10;8</td>
</tr>
<tr>
<td>English-speaking monolinguals</td>
<td>39</td>
<td>8;2</td>
<td>1;2</td>
<td>6;2-10;6</td>
</tr>
</tbody>
</table>

The bilingual English-Italian children in Italy were recruited among the pupils of international or American primary schools in Milan where English is the medium of instruction. The English-Italian bilinguals in the UK were recruited by word of mouth and through an online forum for Italian nationals. The Spanish-Italian bilinguals were recruited among Italian or mixed origin families in Spain and Italy and among pupils at the Italian School of Barcelona1. The criteria for the selection of the bilingual children were the following: between six and ten years of age, no history of language impairment or hearing loss; regular exposure to both English and Italian from birth; regular use of both languages on a daily basis; similar perceived fluency in both languages. The parents of suitable children completed a questionnaire on the pattern of language use in their family, and on their perception of the children’s ability to use both of their languages in everyday situations effectively.

The criteria for the selection of the monolingual participants were the following: no history of language impairment or hearing loss; no exposure to a language other than Italian or English. The children were recruited to match in age the bilinguals and were therefore between six and ten years of age,. The monolingual children were recruited in primary schools in northern Italy and in Scotland. The monolingual adults were recruited among university students in Italy and in England.

1 As it can be expected, the children recruited in Barcelona have been exposed to different extents to Catalan as well as Italian and Spanish. Although we are aware of this situation of trilingualism, Catalan is also a Romance language like Spanish and Italian. The setting of the NMP and its related syntactic and semantics properties are the same in the three languages (Chierchia, 1998), we therefore rule out a possible confounding effect of Catalan in our data.
7. Materials and procedure

Both the English study (Study 1) and the Italian study (Study 2) included six pairs of test sentences and three pairs of filler sentences. Each pair of sentences was presented together with a picture of prototypical objects or animals. The test sentences included six generic contexts and six specific contexts. In the specific contexts the sentences were introduced by “Here/Qui” and in the generic contexts they were prefaced by “In general/In genere”. For each picture the participants heard a sentence containing a subject plural noun phrase in a specific context and a sentence with a subject plural noun phrase in a generic context. The presence of the definite article was manipulated to obtain four different conditions so that participants heard three grammatical and three ungrammatical sentences in the specific condition and three grammatical and three ungrammatical sentences in the generic condition. Examples of grammatical and ungrammatical sentences are provided in (14)-(17) below; a full list of test and filler items in English and in Italian is provided in the appendix.

(14a) Here the strawberries are red. (specific grammatical)
(15a) *Here strawberries are red. (specific ungrammatical)
(16a) In general sharks are dangerous. (generic grammatical)
(17a) *In general the sharks are dangerous. (generic ungrammatical)

The participants’ task was to judge whether the sentence they had just heard was acceptable in English/Italian or not. Instead of using a task where participants are presented only with grammatical options as in the Gelman and Raman (2003) studies, we opted for an acceptability judgment task because the aim of this study was precisely to investigate to what extent bilingual children were prepared to accept an option that is ungrammatical in one language but acceptable in the other language.

The English-Italian bilinguals took part in both the English and in the Italian version of the experiment on separate days at least a week apart. Half of the children participated in the English study first and half in the Italian study first. The experiment was preceded by a series of instructions and by two practice items. The participants were told that they would be looking at a series of pictures of objects and animals and at the same time they would hear some statements about the specific objects and animals in the pictures, and some statements about those objects and animals in general. Their task was to say whether the sentences they heard in those contexts were acceptable in English/Italian or not. During the practice items participants were asked to pay particular attention to the form of the sentences they were presented with. If the participants did not detect the source of the ungrammaticality the experimenter provided the grammatical alternative herself drawing the participants’ attention to the anomaly in the stimulus sentence.

8. Study 1 – English: Results and discussion

To analyse the effect of language background an A’ score was computed for each individual participant based on their ability to discriminate between the presence and the absence of the definite article with a plural noun phrase in specific and in generic contexts. A’ is a non-parametric index of sensitivity ranging from 0 to 1 (with 1 being a perfect score and 0.5 representing chance) that allows a correction for response bias.

