

Revisiting Binding in Turkish-Dutch Bilingual Children: Comprehension and Production

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1. Introduction

Children acquiring two languages from birth constitute an interesting group for linguists, not only because their minds have to compute two different kinds of input simultaneously, but also because they seem to arrive at the same grammar as their monolingual peers, even though they have had half of the exposure their monolingual peers had. As such, there is a large difference in quantity of input between the bilingual and the monolingual child, which could cause a slight delay in acquisition. Nevertheless, binding studies that examined bilingual children's understanding of co-identification between object reflexives or object pronouns and local or non-local antecedents, as in (1) and (2), found hardly, if any, differences between the bilingual and the monolingual children (for Dutch and Turkish: Aarssen & Bos, 1999; for Dutch: Van Koert, Hulk, Koeneman & Weerman, 2013; for English: Marinis & Chondrogianni, 2011).

- (1) The badger_i says the fox_k is pointing to herself_{*i/k}.
- (2) The elephant_i says the camel_k is pointing to her_{i/*k}.

These previous studies investigated bilingual and monolingual children who were aged between six and ten years old; hence, the bilingual children had had much exposure to the dominant language and could have caught up with their monolingual peers. The present study therefore wants to compare younger Turkish-Dutch bilingual children to monolingual Dutch children. Furthermore, the production of object reflexives and pronouns has not been studied much in monolingual Dutch children, let alone in bilingual children. Currently, there is discussion over whether monolingual children produce fewer target-like utterances for (2) than for (1), similar to their comprehension (Ruigendijk, Friedmann Novogrodsky & Babalan, 2010; Spenader, Smits & Hendriks, 2009). The present study wants to add to this discussion by taking into account monolingual Dutch and Turkish-Dutch bilingual production data. Finally, previous studies established that Turkish-Dutch bilingual children show similar behaviour to their Dutch monolingual peers on their comprehension of Dutch object reflexives and pronouns; however, do these Turkish-Dutch bilingual children show similar behaviour to their monolingual Turkish peers? Or do they behave differently? And if so, can cross-linguistic influence from Dutch to Turkish explain this?

This paper is organised as follows. In Section 2 we explain how pronouns and reflexives are distributed in Dutch and Turkish. In addition, we look at monolingual acquisition of the binding principles. Subsequently, in Section 3, we present Experiment I, in which Dutch monolingual and Turkish-Dutch bilingual children carried out a picture selection task (PST). Section 4 describes Experiment II that comprised an elicited production task in which Dutch monolingual and Turkish-Dutch bilingual children participated. Section 5 presents the results of Experiment III, which consisted of a Turkish picture verification task on which Turkish-Dutch bilingual children were tested. Finally, Section 6 discusses the lack of qualitative differences between the monolingual and bilingual children and concludes the paper.

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2. Similarities and differences between Dutch and Turkish anaphors

Object reflexives in Dutch and Turkish display a different distribution from object pronouns, as reflexives are locally bound to their antecedents – following Principle A of the binding principles – while pronouns are unbound in their local clause, as stated in Principle B (Chomsky, 1981). Examples of the distribution of Dutch object reflexives and pronouns will be given in Section 2.1. Moreover, previous research into children’s comprehension and production of Dutch object reflexives and pronouns is succinctly described. In addition to reflexives and pronouns, Turkish has quasi-reflexive elements and null pronouns, which will be discussed in Section 2.2. Only one study, to our knowledge, has investigated the acquisition of Turkish object reflexives and pronouns and their outcomes will be briefly illustrated.

2.1. Dutch object reflexives and pronouns

The behaviour of reflexives is captured in Principle A: reflexives must refer to their local antecedents. Hence, the Dutch reflexive *zichzelf* (‘SE-self’) can only refer to *de das* (‘the badger’) in (3). Principle B states that pronouns cannot refer to their local antecedents; therefore, the Dutch pronoun *haar* (‘her’) cannot refer to *de kameel* (‘the camel’) in (4) but refers to either *de olifant* (‘the elephant’) or to an antecedent occurring outside of the sentence.

- (3) De vos_i zegt dat de das_j naar zichzelf^{*_{i/j}/_k} wijst.
 The fox says that the badger to SE.self^d points
 ‘The fox says the badger is pointing to himself.’
- (4) De olifant_i zegt dat de kameel_j naar haar^{*_i/_j/_k} wijst.
 The elephant says that the camel to her points
 ‘The elephant says the camel is pointing to her.’

Studies investigating monolingual Dutch children’s comprehension of the binding principles found that children performed more target-like on reflexives, as in (3), than on pronouns, as in (4) (e.g. Baauw, Zuckerman, Ruigendijk & Avrutin, 2011; Bergmann, Markus & Fikkert, 2009; van Koert, Koeman, Weerman & Hulk, 2015; Philip & Coopmans, 1996; van Rij, van Rijn & Hendriks, 2010; Sigurjónsdóttir & Coopmans, 1996; Spenader et al., 2009). The crucial difference between (3) and (4) is that Dutch children until the age of 8;0 have more difficulty with rejecting the local antecedent, such as *de kameel* (‘the camel’) in (4), for the pronoun than they have with rejecting the distant antecedent, such as *de vos* (‘the fox’) in (3), for the reflexive. This asymmetry has been termed the delay of Principle B effect (DPBE), because the correct comprehension of pronouns is delayed relative to the correct comprehension of reflexives.

