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Child Cross-linguistic Influence and Adult L1 Transfer: Same or Different?

Jeannette Schaeffer, Sanne Berends, Aafke Hulk, and Petra Sleeman

1. Introduction

The topic of this study is the acquisition of a tiny linguistic element, namely, the Dutch quantitative pronoun ER, by English-Dutch bilingual children as compared to L1 English - L2 Dutch adults. In example (1a) we see a construction that looks similar in Dutch and in English. The difference between the two languages becomes apparent when a quantitative construction follows, in which the noun is elided. Examples (1b) and (1c) show that Dutch noun elision in a quantitative construction requires the pronoun ER, while in an English quantitative discourse an elided noun does not require such a pronoun. The Dutch quantitative pronoun ER refers to an antecedent that is mentioned in the preceding discourse, in this case *stamps*: the pronoun is syntactically part of a complex noun phrase modified by a cardinal numeral or weak quantifier in an indefinite NP in object position. This pronoun does not appear in the original object position, following the numeral, but instead, in a position immediately following the finite verb. The pronoun undergoes several syntactic movements to end up in its final position following the finite verb.

(1) a. Ik ben op zoek naar postzegels.
I am on look for stamps
'I am looking for stamps.'

b. Ik vind er vier.
I find ER four
'I find four.'

c. *Ik vind vier.
I find four
'I find four.'

To anticipate our conclusion, we argue that there is negative influence of English in both child bilingualism and adult L2.

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2. Background

Let us first consider some previous studies on the acquisition of quantitative ER. Sleeman & Hulk (2013) and Berends, Hulk & Sleeman (2016) conducted spontaneous speech studies in Dutch L1 and found that quantitative ER emerges between the ages of 2;4 and 2;9 and is initially optional. Nevertheless, whenever quantitative ER is used, it is pragmatically and syntactically correct. Van Hout, Veenstra & Berends (2011) investigated the acquisition of quantitative ER in L1 Dutch child language experimentally. They tested 20 monolingual Dutch-speaking children age 5 with a so-called 'Guessing Game', adapted from Gavarró, Guasti, Tuller, Prévost, Belletti, Cilibrasi, Delage & Vernice (2011), exemplified in (2).

(2) *Guessing Game* (Van Hout et al. 2011)

Exp:	*Neemt ze drie koffers mee?*
	takes she three suitcases with
	'Is she bringing three suitcases?'
Target:	*Nee, ze neemt er twee mee.*
	no she takes ER two with
	'No, she's bringing two.'

The child has a pile of cards with pictures and picks them up one-by-one. The experimenter, who is sitting opposite the child, cannot see the picture. The back of each card has a clue, enabling the experimenter to know what character and what object is on the card and to make a 'guess' that the child has to evaluate. The experimenter presents her guess as a yes/no-question about the number of objects in the picture, and always guesses wrong. The child is expected to provide the target answer using a quantitative pronoun construction.

The results of Van Hout et al.'s study show a high proportion, namely, 59%, of incomplete, verbless responses. For example, instead of providing a complete sentence, such as *Nee, ze neemt er twee mee* – 'No, she's bringing two', the child just said *Nee, twee!* – 'No, two!', which is actually pragmatically and syntactically correct in colloquial Dutch. The remaining complete responses, with verbs, consisted of 36% correct ER use, and 49% full NP answers (*Nee, ze neemt twee koffers mee!* – 'No, she's bringing two suitcases!'), which are syntactically correct, but pragmatically odd. The true syntactic errors consisted of 10% ER-omission errors, and 5% so-called 'doubling' errors (*Nee, ze neemt ER twee koffers mee!* – 'No, she's bringing two suitcases!'). Because the proportions of incomplete, verbless responses (59%) and also of full NP responses render quite a high number of irrelevant results, Van Hout et al. only tentatively conclude that Dutch quantitative ER has not been acquired fully by age 5.