The analyses are presented separately for the younger participants (6;2-7;11) and the older participants (8;0-10;8). Figure 1 and Figure 2 provide the mean A’ scores and standard deviations for the younger and the older bilingual children, the age-matched monolingual controls and the monolingual adults in the specific and in the generic conditions.
To test for significant differences between the bilingual children, their monolingual peers and the monolingual adults in their acceptability judgements of the presence/absence of a definite article in specific and generic contexts we performed four one-way ANOVAs with language background as the between-subjects variable (English-Italian bilinguals in Italy, English-Italian bilinguals in the UK, monolingual English-speaking children, monolingual English-speaking adults). There was a significant effect of language background in the specific condition for the younger children, $F(3, 66) = 9.39, p < .001, \eta^2 = .29$. On the basis of post-hoc analyses (Tukey) the performance of the adults was significantly better than the bilingual children’s in Italy ($p < .001$), the bilingual children’s in the UK ($p < .01$), and the monolingual children ($p < .05$). No significant differences were observed between the three groups of children. The effect of language background for the younger participants was also significant in the generic condition, $F(3, 66) = 26.09, p < .001, \eta^2 = .54$. The only significant differences revealed by post-hoc analyses (Tukey) were between the adults and the bilingual children in Italy ($p < .001$), the bilingual children in the UK ($p < .001$), and the monolingual children ($p < .001$). No other significant differences were found between the children, regardless of language background.

The one-way ANOVA for the specific condition with the older participants confirmed a significant effect of language background, $F(3, 84) = 5.50, p < .01, \eta^2 = .16$. Post-hoc analyses (Tukey) revealed that the only significant difference was between the monolingual children and the monolingual adults ($p < .001$). The last set of analyses for the older children in the generic condition showed a significant effect of language background, $F(3, 84) = 40.98, p < .001, \eta^2 = .59$. Similarly to what we found in two of the other conditions the only significant differences were between the adults and the three groups of children with the adults being significantly more accurate than the bilingual children in Italy ($p < .001$), the bilingual children in the UK ($p < .001$), and the monolingual children ($p < .001$).

These results of the acceptability judgement task in English show an overall poor level of performance both for the two groups of bilinguals and for the monolingual children. The children in this study correctly accepted plural noun phrases with a definite article in specific contexts and bare plurals in generic contexts. They however also accepted ungrammatical bare plurals in specific contexts and definite articles with plural noun phrases in generic contexts. The fact that accuracy scores were at chance level in both conditions and that there were no significant differences between the monolingual and the bilingual children does not support the hypothesis that the obliqatoriness of the definite article in generic contexts in Italian influenced children’s judgements in English. Rather, the children’s overall poor performance suggests a more general inability to reject ungrammatical noun phrases, regardless of the specific/generic distinction. Possible reasons for this pattern of linguistic behaviour will be...
explored in more detail in the general discussion, but it is relevant to note that not even the monolingual adults performed very satisfactorily on this task, with only half of them achieving scores between .83 and 1.

9. Study 2 – Italian: Results and Discussion

The mean accuracy scores for the four groups of participants were calculated separately for the younger participants (6;2-7;11), for the older participants (8;0-10;8) and for the adults. The results are plotted in Figure 3 and Figure 4.