Several explanations have been put forward to account for the DPBE (cf. Baauw et al., 2011; Chien & Wexler, 1990; Conroy, Takahashi, Lidz & Phillips, 2009; Grodzinsky & Reinhart, 1993; Spenader et al., 2009). There are two recent cross-linguistic accounts that compare and contrast language-internal properties of reflexives and pronouns: the pronominal paradigm (Rooryck & Vanden Wyngaerd, 2015) and the distribution of reflexives and pronouns in locative PPs (Ruigendijk et al., 2010). The pronominal paradigm is an account that takes the person and number features of the reflexive as a starting point. Those features are fused in one morpheme in the Dutch reflexive *zich* (simple expression (SE)). In addition, *zich* is unrelated to the other forms in the pronominal paradigm; therefore, it is morphologically opaque. As such, a Dutch child cannot recognise the reflexive as belonging to the pronominal paradigm that also contains pronouns with similar features (Rooryck & Vanden Wyngaerd, 2015). Thus the DPBE arises in Dutch. The explanation involving the distribution of reflexives and pronouns in locative PPs suggests that those languages that allow pronouns in locative PPs to refer to local antecedents, such as Dutch and English as in (5), are the languages in which a DPBE arise (Ruigendijk et al., 2010). These explanations appear to be valid for Dutch but Section 2.2 discusses whether they could hold for Turkish, too.

¹ The abbreviations used in the glosses are explained in the list below.

- (5) a. The boy_i puts the chair behind himself_i/him_i.
 b. De jongen_i zet de stoel achter zich_i/hem_i neer.

The DPBE does not only appear in comprehension tasks with monolingual Dutch children, it also occurs when Turkish-Dutch bilingual children are tested (van Koert et al., 2013). Van Koert et al. tested Turkish-Dutch bilingual children who had a mean age of 8;3 and a mean length of exposure of 5;10. In other words, these bilingual children had had an extended exposure to the Dutch language (although, admittedly it is not clear what the exact quality of their input was; however, the majority of them had attended Dutch playgrounds and all of them attended Dutch schools); hence, they could have caught up with their monolingual peers. To investigate whether younger Turkish-Dutch bilingual children show the same effects as monolingual Dutch children the current experiment, which is a follow-up to Van Koert et al.'s study (2013), compares and contrasts the comprehension and production of reflexives and pronouns by monolingual and bilingual children between 4;1 and 6;8. There were two reasons for testing children from the age of four onwards: (i) monolingual Dutch children only seem to have a reliable understanding of the reflexive from the age of four onwards (Ruigendijk, Baauw, Avrutin & Vasić, 2004); (ii) children in the Netherlands go to school from 4;0, meaning that Turkish-Dutch bilingual children have had at least some exposure to Dutch. Experiment I contains the comprehension part, which is discussed in Section 3.

Few studies investigated Dutch and English children's production of object reflexives and pronouns with regard to the binding principles (Bloom, Barss, Nicol & Conway, 1994; De Villiers, Cahillane & Altreuter, 2006; Ruigendijk et al., 2010; Spenader et al., 2009). One of the earliest studies examining spontaneous speech found that English children between 2;3 and 5;2 produced very few instances of *myself* and *me* in object position; yet, they hardly made any errors, indicating that children do not mistake pronouns for reflexives, at least in production (Bloom et al., 1994). The investigators concluded that Principle B is in place, even if children still need to learn to recognise pronouns, like *him*, as pronouns. Spenader et al. (2009) conducted an elicitation task with Dutch children between 4;5 and 6;6 and found that they correctly produced pronouns in more instances than they seemed to correctly understand pronouns. Thus, they found an asymmetry between production and comprehension. In addition, they found that the target pronoun condition did not differ from the target reflexive condition. In other words, they did not find a DPBE in production. Yet, to arrive at the number of produced pronouns, Spenader et al. (2009) added up the percentage of produced nouns to the percentage of correctly produced pronouns; whether this is fair is arguable. As production tasks are almost impossible to restrict, it is difficult to determine which computation reflects children's knowledge best. It is clear, however, that when the correct production of pronouns only is compared with the correct production of reflexives, there is a DPBE, similar to what Ruigendijk et al. (2010) found for Hebrew. The current study aims to add to this discussion and to ascertain whether Turkish-Dutch bilingual children show the same behaviour as monolingual Dutch children. Experiment II investigates their production in Section 4.

2.2. Turkish object reflexives and pronouns

The Turkish reflexive *kendi* ('self'), which is inflected for person, number and case, is subject to Principle A; thus, *kendini* ('self.ACC') can only refer to *tilkinin* ('fox') in (6). Following Principle B, the Turkish pronoun *o* ('he/she/it'), which is also inflected for person, number and case, cannot refer to its local antecedent and has to refer to the distant or to an exophoric antecedent. The object pronoun *onu* ('he.ACC') can hence refer to *fil* ('elephant') in (7) or to an antecedent that appears outside of (7).

- | | | | | | |
|-----|---|-----------------------|----------------------------|-----------------------|--------------|
| (6) | Porsuk _i | tilkinin _j | kendini _{*i/j/*k} | işaret ettiğini | söylüyor. |
| | Badger | fox.GEN | self.ACC | indicate.3SG.POSS.ACC | say.3SG.PRES |
| | 'The badger says the fox is pointing to herself _{*i/j} .' | | | | |
| | | | | | |
| (7) | Fil _i | devenin _j | onu _{*i/*j/k} | işaret ettiğini | söylüyor. |
| | Elephant | camel.GEN | s/he.ACC | indicate.3SG.POSS.ACC | say.3SG.PRES |
| | 'The elephant _i says the camel _j is pointing to her _{*i/*j} .' | | | | |

In addition to overt object reflexives and pronouns, Turkish has a null pronoun and a quasi-reflexive element *kendisi* ‘self.3SG’ (Demirci, 2001; Gürel, 2002; Marinis & Chondrogianni, 2011). The latter can undergo both short and long distant binding, meaning that *kendisini* (‘self.3SG.ACC’) can refer to *suaygiri* (‘hippo’) or to *denizatının* (‘seahorse.GEN’) in (8). Context determines which interpretation is most likely; if there is no bias towards either of the antecedents in (8), then adult speakers of Turkish are equally likely to interpret *kendisi* (‘self.3SG’) as a reflexive or a pronoun (Demirci, 2001).

