How Do Turkish-Dutch Bilingual Children Interpret Pronouns and Reflexives in Dutch?

Margreet van Koert, Aafke Hulk, Olaf Koeneman, and Fred Weerman

1. Introduction

Binding studies have shown that Dutch and English monolingual children frequently accept co-identification between object pronouns and local c-commanding Noun Phrase (NP) antecedents, as in (1). Studies into adult L2 learners of English found that these learners do not err on object pronouns but may do so on object reflexives, depending on their first language (Demirci, 2001; White, 1998). For example, Demirci (2001) found that Turkish adult L2 learners of English allowed significantly more long-distance binding of reflexives than monolingual English speakers, especially if the context was biased towards a long-distant interpretation of the reflexive. Less research regarding binding has been done into bilingual children acquiring Dutch or English. Marinis and Chondrogianni (2011) studied early bilingual Turkish-English children and found that they showed non-target-like behaviour on two conditions: Noun Phrase (NP)-subjects and object-pronouns, as in (1), and Quantified Noun Phrase (QP)-subjects and object-reflexives, as in (2).

(1) The cat says the dog_i is touching him_i.   [incorrect acceptance]

(2) The $crocodile_i$ says every lion is touching $himself_i$.   [incorrect acceptance]

Despite the Turkish-English bilingual children's non-target-like interpretations of the object-pronoun in (1) and the object-reflexive in (2), Marinis and Chondrogianni did not attribute these errors to influence from the children's Turkish but rather to developmental properties of their English, because these same patterns were observed in the English monolingual children tested in the same study.

In recent work (van Koert et al., submitted) we used Marinis and Chondrogianni's task to study Dutch monolingual children on the same two conditions. Our results showed interesting similarities and differences with respect to the English monolingual children tested by Marinis and Chondrogianni. In this paper we present new results from Turkish-Dutch bilingual children who were administered the same test. Our goals are: (i) to compare the Turkish-Dutch bilingual children with the Turkish-English bilingual children; (ii) to determine whether for Dutch, too, monolingual and bilingual children behave alike; (iii) to consider an explanation for (the absence of) cross-linguistic influence in the Dutch and English bilingual children.

This paper is organised as follows. In Section 2 we explain how pronouns and reflexives are distributed in Dutch, English and Turkish. In addition, we look at monolingual acquisition of the binding principles. Subsequently, in Section 3, we present the method of our study together with its participants. In Section 4 the statistical results for the Turkish-Dutch bilingual data are given and these are compared to the Turkish-English bilingual data collected by Marinis and Chondrogianni (2011). In Section 5 these bilingual results are discussed and particular emphasis is put on the diverging findings between the groups. It is suggested that the monolingual data should be considered. Hence, Section 6

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turns to the Dutch and English monolingual participants who were documented earlier (van Koert et al., submitted; Marinis & Chondrogianni, 2011). Section 7 compares the bilingual data to the monolingual data and it is found that the bilingual children follow the patterns of the monolingual children. In Section 8 we provide an overall discussion in which we discuss the absence of cross-linguistic influence for these Turkish-Dutch/English bilinguals. Finally, Section 9 concludes the paper.

2. Anaphors: distribution and monolingual acquisition

Typically languages show a different distribution for reflexives than for object-pronouns. These distinct distribution patterns are acquired by children at a certain stage but it is not necessarily the case that the patterns for reflexives and object-pronouns are acquired simultaneously. In Section 2.1 we will look at the distribution patterns of reflexives and pronouns in Dutch, English and Turkish, as found in the adult grammar. Subsequently, in Section 2.2, we will summarise the main findings of previous studies with regard to monolingual Dutch, English and Turkish acquisition of the distribution of reflexives and pronouns.

2.1. The distribution of reflexives and object-pronouns

Whereas reflexives in Dutch, English and Turkish are generally locally bound, pronouns are commonly not bound by the local c-commanding antecedent. These different distribution patterns of reflexives and object-pronouns are described in the binding principles (Chomsky, 1981). Principle A states that reflexives must be bound by their local c-commanding antecedents. Principle B states that pronouns must be free in their local clause. There are a few subtle differences between the behaviours of reflexives and pronouns in Dutch and English on the one hand and Turkish on the other. These will be discussed in Sections 2.1.1 and 2.1.2.

2.1.1. Dutch and English distribution

The binding principles imply a complementary distribution of reflexives and object-pronouns. For Dutch and English these principles capture much of the behaviour, as shown in (3) and (4) for Dutch and (5) and (6) for English.

(3) De krokodil$_i$ zegt dat de leeuw$_j$ zichzelf$_{*i/j/*k}$ aanraakt.
The crocodile says that the lion SE-self touches
'The crocodile says the lion is touching himself'

(4) De kat$_i$ zegt dat de hond$_j$ hem$_{i/*j/k}$ aanraakt.
The cat says that the dog him touches
'The cat says the dog is touching him'

(5) The crocodile$_i$ says the lion$_j$ is touching himself$_{*i/j/*k}$.

(6) The cat$_i$ says the dog$_j$ is touching him$_{i/*j/k}$.

In the examples (3) – (6) co-indexation reflects co-identification. Only reflexives are allowed to refer to the local antecedent, i.e. the subject of the embedded clause, in (3) and (5). Pronouns have to refer to a distant antecedent: either to the subject of the main clause or to an exophoric antecedent, i.e. one occurring outside the sentence, as in (4) and (6).

A difference between Dutch and English is that the former has two reflexive anaphors: *zich* 'Simple Expression (SE)' and *zichzelf* 'SE-self'. Inherently reflexive verbs in Dutch take *zich* 'SE' and never use *zichzelf* 'SE-self' to express a reflexive action (Everaert, 1991; Reinhart & Reuland, 1993). Since *zich* 'SE' appears with only a few verbs, *zichzelf* 'SE-self' is typically selected to express a reflexive action. It has been found that Dutch monolingual five- to six-year-olds use *zichzelf* 'SE-self' significantly more frequently and more accurate than *zich* 'SE' (Ruigendijk et al., 2004).