![Figure 3. Mean accuracy scores for the younger children](image1)

![Figure 4. Mean accuracy scores for the older children](image2)

Four one-way ANOVAs with language background as the between-subjects variable (English-Italian bilinguals in Italy, English-Italian bilinguals in the UK, Spanish-Italian bilinguals, monolingual Italian-speaking children, and monolingual Italian-speaking adults) were conducted to test for significant differences in mean A' scores between the groups in the specific and in the generic condition. There was a significant effect for language background in the specific condition for the younger participants, $F(4, 80) = 16.29$, $p < .001$, $\eta^2 = .44$. Post-hoc analyses (Tukey) showed significant differences between the monolingual children and the English-Italian bilinguals in the UK ($p < .001$), between the adults and the English-Italian bilinguals in Italy, ($p < .01$), between the adults and the English-Italian bilinguals in the UK ($p < .001$), between the adults and the Spanish-Italian bilinguals ($p < .05$), and the English-Italian bilinguals in Italy outperformed their bilingual counterparts in the UK ($p < .01$). In the generic condition the effect of language background was also significant for they younger participants, $F(4, 80) = 29.75$, $p < .001$, $\eta^2 = .59$. According to a series of post-hoc analyses (Tukey), the monolingual Italian children were significantly more accurate than the English-Italian bilinguals in Italy ($p < .001$) and those in the UK ($p < .001$), and the Spanish-Italian bilinguals ($p < .05$). There were no significant differences between the monolingual adults and the monolingual children, but the adults were significantly more accurate than the bilinguals in Italy ($p < .001$), the bilinguals in the UK ($p < .001$) and the bilinguals in Spain ($p < .01$). Finally the Spanish-Italian bilinguals were significantly more accurate than the bilinguals in the UK ($p < .001$).

The ANOVA for the older participants in the specific condition confirmed a significant effect for language background, $F(4, 97) = 10.77$, $p < .001$, $\eta^2 = .30$. The post-hoc tests (Tukey) showed that the monolingual children performed significantly more accurately than the bilinguals in the UK ($p < .001$). The difference between the adults and the bilinguals in Italy ($p < .01$) and between the adults and the bilinguals in the UK ($p < .001$) was significant, and so was the difference between the bilinguals in Italy and the bilinguals in Spain ($p < .05$) and that between the bilinguals in the UK and the bilinguals in Spain ($p < .001$).

The last set of analyses investigated the effect of language background on the accuracy scores in the generic condition for the group of older participants. A one-way ANOVA showed the effect of language background to be significant, $F(4, 97) = 42.43$, $p < .001$, $\eta^2 = .63$. Both the monolingual children and the adults were significantly more accurate than the English-Italian bilinguals in Italy ($p < .001$) and those in the UK ($p < .001$). The English-
Italian bilinguals in Italy outperformed their counterparts in the UK (p < .001), but both groups of English-Italian bilinguals were significantly less accurate than the bilinguals in Spain (p < .001).

The results of study 2 show a strikingly different pattern of performance from study 1. The Italian-speaking monolingual children in both age groups and in both conditions performed at ceiling like the adults. They correctly accepted plural noun phrases with a definite article in both specific and generic contexts and at the same time they rejected ungrammatical bare plurals in both conditions. The Spanish-Italian bilingual children were also at ceiling in both conditions but only in the older age group; in the younger group 3 out of 14 children accepted some ungrammatical bare plurals in either the specific and in the generic condition (2 children) or in the generic condition alone (1 child). The evidence from the monolingual children and from the Spanish-Italian bilinguals indicates that their ability to discriminate between ungrammatical and grammatical plural noun phrases in an acceptability judgement task is well established from the age of 6;2. The same was not true for the English-Italian bilingual children. Overall they accepted grammatical plural noun phrases with a definite article but they were unable to consistently reject ungrammatical bare plurals. More specifically, the inability to reject bare plurals was restricted to generic contexts for the bilinguals in Italy and it extended to both specific and generic contexts for the bilinguals in the UK. The bilinguals in Italy were not significantly worse than their monolingual peers in the specific condition in either age group, but their accuracy scores in the generic condition were significantly lower both for the younger and the older children. The bilinguals in the UK gave significantly less accurate judgements than those of the monolingual children in both conditions and at both ages. Across the two English-Italian groups we see a narrowing of the gap in the specific condition where no significant differences are detected between the two older age groups. As they grow older both sets of children become better at rejecting specific plural noun phrases without a definite article, with a more marked improvement on the part of the bilinguals in the UK. Crucially, with respect to the generic condition only the bilinguals in Italy show significant progress, while the bilinguals in the UK remain at chance level.