- (8) Suaygiri_i denizatının_j kendisini_{i/j/k} yıkadığını söylüyor.
 Hippo seahorse.GEN self.3SG.ACC wash.3SG.POSS.ACC say.3SG.PRES
 ‘The hippo_i says the seahorse_j is washing her_{i/k}/herself_j.’

Since Turkish has this quasi-reflexive element, bilingual children could be influenced in their other language and show more long distant interpretations for the reflexive than their monolingual peers. However, both Marinis and Chondrogianni (2011) and Van Koert et al. (2013) found no cross-linguistic influence from the Turkish quasi-reflexive element *kendisi* (‘self.3SG’) to the English reflexive *himself* and the Dutch reflexive *zichzelf* (‘SE-self’), respectively.

Although the Turkish-Dutch bilingual children did not show any cross-linguistic influence from Turkish to Dutch in those previous studies, they might show influence from Dutch to Turkish. As explained above, monolingual Dutch children display the DPBE; are monolingual Turkish children expected to show a DPBE, too? If we follow the account of the pronominal paradigm, then a DPBE is not likely to arise, because the person and number features on the reflexive each have their own morpheme in Turkish (Kıran, 2014). This means that a Turkish child can easily recognise that the reflexive and the pronoun belong to the same pronominal system and, hence, they can deduce that a pronoun should not receive a reflexive interpretation. Furthermore, the distribution of reflexives and pronouns in locative PPs reaches the same verdict: as only reflexives can occur in locative PPs to refer to the local antecedent, as in (9), Turkish does not belong to the set of languages that is likely to display a DPBE.

- (9) Çocuk_i sandalyeyi kendi/onun*_i arkasına koydu.
 Child chair.ACC self/he.POSS behind.ADV puts.3SG.PRES
 ‘The boy_i puts the chair behind himself/him*_i.’

It is unclear whether monolingual Turkish children show a DPBE, because the only study that examined binding for this group might have been hindered by some methodological flaws (for a review of Aarssen & Bos (1999) see Van Koert et al., 2013). Interestingly, those investigators found that monolingual Turkish children performed less target-like on the reflexives than on the pronouns (Aarssen & Bos, 1999) but no explanation was given. Experiment III explores the comprehension of the Turkish reflexives, pronouns and quasi-reflexives by Turkish-Dutch bilingual children, which is described in Section 5.

3. Experiment I: Dutch comprehension

The comprehension study investigates the interpretation of Dutch object pronouns and reflexives in monoclausal sentences in a group of Turkish-Dutch bilingual children and a group of monolingual Dutch children. The research question addressed in this experiment asks whether young Turkish-Dutch bilingual children perform differently from their age-matched Dutch monolingual peers on this binding task (Smit, 2013; Wijngaards, 2013). Previously, we showed that slightly older Turkish-Dutch bilingual children (age range: 6;5-10;1, M = 8;3) performed similarly to their monolingual Dutch peers (age range: 6;3-9;1, M = 7;0) on their comprehension of object reflexives and pronouns (van Koert et al., 2013). This similarity in performance could be due to the extensive length of exposure these bilingual children had had to Dutch, which could have caused them to catch up with their monolingual peers.

3.1. Participants

Twenty-four typically developing monolingual Dutch children and twenty-one typically developing Turkish-Dutch bilingual children participated. The Dutch monolingual children had a mean age of 5;3 (range: 4;1-6;4, SD = 8 months) and were recruited from the first two grades at a primary school in Volendam. The Turkish-Dutch bilingual children had a mean age of 6;0 (range: 4;3-6;8, SD = 7 months) and were recruited from several schools and associations in Amsterdam, The Hague and Delft. As the response rate of the parental questionnaire was very low, the bilingual children's mean age of onset was impossible to calculate. However, since all of these children attended Dutch primary schools from the age of 4 years onwards and most of them attended playground from the age of 2;6 years onwards, we estimated that all of these children had had at least several months of exposure to Dutch. Regardless of their age of onset, the experimenters did not experience any problems communicating with the Turkish-Dutch bilingual children in Dutch. All children were individually tested by two experimenters in a quiet room at school.

3.2. Materials and procedure

All of the children completed a standardized passive vocabulary test in Dutch containing 96 items (*Taaltoets Alle Kinderen* ('Language Test for All Children')) before they carried out the picture selection task (PST). The present PST is an adapted version of the one used by Ruigendijk et al. (2010). First, it introduces the two protagonists for each item (Figures 1a and 1b) and then shows the two test pictures simultaneously (Figure 2). Both pictures display two protagonists, with one picture showing one of the protagonists doing a reflexive action and the other picture illustrating a non-reflexive action. A PST is an ideal method to measure young children's interpretation preferences (Baauw et al., 2011; Syrett & Musolino, 2013). The pictures were accompanied by a monoclausal test sentence. An example of a pronoun condition is provided in (10).

- (10) Hier zie je de piraat. Hier zie je de tovenaars. De piraat bijt 'm.
'This is the pirate. This is the wizard. The pirate is biting him.'



Figure 1a. Picture of the pirate. Figure 1b. Picture of the wizard.

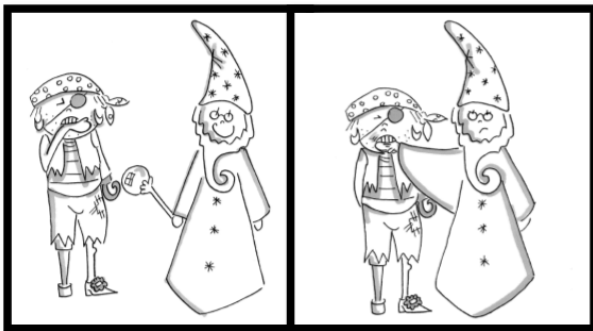


Figure 2. Example of a picture pair used in the comprehension test.