Van Hout et al. also conducted an elicited imitation task. They tested the same 20 children as in their Guessing Task, and found 81% target-like responses with ER, and only 18% ER-omission errors. These results could indicate that 5-year-olds are quite good at Dutch quantitative ER constructions. However, it could also mean that they have good phonological or phonetic memory, as the sentences in the imitation task were not that long.

Turning now to L2, Berends, Schaeffer & Sleeman 2017 tested a group of 25 adult native English speakers acquiring Dutch on their knowledge of quantitative ER with a Grammaticality Judgement Task. The English group accepted ungrammatical sentences without ER significantly more often than the adult native Dutch control group. Berends et al. conclude that the lack of a quantitative pronoun in L1 English negatively influences knowledge regarding the obligatory presence of quantitative ER in L2 Dutch.

This raises the question as to whether similar negative transfer effects can be found in English-Dutch bilingual children, which is addressed in the current study. To operationalize this question, we take a well-known hypothesis from the bilingualism literature, namely, the Cross-linguistic Influence Hypothesis as proposed by Hulk & Mueller (2000) and Mueller & Hulk (2001), also referred to as 'MULK':

(3) *Cross-linguistic Influence Hypothesis* (Hulk & Mueller 2000 and Mueller & Hulk 2001)
Cross-linguistic influence takes place if:
(i) The linguistic phenomenon belongs to the syntax-pragmatics interface;
(ii) The languages concerned present (partial) overlap on the surface.

Applying the Cross-linguistic Influence Hypothesis to the acquisition of Dutch quantitative ER by Dutch-English bilingual children, we predict negative influence from English to Dutch, because of the following reasons: There is partial overlap on the surface between English and Dutch because Dutch ER is not always obligatory in quantitative constructions, as exemplified in (4):

(4) Oma neemt (*er) deze twee mee.
Grandma takes *ER these two with
'Grandma takes these two with her.'

When a demonstrative pronoun is present as well, quantitative ER is not allowed. In this respect, there is overlap with English, which always lacks a quantitative pronoun. Furthermore, it could be argued that, since the pronoun ER refers to a noun in the preceding discourse, this is a linguistic phenomenon at the syntax-pragmatics interface. Our specific prediction is therefore that English-Dutch bilingual children omit quantitative ER more often than monolingual Dutch-speaking children.

3. Methods

Participants To test this prediction, we recruited 38 English-Dutch bilingual children (age range: 4;8-8;7, mean age: 6;7, SD: 1;2) and a control group of 46 age-matched Dutch monolingual children (age range: 4;6-8;6, mean age: 6;6, SD: 1;0).

Materials and Procedure All children took part in a Sentence Completion Task adapted from Van Hout et al. (2011). The goal of turning the Guessing Game of Van Hout et al. (2011) and Gavarró et al. (2011) into a Sentence Completion Task was to obtain fewer incomplete (verbless) responses, and fewer full NP responses, increasing the number of analyzable responses. The Sentence Completion Task includes 22 audio-recorded incomplete experimental sentences accompanied by a picture on a computer screen, and 12 similarly constructed filler items. The participants are asked to complete these sentences. An example of an experimental item and of a filler item is provided in (5).

(5) *Sentence Completion Task*

Experimental item

Exp: De zeehond heeft niet drie lolly's, maar hij…
'The seal does not have three lollypops, but he…'

Target: …heeft ER twee
…has ER two
'…has two.'

Filler item

Exp: De krokodil is niet aan het TV kijken, maar hij…
'The crocodile is not watching TV, but he…'

Target: … is aan het klok kijken
'…is watching the clock.'

All target responses require the production of a verb and of quantitative ER. The filler items do not contain a quantitative construction but just a transitive construction.

Language proficiency was measured by means of the Peabody Picture Vocabulary Test (PPVT-III-NL, Schlichting 2005). In addition, a language background questionnaire was administered. The questionnaire contains questions about the child's hearing, vision, developmental disorders, and language background. The language background questions ask for information regarding: the languages the child and the parents speak, onset and length of exposure, amount of input, language used to communicate with siblings, language used by parents to communicate, average percentage of time that the

child speaks English/Dutch per day, language of preference, best developed language according to the parents, and type of school the child attends.