10. General discussion

The main aim of the present studies was to establish whether English-Italian bilingual children would be significantly different from English- and Italian-speaking monolingual peers in the grammaticality judgements of plural noun phrases in generic contexts. We initially formulated two contrasting hypotheses on the directionality of cross-linguistic influence. According to the subset-superset hypothesis we predicted that Italian (the language with only definite plural noun phrases) would influence English (the language that has both definite plural noun phrases and bare plurals). As a consequence English-Italian bilingual children should be willing to accept plural noun phrases with a definite article in a generic context in English significantly more often than monolingual children. The result of cross-linguistic influence from Italian to English would thus result in a higher acceptance rate of ungrammatical definite noun phrases. Conversely, if cross-linguistic influence exists but is driven by more abstract economy considerations, rather than by the surface overlap of definite articles, we would expect, following Chierchia (1998), that English should influence Italian. The more economical type shifting operation would be preferred over the more costly projection of a Determiner to turn a plural NP into an argument. Our results did not show a significant difference between the English-Italian bilinguals and the English-speaking monolinguals in the accuracy scores in the generic condition, but we did find significant differences between the English-Italian bilinguals and their monolingual Italian peers in the same condition. In English the bilinguals performed at chance level and were equally as likely as the monolinguals to accept a plural noun phrase with a definite article in a generic context. By contrast, in Italian the English-Italian bilinguals were significantly more likely than the monolinguals to accept a bare plural in a generic context, an option that the Italian children rejected 100% of the time. These findings suggest that cross-linguistic influence does exist, that it is unidirectional and that economy consideration rather than surface overlap are responsible for the phenomenon. Although the results are clear-cut in the asymmetry between English and Italian, it is worth commenting further on the performance pattern of all groups in the English study. Aside from the bilingual children, the monolingual children also performed at chance level in both conditions and even the adults did not perform at ceiling. These results cannot be simply a task effect as the monolingual children, the monolingual adults and the Spanish-Italian bilinguals performed at ceiling in the Italian version of the task, and the same English-Italian bilingual children took part in both the English and the Italian study, with much higher accuracy scores in the Italian task. If the disappointing results in English are not an artefact of the task there must be something peculiar to English that is responsible for this pattern of behaviour. In Italian the occurrence of bare plurals is narrowly confined to lexically governed positions and a bare plural in subject position is obviously ungrammatical as shown by the categorical rejection even by the youngest Italian speakers. In English, by contrast, both definite plural noun phrases and bare plurals are found in subject position, albeit in different contexts, it is...
therefore possible that the sheer availability of these two types of noun phrases in the input makes it more difficult for the English speakers to reject either outright. If the participants were disregarding the adjuncts “Here” or “In general” that introduced the sentences in the specific and in the generic condition respectively, both bare plurals and definite plural phrases could be considered acceptable in principle. In a sense it is always possible for the English-speaking participants to conjure up a context in which the sentence is grammatical, while this possibility is precluded to the Italian-speaking participants because of the overall ban on bare plural subjects. Paying attention to the pragmatics of the initial adjuncts calling for either a specific (“Here”) or a generic context (“In general”) was crucial to the task. The results of study 1 show that children, and even adults to some extent, found this difficult and were inclined to override the pragmatics of the adjunct and consider a context in which the sentence would indeed be acceptable.