The task included 24 items per participant: 12 with an object reflexive and 12 with an object pronoun. The test sentences were presented in a semi-randomized order, so that a sequence of three test items was always followed by a filler. The two characters in the test sentences always had the same gender; hence, children could not rely on a gender agreement cue for their choice of antecedent. Since we opted for the most natural language set-ups, a weak object pronoun was used rather than the strong equivalent. Baauw (2002) demonstrated that, for Dutch, the use of weak object pronouns leads to similar results to the use of strong object pronouns.

3.3. Results

An independent samples *t*-test with percentage correct on the reflexive condition as the dependent variable and language background (Turkish-Dutch bilingual, monolingual Dutch) as the between-groups variable showed that there was no significant difference (mean percentage correct: 89.7% vs 90.6%). In addition, the two groups of children did not perform significantly different from each other on the pronoun condition (mean percentage correct: 73.0% vs 68.8%). Figure 3 shows the results.

The Turkish-Dutch bilingual children scored significantly lower (mean number of items correct: 49.8) on the standardized passive vocabulary test than the monolingual Dutch children (mean number of items correct: 63.9) ($t(43) = 3.27, p = 0.002$). Furthermore, the monolingual Dutch children were significantly younger than the Turkish-Dutch bilingual children (mean age: 5;3 vs 6;0; $t(43) = -3.70, p < 0.001$). To determine whether age and/or vocabulary knowledge were significant predictors for the children's performance on the pronoun condition, we ran a multiple regression analysis, but neither of the predictors proved to be a significant contributor.

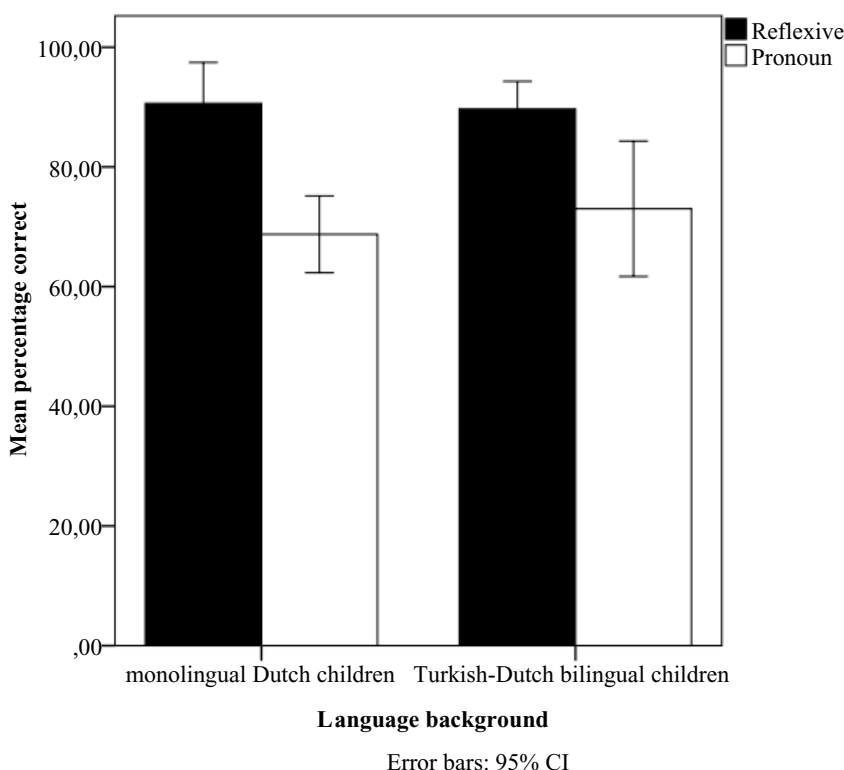


Figure 3. The monolingual Dutch and Turkish-Dutch bilingual children's results of the comprehension part of the PST.

3.4. Discussion

The Turkish-Dutch bilingual children displayed identical behaviour to the monolingual Dutch children in their interpretation of Dutch object reflexives and pronouns. Both groups performed better

on the reflexives than on the pronouns, thereby showing a DPBE. Although the Turkish-Dutch bilingual children had a smaller passive lexicon than the monolingual Dutch children, this difference did not seem to affect their interpretation of reflexive and pronouns. Moreover, both the vocabulary size and age at testing were not significant predictors of correct performance on the present binding task. Since these younger Turkish-Dutch bilingual children exhibited similar behaviour to the older Turkish-Dutch bilingual children that were tested in a previous study (van Koert et al., 2013), it seems likely that length of exposure has little effect on their binding performance. More precisely, the threshold of required input in the target language (i.e. Dutch) appears to be low, as these bilingual children receive less input than their monolingual peers but still demonstrate a comparable level of comprehension. Furthermore, Turkish does not seem to be in these bilingual children's way of acquiring the Dutch binding conditions.

4. Experiment II: Dutch production

The production study investigates the elicited production of Dutch pronouns and reflexives in object position in monoclausal sentences in a group of Turkish-Dutch bilingual children and a group of monolingual Dutch children.

4.1. Participants, materials and procedures

The same children as in Experiment I participated in this production experiment. The production of reflexives and pronouns was elicited by means of a production task. Children were shown two pictures of the protagonists, as in Figures 1a and 1b, and then they saw one picture. The pictures were accompanied by an introduction sentence and a question, as in (11) for the reflexive condition and (12) for the pronoun condition.

- (11) Experimenteer: 'Hier zie je de prinses. Hier zie je oma'
 "This is the princess. This is granny."
 Experimenteer: 'En wat doet de prinses? (Die?)'
 "And what is the princess doing? (She's?)"
 Target answer: '(De prinses/zij/ze/die) bijt zichzelf.'
 "(The princess/she's) biting herself."
- (12) Experimenteer: 'Hier zie je opa. Hier zie je de piraat.'
 "This is grandpa. This is the pirate."
 Experimenteer: 'En wat doet opa met de piraat? (Die?)'
 "And what is grandpa doing to the pirate? (He's?)"
 Target answer: '(Opa/hij/die) slaat hem.'
 "(Grandpa/he's) hitting him."