Zich 'SE' can also occur in locative and directional Prepositional Phrases (PPs) where *zichzelf* 'SE-self' is ruled out but where *hem* 'him' can occur, as in (7).

(7) Klaas$_i$ duwde de kar voor zich$_i$ / hem$_i$ / *zichzelf$_i$ uit.
Klaas pushed the cart before SE / him / *SE-self out
(example from Reinhart & Reuland, 1993, p. 690)

In (7) both *zich* 'SE' and *hem* 'him' may refer to *Klaas*. A similar phenomenon appears in English where both *himself* and *him* can occur in these PPs but refer to the subject of the main clause, as shown in (8).

(8) Max$_i$ pulled the cart towards him$_i$ / himself$_i$.
(example from Reinhart & Reuland, 1993, p. 686)

The examples in (7) and (8) violate the binding principles given in Section 2.1, because in this type of environments reflexive anaphors and pronouns are not in complementary distribution.

In short, although the clear-cut binding principles may explain the behaviours of reflexives and object-pronouns in environments such as (3) – (6), they need additional postulations for the exceptions in (7) and (8). These exceptions may bear some resemblance to the divergent behaviour of the Turkish reflexive *kendisi* 'self.3SG'.

2.1.2. Turkish distribution

Not only does Turkish have an overt pronoun *o* 'he/him' and a reflexive *kendi* 'self', the language also includes null pronouns and the quasi-reflexive element *kendisi/kendileri* 'self.3SG/3PL' (Gürel, 2002; Marinis & Chondrogianni, 2011). The reflexive *kendi* 'self' is inflected for person, number and case and behaves according to Principle A, as in (9). The pronoun *o* 'he/him' is subject to Principle B, as can be seen in (10).

(9) Elif$_i$ Mehmet'in$_j$ kendi-ni$_{*i/j/*k}$ beğendigini   söyledi.
Elif   Mehmet.GEN   self.ACC   like.3SG.POSS.ACC   say.3SG.PAST
'Elif$_i$ said that Mehmet$_j$ likes herself$_{*i}$/himself$_j$.'

(10) Elif$_i$ Mehmet'in$_j$ o-nu$_{i/*j/k}$ beğendigini   söyledi.
Elif   Mehmet.GEN   s/he.ACC   like.3SG.POSS.ACC   say.3SG.PAST
'Elif$_i$ said that Mehmet$_j$ likes her$_i$/him$_{*j}$.'

Although the pronoun *o* 'he/him' and the reflexive *kendi* 'self' follow the binding principles, the quasi-reflexive element seems more deviant. Demirci (2001) describes the several properties of *kendisi* 'self.3SG' amongst which are that it can take more than one possible antecedent, that it can be discourse bound, i.e. without an antecedent in the sentence, and that its binding may depend on the context. Thus, in (11) *kendisi* 'self.3SG' may refer to Elif, Mehmet or to an antecedent outside the sentence.

(11) Elif$_i$ Mehmet'in$_j$ kendi-si-ni$_{i/j/k}$ beğendigini   söyledi.
Elif   Mehmet.GEN   her-/himself.3SG.ACC   like.3SG.POSS.ACC say.3SG.PAST
'Elif$_i$ said that Mehmet$_j$ likes her$_{i/k}$/himself$_j$.'
(examples from Marinis & Chondrogianni, 2011; adapted from Gürel, 2002)

Marinis and Chondrogianni note that *kendisi/kendileri* 'self.3SG/3PL' receives a reflexive reading when it refers to the local antecedent, *Mehmet* in (11); yet, when it refers to the non-local antecedent, *Elif* in (11), it receives a pronominal interpretation. Hence, the interpretation of *kendisi/kendileri* 'self.3SG/3PL' is heavily dependent on context. In fact, Demirci argues that pragmatics is an essential factor for the interpretation of reflexives in Turkish, because speakers have to rely on inference, context and world knowledge to decide between all the options. This is much more so in Turkish than in Dutch

or English. Indeed, in sentences such as (11) where the interpretation of the reflexive is not biased toward the long distant or the local antecedent, Turkish L1ers will find both interpretations equally likely (Demirci, 2001).

2.2. Monolingual acquisition of the binding principles
2.2.1. Dutch and English monolingual acquisition

Since the 1980s much research has been done on English and Dutch monolingual acquisition of the binding principles (for English, inter alia: Chien & Wexler, 1990; Conroy et al., 2009; van der Lely & Stollwerck, 1997; Marinis & Chondrogianni, 2011; Thornton & Wexler, 1999; Wexler & Chien, 1986; for Dutch, inter alia: Bergmann et al., 2009; van Koert et al., submitted; Philip & Coopmans, 1995; van Rij et al., 2010; Ruigendijk et al., 2011; Sigurjónsdóttir & Coopmans, 1996; Spenader et al., 2009). In many of these studies it was found that children performed more target-like on sentences involving Principle A – i.e. reflexives, as in (3) and (5) reprised in (12) – than on Principle B – that is object-pronouns, as in (4) and (6) reprised in (13).

(12) The crocodile$_i$ says the lion$_j$ is touching himself$_{*i/j/*k}$.

(13) The cat$_i$ says the dog$_j$ is touching him$_{i/*j/k}$.

Young children until 7;0 find it more difficult to reject the local interpretation for the pronoun in (13) than the long distant interpretation for the reflexive in (12). Seemingly there is a delay in the correct interpretation of pronouns as compared to that of reflexives, leading to the term the Delay of Principle B Effect (DPBE).

The presence of the DPBE has received many explanations, ranging from incomplete acquisition (Chien & Wexler, 1990), to flawed methodologies used in the experiments (Conroy et al., 2009; Spenader et al., 2009), and from language-internal properties of pronouns and reflexives (Rooryck & Vanden Wyngaerd, 2011) to children's limited processing capacities (Baauw et al., 2011; Reinhart & Grodzinsky, 1993). The many explanations may have arisen, as the DPBE seems to be limited to English, Dutch, Icelandic and Russian (Baauw, 2002; Conroy et al., 2009; Hamann, 2011). The phenomenon is not found in Norwegian (Hestvik & Philip, 2000), in German (Ruigendijk et al., 2010) or in the Romance languages when clitics are used (cf. French: Jakubowicz, 1993).