Analysis We first scored every experimental item as 'target' or 'non-target'. We then categorized the non-target responses into the types illustrated in (6):

(6) Non-target Response Categories

- ER-omission …heeft twee
  '…has two'
- Full NP …heeft twee lolly's
  '…has two lolly pops'
- Doubling …heeft ER twee lolly's
  '…has ER two lolly pops'
- Irrelevant …twee
  '…two'

For the statistics, we used a Generalized Linear Mixed-Effects Logistic Regression analysis.

4. Results

First of all, no children are excluded on the basis of the results from the questionnaire. All children have normal hearing and normal or corrected-to-normal vision, and none of them have a diagnosis of language impairment or any other developmental disorder. Within the experimental group of 38 Dutch-English bilingual children we identified 32 so-called '2L1' children (exposed to 2 languages from birth, as defined by Unsworth, Argyri, Cornips, Hulk, Sorace and Tsimpli 2014), and 6 'early successive bilinguals', for whom exposure to Dutch started between age 1 and 4, as defined by Unsworth et al. (2014). Since there are no differences between the 2L1 children and the early successive bilingual children for any of the test results (Mann-Whitney: $p>.05$), we collapse the data of all the bilingual children in the presentation of our results. The control group of 46 children are all monolingual Dutch speakers.

As for proficiency, the PPVT raw scores were transformed to standardized WBQ scores (Dutch acronym for Word Comprehension Quotient), using the conversion table provided by the PPVT-III-NL Test. These WBQ scores are norm-referenced and take into account the participants' ages in years and months. If a child has a WBQ score of 100, this means that she has exactly the vocabulary a child is expected to have at her age. Table 1 shows that both the monolinguals and the bilinguals score a little higher than 100, and that they do not differ from each other on the proficiency task.

Table 1: Mean scores per language group on PPVT-III-NL

	English-Dutch bilinguals (BI)	**Dutch monolinguals (MO)**
WBQ mean score	106.2	107.8

➔ BI vs MO **not** predictive factor in PPVT, R^2= 0.004, F(1,74)= 0.311, p= 0.579

Despite similar scores on the proficiency task, the bilingual group produces significantly fewer target responses (30%) than the monolingual group (49%) in the Sentence Completion Task, in which quantitative ER was tested, as shown in Table 2.

Table 2: Sentence Completion Task – proportions of target responses

	English-Dutch Bilinguals (BI)	**Dutch Monolinguals (MO)**
Target ER responses	6.63/22 = 30%	10.71/22 = 49%

		***P*-value**
Target ER responses	**BI vs. MO**	0.048 *
	Age	0.029 *

➔ BI vs MO predictive factor for target ER responses in Sentence Completion Task

➔ Age predictive factor for target ER responses in Sentence Completion Task

As such, being bilingual vs. monolingual is a predictive factor for target ER responses in the Sentence Completion Task. Unsurprisingly, Age is also a predictive factor: the older the children get, the more target responses they produce.

For the non-target response analysis we calculated the proportions of the different non-target response types out of the total of non-target responses, so excluding the target responses. As presented in Table 3, this analysis reveals that, first of all, ER-omission is significantly higher in the bilingual group (40% vs. 4% for the monolinguals).

Table 3: Sentence Completion Task – ER-omission responses

	English-Dutch Bilinguals (BI)	Dutch Monolinguals (MO)
Omission responses	6.10/15.37 = 40%	0.51/11.29 = 4%

		P-value
Omission responses	**BI vs. MO**	< .001***
	Age	0.355

➔ BI vs MO predictive factor for omission responses in Sentence Completion Task

Here, too, being bilingual vs. monolingual is a predictive factor for ER-omission. Age turns out to be non-significant as a predictor here.