The task included 12 test items per participant, the target object of six of them was a reflexive, as in (11), and for six it was a pronoun, as in (12). The children's answers were transcribed during the session. Each response was scored as reflexive, pronoun, NP or omission. Null responses were excluded from the analyses.²

4.2. Results

To analyse the results of the production task in the reflexive condition a χ^2 test was carried out. The association between the language background and which answer was given was close to significance ($\chi^2(3) = 8.3, p = 0.056$). The main difference that contributed to this result was that the monolingual Dutch children gave fewer answers containing an omission (9.7% of their answers; $z = -1.6$) than the Turkish-Dutch bilingual children (20.6% of their answers; $z = 1.7$). Figure 4 illustrates the differences between

² One monolingual Dutch child provided two null responses in the pronoun condition; there were 10 null responses in total given by two Turkish-Dutch bilingual children.

the monolingual Dutch and the Turkish-Dutch bilingual children on the reflexive condition of the elicited production task.

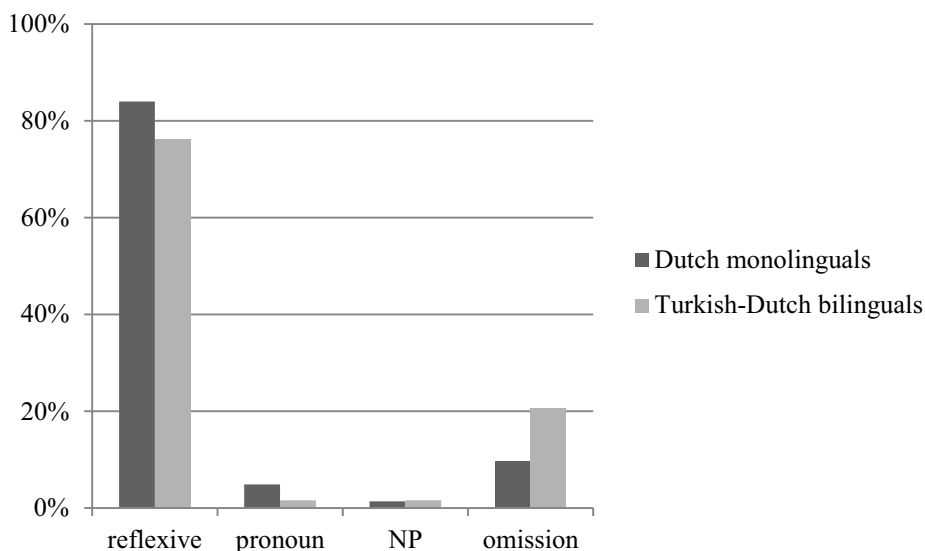


Figure 4. Mean percentage of types of answers given by the monolingual Dutch and the Turkish-Dutch bilingual children on the reflexive condition.

A χ^2 test was run to analyse the results of the production task in the pronoun condition. There was a significant association between the language background and which answer was given ($\chi^2(3) = 29.82$, $p < 0.001$). Dutch monolingual children used significantly more pronouns in their answers (35.2% of their answers; $z = 3.1$) than Turkish-Dutch bilingual children (8.3% of their answers; $z = -3.4$). In addition, Dutch monolingual children gave significantly fewer answers containing an omission (39.4% of their answers; $z = -1.6$) than Turkish-Dutch bilingual children (59.5% of their answers; $z = 1.7$). Figure 5 shows the differences between the monolingual Dutch and the Turkish-Dutch bilingual children on the pronoun condition of the elicited production task.

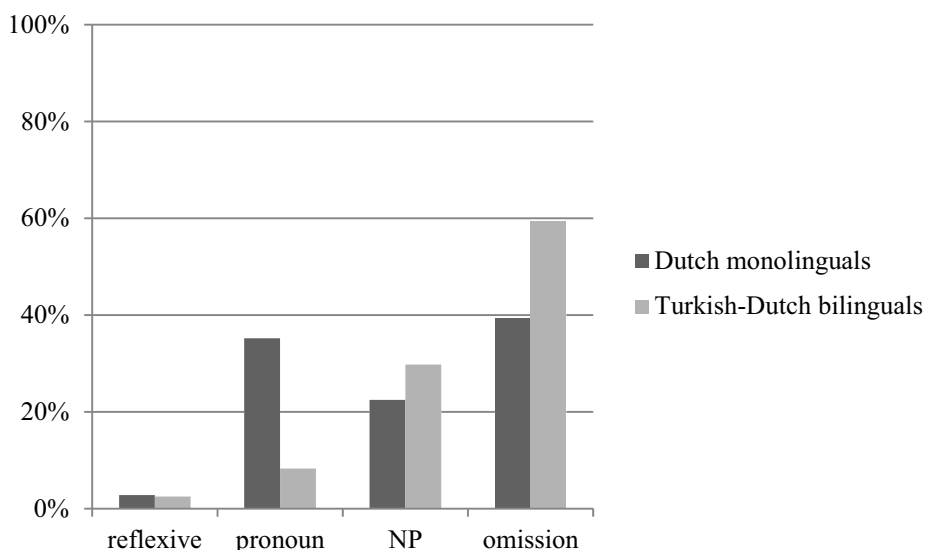


Figure 5. Mean percentage of types of answers given by the monolingual Dutch and the Turkish-Dutch bilingual children on the pronoun condition.

4.3. Omissions in the pronoun condition

Since the Turkish-Dutch bilingual children omitted significantly more objects in the pronoun condition than the monolingual Dutch children, we decided to investigate this difference more closely, as this could be an indication of cross-linguistic influence from Turkish to Dutch. When we re-examined the set-up of the elicited production task, we noticed that both protagonists in each item were highly prominent figures in the discourse, as in (13).

- (13) Experimenter: ‘This is the fairy [points to the picture of the fairy]. This is the witch [points to the picture of the witch]. [Shows the picture with the action and asks] What is the fairy doing to the witch?’