Although linked to the DPBE, a different finding found in many binding studies on English is the Quantificational Asymmetry (QA). The QA entails that children show more target-like behaviour on sentences with a Quantified Noun Phrase (QP) subject and an object-pronoun, as in (14) than on those with an NP-subject, see (13).

(14) The cat$_i$ says every dog$_j$ is touching him$_{i/*j/k}$.

Only those languages that display a DPBE are argued to show a QA: if children's performance on (13) is target-like, then their performance on (14) cannot significantly improve; therefore, a QA is likely to only be found in Dutch, English, Icelandic and Russian. Explanations for the presence of the QA are similar to those that have been proposed for the DPBE: the phenomenon is argued to be due to either the non-referentiality of quantifiers (Chien & Wexler, 1990; Grodzinsky & Reinhart, 1993) or inconsistent test methodologies (Conroy et al., 2009).

A finding which has not received much attention in the literature is the *inversed Quantificational Asymmetry* (inversed QA), as Marinis and Chondrogianni (2011) term it. It comprises the finding that children perform less target-like on sentences containing a QP-subject and a reflexive, as in (15) than on sentences with an NP-subject and a reflexive, see (12).

(15) The crocodile$_i$ says every lion$_j$ is touching himself$_{*i/j/*k}$.

This asymmetry is especially evident in mismatching conditions (Chien & Wexler, 1990; van der Lely & Stollwerck, 1997; Marinis & Chondrogianni, 2011). It is an unexpected finding, since children should perform target-like on Principle A and their interpretation should improve with QP-subjects.

Hence, the result has been ascribed to the difficulty of constructing a distributed reading and task-effects (Grimshaw & Rosen, 1990; Marinis & Chondrogianni, 2011).

2.2.2. A reinterpretation of the (inversed) Quantificational Asymmetry

Interestingly, in a recent study testing Dutch monolingual children on a similar task we found no inversed QA thereby defying the explanation of interfering task-effects in this condition (van Koert et al., submitted). Even more striking is the absence of a QA in Dutch (Drozd & Koster, 1999; van Koert et al., submitted). When we compared our Dutch results to the English findings documented by Marinis and Chondrogianni, we found that the Dutch and English children differed from each other on the QP conditions. We proposed the Collective Distributive Preference Hypothesis (CDPH) to explain these diverging results: English children (5;6 – 7;0) prefer a collective reading of the quantifier *every* thereby excluding a bound variable reading of the reflexive and of the pronoun. If the pronoun is not bound by the QP-subject, it must refer to some other antecedent, leading to a QA. The QA appears when children perform more target-like on sentences with QP antecedents and object-pronouns than on those with NP antecedents. If the reflexive is not bound by the QP-subject, it must also refer to some other antecedent, leading to an inversed QA, meaning that children perform less target-like on sentences with QP antecedents and object-reflexives than on those with NP antecedents. Dutch children, on the other hand, prefer a distributive reading of the quantifier *elk(e)* 'every/each' which imposes a bound variable reading on the reflexive and on the pronoun. If the pronoun is (incorrectly) bound by the QP-subject, it must refer to this subject; hence, there is no QA. If the reflexive is (correctly) bound by the QP-subject, it must refer to this subject; hence, there is no inversed QA in Dutch. By looking at quantifier preferences, we shed a different light on previous QA explanations.

2.2.3. Turkish monolingual acquisition

With such a bulk of information on Dutch and English it may be surprising that much less is known about Turkish monolingual acquisition of the binding principles. To our knowledge there is one study (Aarssen & Bos, 1999) that compared Turkish monolingual children (5;0 – 9;0) to Turkish-Dutch bilingual children (4;0 – 10;0) on their interpretation of reflexives and object-pronouns. Aarssen and Bos used a Picture Selection Task (PST): the experimenter read out a test sentence whilst the child saw four pictures from which she had to choose one that suited the sentence best. The task consisted of 24 sentences, half of which contained a reflexive and the other half an object-pronoun. Six transitive verbs were used which could express either a reflexive or a disjoint meaning in both Dutch and Turkish. The reflexive *zich* 'SE' was used for Dutch, whereas for Turkish the reflexive *kendini* 'self.ACC' was used for half of the reflexive sentences and for the other half the reflexive infix $-(\dot{I})n$ was used. The characters in the pictures were two boys, *Martijn* and *Kerim*, who were friends. Examples of the test sentences are shown in (16) and (17) for Dutch and (18) and (19) for Turkish.

(16) De vriend$_i$ van Kerim$_j$ knijpt zich$_{i/*j/*k}$.
The friend of Kerim pinches SE
'Kerim's$_j$ friend$_i$ is pinching himself$_{i/*j/*k}$.'

(17) De vriend$_i$ van Kerim$_j$ knijpt hem$_{*i/j/k}$.
The friend of Kerim pinches him
'Kerim's$_j$ friend$_i$ is pinching him$_{*i/j/k}$.'

(18) Kerim'in$_i$ arkadaşı$_j$ kendi-ni$_{*i/j/*k}$ çimdikliyor
Kerim.GEN   friend.NOM   self.ACC   pinch.3SG.PRES
'Kerim's$_i$ friend$_j$ is pinching himself$_{*i/j/*k}$.'

(19) Kerim'in$_i$ arkadaşı$_j$ o-nu$_{i/*j/k}$ çimdikliyor
Kerim.GEN   friend.NOM   s/he.ACC   pinch.3SG.PRES
'Kerim's$_i$ friend$_j$ is pinching him$_{i/*j/k}$.'
(examples adapted from Aarssen & Bos, 1999)

The results showed that the Turkish-Dutch bilinguals performed similarly to the Turkish monolinguals in that they performed better on the pronouns than on the reflexives. Overall their scores were very low, ranging from 30% correct at 5;0 to 70% correct at 9;0. This could indicate that it takes Turkish-speaking children a long time to correctly understand the binding principles.

