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Distributing Preferences: Putting the Collective Distributive Preference Hypothesis to the test.

An experiment with Dutch children.

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Table of Contents

Abstract

Van Koert et al. (2014) recently proposed the Collective Distributive Preference Hypothesis which attempts to explain the differences between the effects of Quantificational Asymmetry for Dutch and English children. This hypothesis states that these differences in performance originate from a differing preference in interpreting the universal quantifier that is involved: Dutch children prefer a distributive interpretation while English children favour a collective interpretation. This thesis attempts to test the boundaries of this preference for Dutch children and use those data to try and determine a possible origin of this preference. It specifically tests the suggestion made by Van Koert et al. that it originates from the scope rigidity of the Dutch language.

The data suggest that, while universal quantifiers are indeed interpreted distributively, both existential quantifiers and conjoined subjects are interpreted collectively. This is especially surprising for the existential quantifiers, which would be expected to be interpreted in the same way as universal quantifiers. This thesis will therefore argue that the syntactic plurality of existential quantifiers and conjoined subjects makes it easier to interpret them collectively. It will be argued that this is semantically the interpretation that is easiest to access and is therefore able to override the preference for a surface scope interpretation that is generally quite prevalent in the Dutch language.

Keywords: Binding, collective interpretation, distributive interpretation, surface scope, pronouns, reflexives, quantifiers

1. Introduction

The acquisition of the binding principles is a central theme in children's linguistics. There is an ongoing debate revolving around children's ability to correctly link certain pronouns and reflexives to their respective antecedents. These processes are usually referred to as principle A, which relates to reflexives, and Principle B, which concerns pronouns. The difference between these principles can be demonstrated by means of the contrast between, for example, *John said Liam kicked him* or *John said Liam kicked himself*. In the first sentence, *him* refers to *John*, but not to *Liam*. In the second sentence, *himself* refers to *Liam*, but not to *John*. These elements are therefore in complementary distribution with each other, since it is not possible to both refer and not refer to both antecedents.

A main point of interest in this debate is the so-called Delayed Principle B Effect (DPBE). The DPBE states that in some languages, including both English and Dutch, there is a major discrepancy in children's performance on correctly identifying the antecedent for either a pronoun or reflexive. On principle A, pertaining to reflexives, children usually perform almost adult-like quite early, while for Principle B, pertaining to pronouns, this is a much slower process. The question that is often asked in this regard is why this is, and many potential answers have been formulated. However, some of these answers bring their own questions with them. Let me explain one of these questions, which is the subject of this thesis.

One of the major discoveries in the field is first reported by Chien and Wexler (1990), which has been termed the Quantificational Asymmetry (QA). In short, when the local subject of the pronoun is a quantifier, English children performed much more adult-like than when this subject is not quantificational. For example, on a simple sentence such as *The sheep said the cow kicked him* the children performed quite poorly. However, when the sentence was changed to *The sheep said every cow kicked him* the children's performance significantly increased. This effect was replicated multiple times (Thornston and Wexler 1999, Marinis and

Chondrogianni, 2011). A recent addition to this line of research came from Van Koert et al. (2014), which will be the foundation most of the research in this thesis continues to build upon. Van Koert et al. replicated experiments conducted by Marinis and Chondrogianni (2011) with Dutch children instead of English children and found that they reacted remarkably different to the involvement of quantifiers. Instead of improving on Principle B, they performed equally poor or even worse. And while the English children decreased in performance on Principle A when quantifiers were involved, the Dutch children performed equally well or even better.

There have been many previous attempts at understanding the behaviour of the English children, which will be outlined further in chapter 2. However, none of these theories explain the behaviour of the Dutch children. The only exception to this is the theory proposed by Van Koert et al. (2014). They explain this difference between English and Dutch children with the Collective Distributive Preference Hypothesis (CDPH). They hypothesized that English children favour a collective interpretation of universal quantifiers (their primary example was 'every') while Dutch children favour a distributive interpretation of that same universal quantifier (the Dutch translation 'elk(e)'). With no further research to base themselves on, they were only able to make a prediction as to where these preferences might have come from (p. 151). For Dutch, they theorized that perhaps the scope rigidity of the language played a role in a way that will be explained in more detail in section 2. In Dutch, the surface scope interpretation is often preferred and for sentences with quantifiers this incidentally means a distributive interpretation is preferred. This would predict that these preferences hold out on sentences with other type of quantified subjects such as 'twee' (English: two), but not necessarily for different kinds of semantically plural subjects such as the conjoined subject 'Frank en Bas' (Frank and Bas). This thesis will test this hypothesis and will argue that this cannot be the complete answer.