The discourse in (13) pragmatically licenses drop, if the language in question allows it. Turkish has discourse licensed object drop, meaning that in discourse set-ups such as (14) the object may be covertly realized.

- (14) [...Zeynep_m...]
 Elif_i Mehmet’in_k *pro*_m beğendiğini söyledi.
 Elif Mehmet.GEN like.3SG.POSS.ACC say.PAST
 ‘Elif said (that) Mehmet likes *pro*_m.’
 (example based on Gürel, 2002, p. 28)

If the object is highly prominent in the discourse – and in (13) there is only one possible object, because the experimenter and the child are both looking at the picture showing the fairy biting the witch – it can be dropped in Turkish. Young monolingual Turkish children have been found to elide object pronouns significantly more than adults (Güranlı, Nakipoğlu Demiralp & Özyürek, 2007); are these Turkish-Dutch bilingual children therefore influenced by their Turkish when they omit the object in Dutch? Before we can answer that question, we need to look at adult and child Dutch.

Dutch has topic drop, meaning that in discourse set-ups like (15) the topicalized object may be dropped, resulting in a null object.

- (15) Question: Ga je mee naar Star Wars VII?
 ‘Do you wanna come with us to Star Wars VII?’
 Answer: ~~Die~~ heb ik al gezien.
~~That~~ have I already seen
 ‘I’ve already seen it.’
 (example based on Müller & Hulk, 2001; originally by De Haan & Tuijnman, 1988)

Adults can use this kind of object topic drop when the discourse allows it. Young Dutch children use this type of topic drop to a greater extent than adults in spontaneous speech (De Haan & Tuijnman, 1988; Thrift, 2003). In addition, they are known to occasionally drop objects in postverbal position, (Blankenstijn & Schepers, 2003; Thrift, 2003), as in (16). This is ungrammatical in adult Dutch and probably reflects a developmental stage.

- (16) Maria kan niet maken. (Maria, 2;08.28)
 Maria can not make.INF
 (example from Thrift, 2003, p. 113)

Hence, object drop is not just a Turkish phenomenon; it occurs in child Dutch as well. Typically developing Dutch children incorrectly drop the postverbal object increasingly less until, at around six years old, they hardly err anymore (Blankenstijn & Schepers, 2003; Thrift, 2003).

4.3.1. Analysis of object pronoun omissions

To determine whether the Turkish-Dutch bilingual children are influenced by their Turkish when they provide their response to the elicited production task, we need to know what their omissions consist of. If these monolingual Dutch children only produce object topic drop and the Turkish-Dutch bilingual children only produce postverbal object drop, then cross-linguistic influence from Turkish to Dutch is more likely than when both groups of children produce similar numbers of object topic drop and postverbal object drop. Table 1 provides a summary of the responses that were categorized as follows: finite verb + subject, bare infinitive, bare finite verb and different construction.

Table 1. Fine-grained analysis of object omissions in elicited production task.

| Type of omission | Example | Monolingual Dutch | Turkish-Dutch bilingual |
|------------------------|--|-------------------|-------------------------|
| Finite verb + subject | (Die _{obj} ?) Bijt ze '(Her?) Bites she' | 3 | 8 |
| Bare infinitive | [?] Bijten 'Biting' | 27 | 42 |
| Bare finite verb | (Die _{subj} ?) [#] Bijt '(She?) bites' | 13 | 20 |
| Different construction | (Die _{subj} ?) Bijt in d'r vinger '(She?) Bites in her finger' | 13 | 1 |

A χ^2 test revealed a significant association between the language background of the children and which type of omission was given ($\chi^2(3) = 17.57, p = 0.001$). The only significant difference that contributed to this result was that the monolingual Dutch children provided more omissions by using a different construction (23.2% of their omissions consisted of a different construction; $z = 2.7$) than the Turkish-Dutch bilingual children (1.4% of their omissions consisted of a different construction; $z = -2.4$). The Turkish-Dutch bilingual children did not behave significantly differently from their monolingual peers with regard to the other types of omissions. Therefore, the difference in object omissions between the bilingual and monolingual children appears to be quantitative rather than qualitative.

4.3.2. Discussion of types of object pronoun omissions

Table 1 lists four different types of omissions but in order to determine whether the Turkish-Dutch bilingual children show cross-linguistic influence, we need to know which types display object topic drop or postverbal object drop. The first type, “finite verb + subject”, is an instance of topicalisation, because the finite verb precedes the subject (De Haan & Tuijnman, 1988). However, it is probably not an example of object topic drop, as it is likely that the children who produced these omissions understood the demonstrative pronoun *die* (‘that’) – that was used as a prompt to help children produce a sentence – as an object, meaning that the experimenter already uttered the object and children only had to produce the rest of the topicalised sentence. The reason why the bilingual children produced this type of omission slightly more than the monolingual children could be because the object reading of the prompt *die* (‘that’) is pragmatically not the most ideal interpretation. The topic position is usually reserved for new information and the object in this case did not constitute new information in the discourse. When there is no new information, the subject bias causes listeners to infer that the demonstrative pronoun refers to the subject, i.e. *de fee* (‘the fairy’), (Kehler & Rohde, 2013). Therefore, the most likely continuation for the question *Wat doet de fee met de heks? Die..?* (‘What is the fairy doing to the witch? She’s...?’) should be one in which the demonstrative pronoun *die* (‘that’) is interpreted as a subject.

The second type of omission is “bare infinitive;” children tend to rely on the infinitive in elicitation tasks, even though it is pragmatically not the best continuation in adult language. It is not a straightforward case of omission, because on the one hand the bare infinitive suffices as answer, whereas, on the other hand, in set-ups like these it would be clearer to add a pronoun. In addition, it is not evident whether infinitival clauses contain object topic drop, as some claim that topicalisation is

marked by preposed finite verbs (De Haan & Tuijnman, 1988), while others argue that object topic drop occurs in infinitival clauses, too (Thrift, 2003). Since there was no significant difference between the rates of production of “bare infinitive” between the bilingual and the monolingual children and since it is unclear whether this is a case of omission, we will not analyse this type further.