Surprisingly, the Dutch monolingual results in the Aarssen and Bos' study showed a similar pattern, i.e. there was no difference between the pronouns and the reflexives and the scores remained low (< 70% correct) until the children were 8;0. In most binding experiments, Dutch children typically display the DPBE (Bergmann et al., 2009; van Koert et al., submitted; van Rij et al., 2010; Ruigendijk et al., 2011; Sigurjónsdóttir & Coopmans, 1996; the classic and embedded condition in Spenader et al., 2009).

Since Aarssen and Bos' experiment was based on earlier PSTs designed by Deutsch and Koster (1982) and Deutsch et al. (1986) who did find a DPBE for the Dutch seven- and eight-year-olds, the unexpected results raise a few questions about the methodology. Firstly, the sentences might be too complex for young children to process. Deutsch et al.'s results showed that the six-year-olds scored around 50% correct on reflexives and pronouns; it is only from 7;0 that children's performance on reflexives significantly surpassed that on pronouns. The task complexity may well hold for both Dutch and Turkish. Secondly, the drawings could have been problematic for two of the six verbs, namely *to tie up* and *to release*, because they can be portrayed by the same picture; hence, the antecedents can be confused easily. Thirdly, the context may not have been ideal. For Dutch *knijpen* 'to pinch', which was one of the six verbs, is not typically combined with *zich* 'SE', as it is not an inherently reflexive verb (see Section 2.1.1). For Turkish, the use of an overt pronoun in (19) may have led Turkish-speaking children toward an interpretation involving an exophoric antecedent, because an overt pronoun in an embedded clause cannot refer to the subject of the main clause (Gürel, 2002).

Because of these concerns with Aarssen and Bos' study it is difficult to draw any conclusions regarding the development of the binding principles in Turkish monolingual children. There might be a delay of Principle A effect in Turkish but a careful methodology might just as well yield very different results.

As for the status of the QA in Turkish, it is unclear whether it is present or not. To our knowledge no study has investigated Turkish monolingual children's interpretation of quantified antecedents in relation to reflexives and pronouns. Nevertheless, some hypotheses can be postulated on the basis of certain qualities of Turkish universal distributive quantifiers. Firstly, Turkish is a scope-rigid language meaning that only the surface scope reading is considered (Kelepir, 2001; Öztürk, 2005), similar to Dutch. Secondly, there is only one universal distributive quantifier in Turkish: *her* 'every/each'. According to Öztürk (2005) *her* 'every/each' is the only quantifier in Turkish that imposes distributivity, as the other quantifiers are indistinguishable with regard to a collective or a distributive reading. Thirdly, Gürel (2002) notes that the overt pronoun may not be interpreted as a bound variable: an overt object-pronoun cannot be bound by a QP-subject but a null object-pronoun can, cf. (20) and (21).

(20) Her   çocuk$_i$ o-nu$_{*i/j}$ çimdikliyor
       every.NOM   child.NOM   s/he.ACC   pinch.3SG.PRES
       'Every child$_i$ is pinching her$_{*i/j}$'

(21) Her   çocuk$_i$ *pro*$_{i/j}$ çimdikliyor
       every.NOM   child.NOM   pinch.3SG.PRES
       'Every child$_i$ is pinching pro$_{i/j}$'

All in all, Turkish *her* 'every/each' seems to be closer to Dutch *elk(e)* 'every/each' regarding its interpretation than to English *every*; therefore, it is likely that no QA will be found for Turkish *her* 'every/each'.

3. Turkish-Dutch and Turkish-English bilingual children

The present study investigates the interpretation of pronouns and reflexives in object position in bi-clausal sentences in a group of Turkish-Dutch bilingual children, who were age-matched to the Turkish-English bilingual children from the Marinis and Chondrogianni (2011) study.

The research questions ask whether: (i) the Turkish-Dutch bilingual children show non-target-like behaviour on the NP/Reflexive condition, similar to the Turkish-Dutch bilingual children in the Aarssen and Bos' study (1999); (ii) the Turkish-Dutch bilingual children show non-target-like behaviour on the NP/Pronoun conditions, similar to the Turkish-Dutch bilingual children in the Aarssen and Bos' study (1999) and to the Turkish-English bilingual children; (iii) the Turkish-Dutch bilingual children show non-target-like behaviour on the QP/Reflexive condition, similar to the Turkish-English bilingual children; (iv) the Turkish-Dutch bilingual children show target-like behaviour on the QP/Pronoun condition, similar to the Turkish-English bilingual children.

3.1. Participants

Thirty-three typically developing Turkish-Dutch bilingual children participated in the present study and thirty-nine typically developing Turkish-English bilingual children participated in the Marinis and Chondrogianni (2011) study.

The Turkish-Dutch bilingual children had a mean age of 8;3 (range: 6;5-10;1; SD = 12 months). They had a mean age of onset of 2;3 (range: 1;0-4;0; SD = 6 months) and a mean length of exposure of 5;10 (range: 4;2-7;9; SD = 13 months). The Turkish-Dutch bilingual children were born in the Netherlands in Turkish immigrant families. They attended schools in Amsterdam and Alphen aan den Rijn. The parents' social-economic status was measured by education: the median was *MBO* 'senior secondary vocational training'. Most children spoke both Dutch and Turkish at home. Although highly likely, there is no information on whether the children received a qualitatively different Dutch input from the standard Dutch input (Hulk & Cornips, 2006).

The Turkish-English bilingual children had a mean age of 7;8 (range: 6;2-9;9; SD = 12 months). They had a mean age of onset of 3;3 (range: 2;6-4;0; SD = 5 months) and a mean length of exposure of 4;0 (range: 2;6-6;0; SD = 13 months). Further details of the Turkish-English children are documented by Marinis and Chondrogianni (2011). The social-economic status of both groups was comparable.

None of the children had any history of speech and/or language delay impairment and their parents were not concerned about their language development.

All children were individually tested by two experimenters in a quiet room at school.

3.2. Material and procedures

The Dutch-speaking children were administered a Dutch translation of the Advanced Syntactic Test of Pronominal Reference-Revised (A-STOP-R) (van der Lely, 1997), the same test Marinis and Chondrogianni (2011) used. It comprises a booklet containing pictures to which accompanying bi-clausal sentences are read out by one of the experimenters. Children are asked to judge whether the sentence they heard matches the picture they see; thus, it is a PVT.