Another non-target response type concerns the full NP responses. Of the non-target responses, 49% consists of full NPs in the bilinguals, and 79% in the monolinguals. This difference is significant. Thus, being bilingual vs. monolingual is a predictive factor for full NP responses, as is Age.

Table 4: Sentence Completion Task – Full NP responses

	English-Dutch Bilinguals (BI)	Dutch Monolinguals (MO)
Full NP responses	7.57/15.37 = 49%	.93/11.29 = 79%

		P-value
Full NP responses	**BI vs. MO**	0.0001***
	Age	0.009**

➔ BI vs MO predictive factor for full NP responses in Sentence Completion Task

➔ Age predictive factor for full NP responses in Sentence Completion Task

The third type of non-target responses concerns doubling errors, as shown in Table 5: the bilinguals produced 0.5% doubling errors, and the monolinguals 5%. This difference is not significant, and age is not a predictive factor here either.

Table 5: Sentence Completion Task – Doubling errors

	English-Dutch Bilinguals (BI)	Dutch Monolinguals (MO)
Doubling responses	0.07/15.37 = 0.5%	0.53/11.29 = 5%

		P-value
Doubling responses	**BI vs. MO**	0.222
	Age	0.694

Finally, as presented in Table 6, regarding the irrelevant, or incomplete responses, the bilinguals produced 10.5% irrelevant responses, which did not significantly differ from the monolinguals' irrelevant responses, which was 12% of the time. However, Age is a predictive factor here: the older the children get, the fewer irrelevant responses they produce.

Table 6: Sentence Completion Task - Irrelevant/incomplete responses

	English-Dutch Bilinguals (BI)	Dutch Monolinguals (MO)
Irrelevant responses	1.63/15.37 = 10.5%	1.31/11.29 = 12%

		P-value
Irrelevant responses	**BI vs. MO**	0.922
	Age	0.002**

➔ Age predictive factor for irrelevant responses in Sentence Completion Task

In summary, the bilinguals provide significantly fewer target responses than the monolingual children. As for the non-target responses, the bilingual children omit ER significantly more often than the monolingual controls; the bilingual children provide full NPs significantly less often than the monolinguals; and the bilingual children do not differ from the monolingual controls in terms of doubling responses and irrelevant/incomplete responses.

5. Discussion & Conclusion

We interpret these results as follows. First of all, the Sentence Completion Task seems an improvement on Van Hout et al.'s (2011) and Gavarró et al.'s (2011) Guessing Game. Recall that Van Hout et al.'s study reports a high proportion of incomplete responses, namely, 59%. This proportion was calculated out of all responses. In contrast, our Sentence Completion Task renders very few irrelevant/incomplete responses. Table 6 presents the (already

low) proportions of 10.5% incomplete responses for the bilinguals and 12% for the monolinguals. Note, however, that these proportions are calculated out of all non-target responses, not out of all responses in total (including the target responses). If we calculate the proportions of incomplete responses in the same way as Van Hout et al., they are as follows: 5.9% (1.31/22) for the monolinguals and 7.5% (1.63/22) for the bilinguals, i.e., extremely low numbers. As such, the Sentence Completion Task generates many more valid and usable responses than the Guessing Game Task.

Second, there is a clear difference between the bilingual and the monolingual children regarding the production of quantitative ER. The bilingual children provide significantly fewer instantiations of ER than the monolingual children (see Table 2), and they omit ER significantly more often than the monolingual children (see Table 3). This difference cannot be attributed to proficiency in Dutch, as the PPVT scores do not differ. We take this finding to support the Cross-linguistic Influence Hypothesis: English, which does not have a quantitative pronoun, negatively influences Dutch in English-Dutch bilingual children aged 4;6-8;6: they produce quantitative ER in obligatory contexts significantly less often than Dutch-speaking monolingual children the same age.