A clear type of omission is “bare finite,” as it constitutes postverbal object drop. It is ungrammatical to only include the finite verb in the answer, because *slaan* (‘to hit’), for example, is a transitive verb, which requires an object. Furthermore, this type of answer does not include topicalisation, as the addition of a subject after the finite verb would be necessary in that case. Since there is no significant difference between the rates of production of “bare finites” between the bilingual and the monolingual children, it is difficult to determine whether the bilingual children show signs of cross-linguistic influence from Turkish to Dutch. However, the bilingual children produce marginally more of these “bare finites” at a slightly older age; thus, it could be that they linger longer in this stage.

Finally, the last type of omission consisted of “different constructions”. Monolingual Dutch children used significantly more different constructions, such as *knijpen aan z'n schouders* (‘pinching on his shoulders’), *in d'r hand bijten* (‘in her hand bite’) and *ze hoofd kloppen* (‘his head thump’), than the Turkish-Dutch bilingual children. It is highly likely that this difference is due to the monolingual children’s bigger vocabulary size, which was demonstrated by the higher mean score on the standardized passive vocabulary test by the monolingual children. As this category had nothing to do with omission, we cannot conclude whether the bilingual children show signs of cross-linguistic influence from Turkish to Dutch on the basis of this category.

4.4. Discussion

The Turkish-Dutch bilingual children omit more reflexives and significantly more pronouns than the monolingual Dutch children in the present elicited production task. At first sight this difference signifies cross-linguistic influence, especially as object drop is a Turkish phenomenon that obligatorily occurs in discourse set-ups where the protagonists are highly prominent (Gürcanlı et al., 2007). However, child Dutch also displays object drop, which is why the monolingual Dutch children show instances of object omission, too. Moreover, a fine-grained analysis of the object omissions did not reveal any significant differences between the monolingual and bilingual children. It is therefore difficult to tease apart cross-linguistic influence (from Turkish to Dutch) from (Dutch) language development. Cross-linguistic influence could manifest itself in that the bilingual children merely need more time to leave the object drop stage of Dutch than their monolingual peers (Müller & Hulk, 2001).

Secondly, these results reveal a DPBE in production (contra Spender et al., 2009; but pro Ruigendijk et al., 2010), as the Turkish-Dutch bilingual and the monolingual Dutch children produce fewer pronouns (even when the full NPs are included) than reflexives. The DPBE seems more pronounced for the bilingual children, because they produce so few pronouns; yet, this could also indicate a difficulty with pronoun realisation.

5. Experiment III: Turkish comprehension

The third experiment examines the interpretation of Turkish object pronouns and reflexives in biclausal sentences by a group of Turkish-Dutch bilingual children; these were different children from the ones tested in Experiments I and II. The research question addressed in this experiment asks whether these Turkish-Dutch bilingual children show any signs of cross-linguistic influence from Dutch to Turkish, i.e. will they show a DPBE in Turkish, even though on the basis of two theoretical accounts this effect is not expected to occur in Turkish. To our knowledge there is only one study that investigated the comprehension of binding by monolingual Turkish children and they found worse performance on reflexives than on pronouns (Aarssen & Bos, 1999); however, unfortunately, their methodology differed greatly from the present methodology, which makes a comparison difficult to draw.

5.1. Participants

Twenty-two typically developing Turkish-Dutch bilingual children participated. They had a mean age of 8;3 (range: 6;7-9;10, SD = 12 months) and were recruited from primary schools in Arnhem. There is a strong Turkish community in the Netherlands with several organizations, clubs, TV channels, mosques and schools. The participants' parents were likely heritage speakers of Turkish, because they undoubtedly do not belong to the group of first generation immigrants. However, no parental questionnaire was administered; thus, the bilingual children's familiarity with Turkish could only be estimated from their results on the Turkish translation of the Peabody Picture Vocabulary Test (Blom, Boerma & Timmermeister, 2014). All the children were individually tested by a native speaker of Turkish in a quiet room at their school.

5.2. Materials and procedure

All of the children completed a part of the Turkish translation of the Peabody Picture Vocabulary Test (Blom et al., 2014), which consisted of 32 items, before they carried out the binding task. The binding task was a Turkish translation of the advanced syntactic test of pronominal reference revised (A-STOP-R) (van der Lely, 1997), which is a picture verification task. The original control items in the A-STOP-R depended on gender: these pictures showed one of the animals sporting a moustache, indicating that this particular animal was male so that it could be referred to with *him* and *himself*, and the other animal wore a pink bow and pink nail varnish to signify that this animal was feminine and, hence, could be referred to with *her* and *herself*. However, since Turkish has no gender, these control items had to be adapted; therefore, they were changed to include *kendisi* ('self.3SG'), which is the quasi-reflexive (i.e. both locally and non-locally bound) element, to establish which interpretation these Turkish-Dutch bilingual children prefer for *kendisi* ('self.3SG').

5.3. Results

The Turkish-Dutch bilingual children's overall performance was analysed using repeated measures ANOVAs with the within factors Anaphor (reflexive, pronoun) and Matching (match, mismatch). No significant main effect of Anaphor was found, meaning that the overall mean percentage correct on object reflexives was comparable to the overall mean percentage correct on object pronouns (75.8% versus 72.0%). The ANOVA revealed a main effect of Matching ($F(1, 21) = 24.76, p < 0.001, \eta^2 = 0.54$), meaning that the children performed better on the matching than on the mismatching sentence-picture pairs (mean percentage correct: 87.3% versus 60.4%). The results are presented in Table 2.