There are two monoclausal practice sentences, which all children answered correctly. The test consists of 96 test sentences. There are 16 conditions and six sentences per condition. Four conditions are control conditions containing the same sentence structure as the test sentences. In these control conditions one of the characters is male sporting a moustache and the other is female wearing a pink bow; children performed well (range of mean accuracy: 73.4%-94.2%). The 12 experimental conditions had three variables: matching (match, mismatch and mismatch-syntax), NP type (referential NP (NP) and quantificational NP (QP)), and anaphor type (reflexive, pronoun). The Mismatch-Syntax condition is not considered here.

Examples of the test sentences in the Mismatch condition are given in (22) – (25), (a) lists the Dutch examples and (b) the English ones.

(22) a. De krokodil zegt dat de leeuw zichzelf aanraakt.   [picture: lion touches crocodile]
    b. The crocodile says the lion is touching himself.
    Reflexive NP/Mismatch condition

(23) a. De krokodil zegt dat elke leeuw zichzelf aanraakt.   [picture: 3 lions touch crocodile]
    b. The crocodile says every lion is touching himself.
    Reflexive QP/Mismatch condition

(24) a. De kat zegt dat de hond hem aanraakt.   [picture: dog touches self]
     b. The cat says the dog is touching him
     Pronoun NP/Mismatch condition

(25) a. De kat zegt dat elke hond hem aanraakt   [picture: 3 dogs touch self]
     b. The cat says every dog is touching him
     Pronoun QP/Mismatch condition

4. Bilingual children's results

The bilingual children's performance on reflexives and pronouns was analysed separately using repeated measures ANCOVAs with the between factors Test Language (English, Dutch), and the within factors NP type (NP, QP) and Matching (match, mismatch). Since the Turkish-English bilingual children were significantly younger than the Turkish-Dutch bilingual children (mean ages: 7;9 vs. 8;3, $F_{(1, 70)} = 4.73$, $p = 0.033$), Age in Months was used as a covariate. Interactions were followed up using pairwise comparisons with Bonferroni correction. One-sample t-tests were used to ascertain chance level performance.

4.1. Reflexives

The ANCOVA revealed a main effect of Language ($F_{(1, 69)} = 16.92$, $p < 0.001$), a main effect of Matching ($F_{(1, 69)} = 4.83$, $p = 0.031$), an interaction between Language and NP type ($F_{(1, 69)} = 42.41$, $p < 0.001$), an interaction between Language and Matching ($F_{(1, 69)} = 20.25$, $p < 0.001$), an interaction between NP type and Matching ($F_{(1, 69)} = 5.42$, $p = 0.023$), and a three-way interaction between Language, NP type and Matching ($F_{(1,69)} = 12.25$, $p = 0.001$). Figure 1 shows the interaction between Language and NP type.

Since there was a main effect of and interactions with Language, the groups performed differently from each other in the interpretation of reflexives on all conditions. To trace the source of the interactions separate ANCOVAs were conducted for each group.
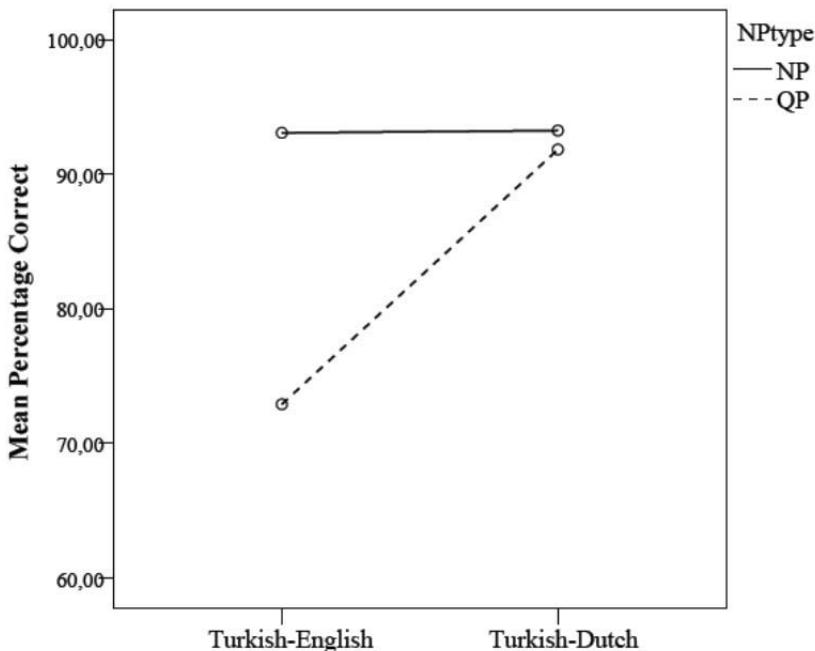

Fig. 1. The bilingual children's performance on the reflexives categorized by the independent variable NP type; match and mismatch conditions are collapsed. The covariate Age was evaluated at 7;11.

For the Turkish-Dutch bilingual children this resulted in no main effects and no interactions, meaning that they scored similarly on NPs and QPs and they showed comparable performance on matching and mismatching conditions. One sample t-tests showed no chance performance.

The Turkish-English bilingual children from Marinis and Chondrogianni (2011) showed a main effect of NP type (F (1, 38) = 98.50, p < 0.001), a main effect of Matching (F (1, 38) = 54.85, p < 0.001) and an interaction between NP type and Matching (F (1, 38) = 49.28, p < 0.001). The main effect of NP type showed that the children performed better on NPs than on QPs (mean accuracy: 92.7% vs. 72.6%, p < 0.001). The main effect of Matching indicated better performance in the match compared to the mismatch condition (mean accuracy: 93.4% vs. 72.0%, p < 0.001). The interaction was followed by pairwise comparisons which showed better performance in sentences with NPs compared to QPs in the match (mean accuracy: 96.6% vs. 88.9%, p = 0.002) and mismatch conditions (mean accuracy: 90.2% vs. 55.1%, p < 0.001). One sample t-tests showed chance performance in the QP/Mismatch condition: (t (38) = 1.46, p > 0.1).