In a comprehension task of specific and generic plural noun phrases in Catalan, Gavarró et al. (2005) report a similar overinterpretation of the context in which children, and even some adults, treated plural noun phrases with and without a definite article as having both a specific and a generic reading. In a recent study of the effect of specificity on clitic omission in Spanish Borgonovo, Bruhn de Garavito, Guijarro-Fuentes, Prévost & Valenzuela (2006) reported another instance in which participants behaved in an unexpected way. When choosing between two answers to a question containing a non-specific bare noun (e.g. “¿Compraste leche?” ‘Did you buy milk?’) the native speakers and the L2 learners selected the answer with a clitic (“Sí, la compré”, ‘Yes I bought it’) 15.7% and 40% of the time respectively, when in fact they should have chosen the sentence without a clitic (“Sí, compré” ‘Yes I bought’) 100% of the time because the noun phrase in the question (“leche”, ‘milk’) was non-specific. Clearly, the participants treated the bare noun in the question as if it was in fact preceded by a definite article (“¿Compraste la leche?” ‘Did you buy the milk?’), a specific context in which the sentence with the clitic would have been appropriate. In sum, there is evidence that comprehenders of all ages and linguistic backgrounds are willing to ignore the context provided by the experimenter and accept a sentence as grammatical if the option is available in their language. What is important for the present study, however, is the fact that the English-Italian bilingual children did not reject generic bare plurals significantly more often than the monolingual children as we would expect if the obligatoriness of definite articles in Italian were affecting their judgments in English.

The second prediction formulated in connection with the directionality of cross-linguistic influence concerns the role of input. We have observed a unidirectional effect from English to Italian, therefore if the language of the community plays an important part in the magnitude of the differences between bilingual children and their monolingual peers we predicted that the bilingual children in the UK would perform significantly less accurately than the bilinguals in Italy. Although both groups of English-Italian bilinguals scored significantly lower in the generic condition than the monolinguals in both the younger and the older group, we did find that the bilinguals in Italy consistently outperformed their bilingual counterparts in the UK. This suggests that the frequency with which Italian is heard and spoken by the children must have an effect on the likelihood of accepting a bare plural as an acceptable generic phrase. To our knowledge, no other study, apart from Argyri & Sorace (2006) has explored the role of input in the issue of cross-linguistic influence. These results and those of Argyri & Sorace indicate that the role of input is non-trivial and should therefore be considered as an explanatory variable in future research.

This is also the first study to compare groups of bilingual children who are acquiring two different language combinations. Our rationale for doing so was to explore whether any differences we might find between the English-Italian bilinguals and the Italian monolinguals are indeed the effect of the different parametric setting between English and Italian or more generally the consequence of the simultaneous acquisition of two languages. Italian and English have different settings of the NMP, English is [+arg, +pred] while Italian is [-arg, +pred]. Although it is very likely that significant differences between bilinguals and monolinguals in Italian are due to the fact that the English-Italian bilinguals get interference from speaking and hearing English in addition to Italian, we cannot a priori rule out the eventuality that the effect is due to learning two languages rather than one. If we take this second possibility seriously we can formulate two sets of predictions. Because Spanish and Italian have the same [-arg, +pred] setting of the NMP, we would expect Spanish-Italian bilingual children to behave like monolinguals and significantly better than English-Italian bilinguals, if what drives the likelihood of accepting a bare plural in a generic context is indeed the availability of the [+arg] setting in English. If, on the other hand, accuracy in this discrimination task is affected by the number of languages spoken we would expect Spanish-Italian and English-Italian bilingual children to behave alike and significantly worse than monolingual Italian children. Our results show quite clearly that what drives performance is not bilingualism per se but the availability of the [+arg] setting in English and as a consequence the opportunity to exploit type shifting to turn a plural NP into an argument.

Finally, our results also address the issue of development over time and convergence on the performance of monolinguals. In English the older bilingual children were not more accurate than the younger ones, but neither were the monolinguals. In Italian the monolingual children were already at ceiling in the younger group, the younger
Spanish-Italian bilinguals were not quite at ceiling but their performance was already very accurate. They had a margin for improvement which they took advantage of to reach 100% correct responses in the older group. As for the English-Italian bilinguals, improvement was observed for both groups in the specific condition, but in the generic condition of greater interest here only the bilinguals in Italy showed a significant improvement. This interaction between age and language of the community suggests that convergence on the monolingual target might depend crucially on frequency of use and exposure to the language. As a consequence significant differences between bilingual and monolingual performance might persist over time, and perhaps never disappear, in the language with reduced native input.

References