Table 2. Turkish-Dutch bilingual children's results on the Turkish picture verification task.

| Test condition | Reflexive match | Reflexive mismatch | Pronoun match | Pronoun mismatch |
|----------------|-----------------|--------------------|---------------|------------------|
| % correct | 87.9% | 63.6% | 86.7% | 57.2% |

For the control items a one-sample *t*-test showed that these children understood *kendisi* ('self.3SG') as a reflexive more than chance ($t(21) = 7.25, p < 0.001$). In other words, they preferred to interpret *kendisi* ('self.3SG') as a reflexive (76.2% of the time) rather than as a pronoun (23.8% of the time). Finally, the Turkish-Dutch bilingual children had a mean score of 21 items correct on the vocabulary test (range: 12 – 30 items, SD = 5 items).

5.4. Discussion

The Turkish-Dutch bilingual children show similar behaviour on the Turkish object reflexives and on the pronouns; thus, they do not display a DPBE in Turkish and they do not have a poorer understanding of reflexives than of pronouns (contra Aarssen & Bos, 1999; but in line with the theoretical accounts of Rooryck & Vanden Wyngaerd (2014) and Ruigendijk et al. (2010), see Sections 2.1. and 2.2.). On the one hand, these bilingual children do not seem to be influenced by their Dutch, as they do not show a DPBE; on the other hand, they appear to show more target-like behaviour on the

reflexives than their monolingual peers in the Aarssen and Bos study, which may indicate some facilitative effect from Dutch. Indeed, if the resources for Turkish and Dutch were not pooled in these bilingual children, worse performance than the monolingual children would have been expected. However, since the methodologies differ to such an extent, it is difficult to make any comparison between the monolingual Turkish child participants in the Aarssen and Bos study and our Turkish-Dutch bilingual child participants.

The bilingual children in the present experiment showed a preference for the reflexive interpretation of *kendisi* ('self.3SG') in situations where the reflexive and the pronoun reading were equally likely. Despite there not being any studies that examined the interpretation preferences of *kendisi* ('self.3SG') by monolingual Turkish children, we do know that monolingual Turkish adults do not prefer one reading over the other in situations like these (Demirci, 2001). Why do these bilingual children show a different preference? It could be that these children prefer local binding and, hence, rely on the reflexive interpretation of *kendisi* ('self.3SG') rather than on the pronoun interpretation (Kıran, 2014); yet, this explanation is not likely, as these same children sometimes incorrectly accepted non-local NP antecedents for *kendi* ('self'), which the 63.6% correct performance on the reflexive mismatch conditions shows, see Table 2. Another explanation posed by Kıran (2014) is that *kendisi* ('self.3SG') is morphologically closer to *kendi* ('self') than to *o* ('he/she/it'), causing children to connect the meaning of *kendisi* ('self.3SG') to that of *kendi* ('self'). This explanation is tenable, as the acceptance rate of *kendisi* ('self.3SG') as a reflexive (76.2%) is comparable to the mean percentage correct on *kendi* ('self') in the matching and mismatching conditions (75.8%). Alternatively, these bilingual children may map the structure of the Dutch pronominal paradigm, including the object pronoun *hem* ('him'), the complex reflexive *zichzelf* ('SE-self') and the simple reflexive *zich* ('SE'), to the Turkish pronominal system, meaning that *hem* ('him') is mapped onto *o* ('he/she/it'), *zichzelf* ('SE-self') onto *kendi* ('self') and *zich* ('SE') onto *kendisi* ('self.3SG'). Since *zich* ('SE') allows long-distant binding in some contexts (Everaert, 1991), it shares some superficial characteristics with *kendisi* ('self.3SG'). If indeed children map these two systems onto each other, it would cause them to prefer the reflexive interpretation of *kendisi* ('self.3SG'), as it is the most salient reading of *zich* ('SE'). It is only this latter explanation that assumes cross-linguistic influence from Dutch to Turkish.

6. Conclusion

All in all, Experiments I, II and III revealed that Turkish-Dutch bilingual children show very similar behaviour to their monolingual Dutch and Turkish peers in their comprehension and production of object reflexives and pronouns. First of all, Experiment I showed that young Turkish-Dutch bilingual children perform more target-like on reflexives than on pronouns, just like young monolingual Dutch children. Therefore, Turkish does not seem to hinder the acquisition of Dutch binding by these bilingual children. Secondly, Experiment II demonstrated that, even though Turkish-Dutch bilingual children omit more object reflexives and pronouns in their elicited production than their monolingual Dutch peers, they again both show more target-like behaviour on reflexives than on pronouns. Hence, there are no qualitative differences between the bilingual and monolingual children. All the children's omissions may have had to do with difficulties in pronoun realisation, causing both bilingual and monolingual children to rely on an avoidance strategy. An alternative explanation is that the bilingual children remain longer than their monolingual peers in a phase in which they allow object drop under the influence of Turkish. The present experiment did not gather enough evidence to decide between these two explanations. Finally, Experiment III revealed that the Turkish-Dutch bilingual children performed similarly on Turkish object reflexives and on Turkish object pronouns, thereby showing no delay of Principle B effect. A previous study found that monolingual Turkish children performed less target-like on the reflexives than on the pronouns (Aarssen & Bos, 1999); however, since the methodologies are very different, it is impossible to determine whether the more target-like performance on the reflexives by the Turkish-Dutch bilingual children is due to (positive) cross-linguistic influence from Dutch to Turkish. Despite the children's similar behaviour on reflexives and pronouns, their performance does not reach ceiling. Perhaps the use of overt pronouns and reflexives throughout the task in both studies was not very natural for the children (Gürcanlı et al., 2007). Further research is necessary to uncover what monolingual Turkish children's knowledge of reflexives and pronouns comprises and to what extent Turkish bilingual children differ. Taken together, the present

experiments showed that Turkish-Dutch bilingual children experience no impediment from either language in the domain of binding.

Abbreviations in glosses

| | | | |
|-----|--------------|------|-------------------|
| 3 | third person | PAST | past |
| ACC | accusative | POSS | possessive |
| ADV | adverb | PRES | present |
| GEN | genitive | SE | simple expression |
| INF | infinitive | SG | singular |
| OBJ | object | SUBJ | subject |

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