4.2. Pronouns

The ANCOVA revealed a main effect of Matching (F (1, 69) = 10.45, p = 0.002) and a three-way interaction between Language, NP type and Matching (F (1, 69) = 8.27, p = 0.005). Figure 2 shows the interaction between Language and NP type.

As there was an interaction with Language, the groups diverged in their interpretation of pronouns. To trace the source of the interaction separate ANOVAs were conducted for each group.
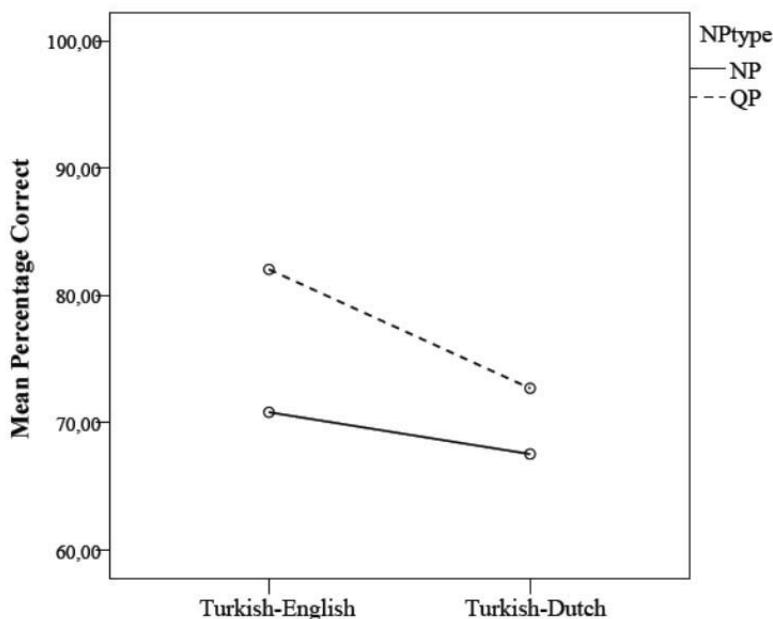

Fig. 2. The bilingual children's performance on the pronouns categorized by the independent variable NP type; match and mismatch conditions are collapsed. The covariate Age was evaluated at 7;11.

For the Turkish-Dutch bilingual children this resulted in a main effect of Matching (F (1, 32) = 68.73, p < 0.001) but no interactions. Pairwise comparisons showed that the children scored significantly better in the match compared to the mismatch condition (mean accuracy: 90.7% vs. 51.5%, p < 0.001). No significant difference between the NP and QP conditions was found. One sample t-tests showed chance performance in the NP/Mismatch (t (32) = 0.18, p > 0.4) and QP/Mismatch conditions (t (32) = 0.38, p > 0.3).

The Turkish-English bilingual children documented by Marinis and Chondrogianni (2011) displayed a main effect of NP type (F (1, 38) = 27.85, p < 0.001), a main effect of Matching (F (1, 38) = 86.80, p < 0.001), and an interaction between NP type and Matching (F (1, 38) = 6.39, p = 0.016). The

main effect of NP type indicated that there was a significant difference between the QP and NP conditions (mean accuracy: 81.2% vs. 70.1%, p < 0.001). The main effect of Matching reflected better performance in the matching compared to the mismatching conditions (mean accuracy: 94.2% vs. 57.1%, p < 0.001). Pairwise comparisons indicated better performance in sentences with QP compared to NP subjects in the matching (mean accuracy: 97.0% vs. 91.4%, p < 0.001) and mismatching conditions (mean accuracy: 65.4% vs. 48.7%, p < 0.001). One sample t-tests showed chance performance in the NP/Mismatch condition (t (38) = -0.3, p > 0.4).

5. Discussion

Regarding the research questions there were four important findings:

(i)   the Turkish-Dutch bilingual children just as the Turkish-English bilingual children showed target-like behaviour on the NP/Reflexive condition, unlike the Turkish-Dutch bilingual in the Aarssen and Bos' study (1999);

(ii)   the Turkish-Dutch bilingual children showed non-target-like behaviour on the NP/Pronoun conditions, similar to the Turkish-Dutch bilingual children in the Aarssen and Bos' study (1999) and to the Turkish-English bilingual children;

(iii) the Turkish-Dutch bilingual children show target-like behaviour on the QP/Reflexive condition, unlike the Turkish-English bilingual children;

(iv)   the Turkish-Dutch bilingual children showed non-target-like behaviour on the QP/Pronoun conditions, unlike the Turkish-English bilingual children.

The Turkish-Dutch bilingual children performed target-like on the reflexive conditions. In fact, they scored so well that these results challenge earlier findings by Aarssen and Bos (1999), who found that their Turkish-Dutch bilingual children, particularly the ones younger than 7;0, scored lower on the reflexives than on the pronouns. The present study could not find a main effect of age, meaning that the younger children patterned similarly to the older children. Therefore, the substantial difference between the present study and the one by Aarssen and Bos must lie in the methodologies used. It could be that the sentence structure, especially concerning the introduction of the two antecedents, was more transparent in the present experiment than in the Aarssen and Bos' study (cf. (16) and (17) to (22a) and (24a)).

The NP/Pronoun condition revealed non-target-like behaviour for both the Turkish-Dutch as well as for the Turkish-English bilingual children, particularly in the mismatch condition where both groups scored around chance. This behaviour has previously been found for Dutch and English monolingual children (see Section 2.2.1. for discussion and references). In the present study, as in most previous studies, this poor performance on the pronouns indicated a DPBE, because the bilingual children's performance on the NP/Reflexive condition was target-like. Although Aarssen and Bos (1999) also found non-target-like behaviour on the pronoun condition, it did not reveal a DPBE, since their participants' performance on the reflexives was also weak.