Turning now to the other non-target responses: Similar to van Hout et al.'s (2011) results, there are many full NP responses, in which the NP is repeated, instead of replacing it with a quantitative pronoun. Table 4 shows that this is the case for the bilinguals as well as for the monolinguals: 49% of the non-target responses are full NPs in the bilingual group, and 79% of the non-target responses are full NPs in the monolingual group. This results in sentences such as: *De brandweerman heeft niet drie honden, maar hij: heeft twee honden*, 'The fireman does not have three dogs, but he: has two dogs'. If these full NP responses are calculated out of all responses, the proportions are 34% in the bilinguals and 42% in the monolinguals, so a little less than the 49% of full NPs in van Hout et al.'s (2011) study, but still substantial. Although full NPs are pragmatically infelicitous in this context (because given information is usually referred to with pronouns) they are not syntactically incorrect. There may be several reasons for children to use a full NP in such contexts: full NP answers may be used as an avoidance strategy to bypass the syntactically more complex quantitative pronoun construction. Alternatively, full NPs may be used to be overexplicit or over-informative in an experimental setting. As noted in the results, Age is a predictive factor for Full NP responses: the older, the more full NPs, in both the bilingual and the monolingual group. This suggests that the latter explanation is on the right track: Full NP responses reflect a tendency to be overexplicit in an experimental setting, rather than a decrease of syntactic knowledge of the quantitative pronoun ER.

As for the third category of non-target responses, doubling errors refer to answers in which both the noun and the pronoun ER are produced, which is syntactically ungrammatical. For example: *De aap heeft niet twee munten, maar hij: heeft er drie munten*, 'the monkey does not have two coins, but he: has ER three coins'. Such responses could be an indication that the child knows that ER

exists, but that she does not yet completely master its exact syntactic constraints. Nevertheless, out of the total of non-target responses, the English-Dutch bilinguals produce only 0.5% doubling answers and the Dutch monolinguals only 5%. These scores do not differ significantly from each other, meaning that doubling errors do not depend on being bilingual or monolingual, nor do they depend on Age. Moreover, the low numbers of these doubling errors makes them negligible.

The last category of non-target responses consists of rarely given, irrelevant responses (empty, nonsense, and verb-less responses). An illustration of a verb-less response is the following: *De giraffe heeft niet twee tassen, maar hij: één*, 'the giraffe does not have two bags, but he: one'. The proportions of irrelevant responses in our study become even smaller if we (as was done in Van Hout et al.) calculate their occurrence out of the entire dataset, including the target answers: .07% in the bilingual group and .05% in the monolingual group. Similar to the doubling error numbers, these numbers are negligible.

Returning now to the question in our title ("Are child cross-linguistic influence and adult L1 transfer the same or different?"), our results suggest that child cross-linguistic influence and adult L1 transfer are similar: English negatively influences the use of the Dutch quantitative pronoun ER in both children and adults. Nonetheless, the finding that the bilingual group in our study performs more poorly than the monolingual group may also be due to a general delay in grammatical acquisition of bilingual children, as suggested by Austin (2009). To rule this possibility out, future studies employing a Sentence Completion Task should show a difference with bilingual children whose other language does have a quantitative pronoun, such as French (namely, *en*), or Italian (*ne*). If French-Dutch or Italian-Dutch bilingual children perform better on Dutch quantitative pronoun ER constructions than English-Dutch bilingual children in the Sentence Completion Task, the tentative conclusion of the current study that there is cross-linguistic influence rather than a general delay is supported.

In addition, the results of the suggested study with French-Dutch bilingual children should be compared to the use of Dutch quantitative ER in French L1-Dutch L2 adults with a Sentence Completion Task. This would further establish whether cross-linguistic influence in child language and transfer in adult language are the same. Here we predict that French L1-Dutch L2 adults perform better than English L1-Dutch L2 adults on Dutch quantitative ER constructions as tested in the Sentence Completion Task.

Finally, as we still do not know at what age children (both monolingual and bilingual) fully master the Dutch quantitative ER, the Sentence Completion Task should also be carried out with older children.

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