On the QP/Reflexive condition the Turkish-Dutch bilingual children outperformed the Turkish-English bilingual children. This cannot be due to the methodology, as the same test was used for both groups. According to Marinis and Chondrogianni (2011) the non-target-like behaviour of the Turkish-English bilingual children was a task-effect, as this condition required the demanding process of constructing a distributed reading. Yet, this explanation seems less likely in light of the present findings: the Turkish-Dutch bilingual children scored > 90% on this same condition. Consequently, the Turkish-Dutch bilingual children had no problem constructing a distributed reading, as was suggested for the English-speaking children. This matter will be discussed in more detail in Section 8.

Interestingly, the Turkish-Dutch bilingual children did not perform more target-like on the QP/Pronoun than on the NP/Pronoun condition, as the Turkish-English bilingual children did. In fact, the Turkish-Dutch bilingual children seemed to treat these antecedent types similarly; the QP antecedent did not aid interpretation. Therefore, the Turkish-Dutch bilingual children did not display a QA, which the Turkish-English bilingual children particularly showed in the mismatch condition.

Taken together these results can inform us about the possible influences from Turkish. On the one hand, the Turkish-Dutch and the Turkish-English bilingual children perform alike, because they both

display target-like behaviour on the NP/Reflexive conditions and non-target-like behaviour on the NP/Pronoun conditions. Their comparable behaviour could indicate consistent cross-linguistic influence from Turkish into Dutch and English – we will discuss this in more detail in Section 8. On the other hand, the Turkish-Dutch bilingual children perform differently from the Turkish-English bilingual children, because they diverge from each other in the QP/Reflexive and QP/Pronoun conditions. These contrary behaviours most probably point to different factors at play in Dutch from those in English. The suggested difficulty of constructing the distributed reading in the QP/Reflexive condition may well be less in Dutch than in English, leading to higher mean accuracy scores in Dutch than in English. For the QP/Pronoun condition a similar explanation related to the ease of creating a distributed reading in Dutch may well explain the different results in Dutch and English.

Before going into the question of possible cross-linguistic influence from Turkish into Dutch and/or English, we compare the bilingual results to their Dutch and English monolingual counterparts in the next section in order to investigate whether or not the bilingual children resemble their monolingual peers.

6. Dutch and English monolingual children

Part two of the present study investigates the interpretation of pronouns and reflexives in object position in bi-clausal sentences in a group of Dutch monolingual children, who were age-matched to the Turkish-Dutch bilingual children, reported in Sections 3 and 4. The differences and similarities between the Dutch monolingual and bilingual results are compared to the differences and similarities between the English monolingual and bilingual results (Marinis & Chondrogianni, 2011).

The questions we would like to address are: (i) whether the Dutch monolingual children show target-like behaviour on the QP/Reflexive condition, similar to the Turkish-Dutch bilingual children and unlike the Turkish-English bilingual children; (ii) whether the Dutch monolingual children show non-target-like behaviour on the QP/Pronoun condition, similar to the Turkish-Dutch bilingual children and unlike the Turkish-English bilingual children.

6.1. Participants

Twenty-nine typically developing Dutch monolingual children participated in the present study and thirty-three typically developing English monolingual children participated in the Marinis and Chondrogianni (2011) study. The bilingual children's details are listed in Section 3.1.

The Dutch monolingual children had a mean age of 7;0 (range: 6;3-9;1; SD = 9 months). The parents' social-economic status was similar to that of the Turkish-Dutch bilingual children's parents'. Further details of the Dutch monolingual children are recorded by van Koert et al. (submitted).

The English monolingual children had a mean age of 7;5 (range: 6;0-9;0; SD = 9 months). The social-economic status of both groups was comparable. Further details of the English monolingual children are documented by Marinis and Chondrogianni (2011).

None of the children had any history of speech and/or language delay impairment and their parents were not concerned about their language development. All children were individually tested by two experimenters in a quiet room at school. The materials and procedures are described in Section 3.2.

7. Comparison of the monolingual and bilingual results

The differences and similarities between the Dutch monolingual and the English monolingual children are discussed by van Koert et al. (submitted). This section compares the Dutch monolingual and bilingual results and contrasts these findings to the comparison between English monolingual and bilingual results made by Marinis and Chondrogianni (2011).[1]

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[1] The Dutch monolingual and bilingual children made a standardized vocabulary test but there was no significant difference between their scores (F $(1, 60) = 3.01$, p = 0.088).

7.1. Turkish-Dutch bilingual versus Dutch monolingual children

The Turkish-Dutch bilingual and Dutch monolingual children's performance on reflexives and pronouns was analysed separately using repeated measures ANCOVAs with the between factors Language background (L1, L2) and the within factors NP type (referential, quantificational) and Matching (match, mismatch). Since the Turkish-Dutch bilingual children were significantly older than the Dutch monolingual children (F (1, 60) = 26.71, p < 0.001), Age in Months was used as a covariate. Interactions were followed up using pairwise comparisons with Bonferroni correction. One-sample t-tests were used to ascertain chance level performance.

For the reflexives the ANCOVAs revealed no main effects and no interactions, indicating that both groups performed similarly in the interpretation of reflexives (mean accuracy: 96.6% for the Dutch monolingual and 92.1% for the Turkish-Dutch bilingual children) and that there was no difference between the matching or between the NP type conditions.

For the pronouns the ANCOVAs revealed a main effect of Matching (F (1, 59) = 7.61, p = 0.008) but, again, no main effect of and no interactions with Language background were found, meaning that both groups performed similarly in the interpretation of pronouns (mean accuracy: 76.5% for the Dutch monolingual and 68.8% for the Turkish-Dutch bilingual children). The main effect of Matching reflected better performance in the matching compared to the mismatching conditions (mean accuracy: 91.4% vs. 54.0%, p < 0.001). One sample t-tests showed chance performance in both groups in the NP/Mismatch (Dutch monolingual: (t (28) = 0.71, p > 0.2; Turkish-Dutch bilingual: (t (32) = 0.18, p > 0.4) and in the QP/Mismatch conditions (Dutch monolingual: (t (28) = 1.70, p > 0.05; Turkish-Dutch bilingual: (t (32) = 0.38, p > 0.3).

7.2. Turkish-English bilingual versus English monolingual children

The differences and similarities between the English monolingual and the Turkish-English bilingual children are reported by Marinis and Chondrogianni (2011). The main findings were: (i) on the QP/Reflexive condition, both groups performed at chance, revealing an inversed QA; (ii) on the QP/Pronoun condition, both groups performed target-like, displaying a QA.

8. Overall discussion

By comparing the Dutch monolingual children to the Turkish-Dutch monolingual children it was found that:

(i)   the Dutch monolingual and Turkish-Dutch bilingual children behave alike on the QP/Reflexive condition, i.e. both groups show target-like behaviour;

(ii)   the Dutch monolingual and Turkish-Dutch bilingual children both show non-target-like behaviour on the QP/Pronoun condition.

The same held for the Turkish-English bilingual children who in both conditions behaved like the English monolingual children. These results strongly suggest that there was no cross-linguistic influence from Turkish into either Dutch or English.

Section 5 revealed that the Turkish-Dutch bilingual children do not perform similarly to the Turkish-English bilingual children, particularly regarding the QP-antecedent conditions. At first sight this may have seemed surprising but when we took into account the monolingual data, we found similar patterns for the Dutch-speaking group on the one hand and the English-speaking group on the other.

These bilingual results lend additional support to the Collective Distributive Preference Hypothesis (CDPH) we postulated recently on the basis of monolingual findings (van Koert et al., submitted). We assume that children interpret reflexives and pronouns to be locally bound to their antecedents. This bound interpretation leads to a DPBE in the NP/Pronoun condition. For the QP/Pronoun condition a similar poor performance is expected based on the bound pronoun interpretation; however, whether or not the pronoun is interpreted as bound depends on the interpretation of the QP antecedent, according to the CDPH. If the QP antecedent receives a collective reading, the bound pronoun interpretation is cancelled, as a bound variable interpretation can only be induced if the QP takes a distributive reading.

Thus, the pronoun is not interpreted as locally bound and must refer to a non-local antecedent. Hence, a target-like performance will be found on the QP/Pronoun condition under a collective interpretation of the QP antecedent. Since English-speaking children are hypothesised to prefer a collective reading of the quantifier *every*, they are expected to perform target-like on the QP/Pronoun condition, which is what Marinis and Chondrogianni (2011) have found. On the contrary, the present study found poor performance by the Dutch-speaking children on the QP/Pronoun condition. If the QP antecedent receives a distributive reading, the bound variable interpretation is stimulated, thereby encouraging the child to interpret the pronoun as bound to its local QP antecedent. Hence, a distributive interpretation of the QP antecedent will result in non-target-like performance on the QP/Pronoun condition.

The same explanation holds for the reflexive conditions. If the QP antecedent receives a collective interpretation, the bound interpretation is cancelled, meaning that the reflexive should refer to a non-local antecedent. Thus, a collective interpretation of the QP antecedent will cause poor performance on the QP/Reflexive condition, which is what Marinis and Chondrogianni (2011) found for the English-speaking children.[2] Yet, the present study found target-like performance by the Dutch-speaking children on the QP/Reflexive condition. Since the Dutch-speaking children are thought to give a distributive interpretation to QP antecedents, they interpret reflexives to be bound to their local QP antecedents; hence, they show target-like performance on the QP/Reflexive condition.

8.1. The absence of cross-linguistic influence

It is generally assumed that for children growing up bilingually from birth cross-linguistic influence may appear in particular at the syntax-pragmatics interface under certain overlap conditions (Hulk & Müller, 2000, and subsequent work). In Dutch and English, local binding of reflexives is a purely syntactic phenomenon, where cross-linguistic influence is not expected to play a role. However, in Turkish, the interpretation of reflexives is not purely syntactic but operates at the interface of discourse and syntax (see Section 2.1.2). Therefore, *kendisi* 'self.3SG' could well be expected to influence *zichzelf* 'SE-self' or *himself* with long-distance binding of the reflexive being then possible in Dutch or English for Turkish bilingual children under the (negative) influence of Turkish. Although we did not find this for the Turkish-Dutch bilingual children, the problems the Turkish-English bilingual children had with local binding of the reflexive in the QP/Reflexive condition, making them accept long-distance binding of *himself*, could be reinforced under the influence of Turkish. Nevertheless, we saw that English monolingual children had as many problems on this particular condition, rendering an explanation of cross-linguistic influence less plausible. Further research into other language pairs is clearly necessary to tease apart instances of cross-linguistic influence from language-internal factors.

For Dutch and English, the interpretation of object-pronouns is at the syntax-pragmatics interface, because syntax is needed to rule out local binding and pragmatics is needed to arrive at the correct, or rather, most likely interpretation. For Turkish, the interpretation of object-pronouns is also at the syntax-pragmatics interface (see Section 2.1.2). Hence, the phenomenon and its interpretation overlap in the languages under consideration, which may facilitate acquisition for the bilingual children. It may well be that positive influence from Turkish causes them to perform similarly to their monolingual peers on object-pronouns.[3] The positive influence might even outweigh the fact that the bilingual children's input in Dutch/English is much more limited than the input monolingual receive, which would typically lead to a delay.

Future research should take into account the Turkish of these bilingual children in order to establish how they manage with the interpretation of reflexives and pronouns, compared to their Turkish monolingual peers. Such research allows us to obtain more insight in the role of cross-linguistic influence in this bilingual population with respect to these binding phenomena.

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[2] In addition, *himself* is ambiguous between denoting a reflexive and an intensifier meaning, which strengthens the disjoint reading of *himself* caused by the collective interpretation of the QP (van Koert et al., submitted).

[3] Marinis and Chondrogianni (2011) found that the Turkish-English bilingual children performed significantly less target-like on the NP/Pronoun condition than their monolingual peers. We did not find a significant difference between the Dutch-speaking children on this condition, which might be because Dutch monolingual children are delayed on the pronouns to such an extent that the Turkish-Dutch bilingual children have much time to catch up.

9. Conclusion

In this study we compared Turkish-Dutch bilingual children to Turkish-English bilingual children (Marinis & Chondrogianni, 2011) in their interpretation of reflexives and pronouns. We found that instead of patterning alike, due to their shared language Turkish, they diverged from each other but they did pattern like their monolingual peers.

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