In this thesis, thirty normally developing children were tested via a picture selection task to see whether they indeed prefer a distributive reading of certain subjects. These subjects included universal quantifiers, existential quantifiers and conjoined subjects. The results show that while the distributive preference indeed strongly holds for the universal quantifiers, it does not hold for either the existential quantifiers or the conjoined subjects. The results of the existential quantifiers, in this paper the numeral 'twee' (English: two), are surprising in the light of the predictions made by Van Koert et al., since they are scope-taking elements in the exact same way as universal quantifiers are. This means that either Van Koert et al.'s theory is incorrect or there is some other preference that is interfering. This thesis will pursue this second line of thought and will argue that it is in fact the match of semantic and syntactic plurality of both existential quantifiers and conjoined subjects that makes them easier to interpret collectively. Based mainly on research by Schmitt (2017) and colleagues, this preference to combine the semantic and syntactic plural into a single collective interpretation is able to overrule the preference for a surface scope reading suggested by Van Koert et al.

This thesis will be organized as follows. The next chapter outlines the background of this body of research. To properly examine the origins of the CDPH and its relevant ideas, this paper will take a step back to paint a complete picture of the debate surrounding the acquisition of the binding principles and the workings of QA. In the third chapter the exact methodology used for the experiment will be set out and the choices that were made will be justified. The fourth chapter contains a detailed outline of the results and statistical analyses that were performed on those results. In the fifth chapter then, a discussion will be presented as to the potential origins of the aforementioned preferences. The paper will end with a conclusion with suggestions for further research.

2. Background

The origin of the Collective Distributive Preference Hypothesis lies in the issue of children's acquisition of binding principles. The relevant part of binding in the context of this paper is that of reflexives and pronouns and the related Principle A and Principle B. Binding Principle A effectively states that a reflexive must always be locally bound. This means that the antecedent of any given reflexive must c-command[1] its reflexive and in simple cases will usually mean the antecedent and the reflexive are in the same clause (Chien and Wexler, 1990, p. 229). This is an example used in Chien and Wexler (1990, p. 230):

(1) Mary_i says [that [Sarah_j's mother]$_k$ hit $\text{herself}_{*i/*j/k}$].

(2) Mary_i says [that [Sarah_j's father]$_k$ hit $\text{herself}_{*i/*j/*k}$]

Both sentences contain three possible antecedents, namely *Mary*, *Sarah* and *Sarah's mother*. Principle A states that *Sarah's mother* is the only potential correct option. While *Mary* c-commands the reflexive, it is not a local antecedent since it occurs in a different clause. *Sarah* is local, but it does not c-command *herself*. The only option that fully complies with Principle A is *Sarah's mother*. This means that in sentence (2) the only option would be *Sarah's father*. However, this is ungrammatical because *Sarah's father* does not carry the same gender features as the reflexive *herself*, making it impossible for this sentence to be grammatical.

In general, children perform relatively adult-like on Principle A, both in free speech (Bloom et al, 1994) and controlled experiments (Grimshaw and Rosen, 1990). This means that they are able to correctly bind *herself* to its proper antecedent and only rarely allow a sentence like in (1) to mean that either Mary or Sarah hit herself. This is the case from a

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[1] C-command is a relationship between nodes in a syntactical tree construction. Node A of a tree C-commands node B if the first branching node that dominates node A also dominates node B. In layman's terms: If you go one step up from node A, and are then able to reach node B by only going down from then on, A c-commands B.

relatively early age and in multiple languages, including both English and Dutch (Koster, 1993, Philip and Coopmans, 1996, both qtd. in van Koert et al. 2014).

Principle B is a similar type of rule that concerns pronouns instead of reflexives. Principle B states that, in contrast to reflexives, pronouns should not be locally bound. This effectively means that a pronoun can only refer to a non-local c-commanding antecedent, or a non-c-commanding antecedent. An example can easily be formed by replacing the reflexive in example sentence (1) by a pronoun:

(3) Mary$_i$ says [that [Sarah$_j$'s mother]$_k$ hit her$_{i/j/*k}$].

This sentence contains two potential binding relations: *her* can either refer to *Mary,* which c-commands the pronoun and is not local to it, or *her* can refer to *Sarah,* which is local to *her* but does not c-command it. There is even a third option in which *her* refers to an antecedent that is sentence external. Imagine for example sentence (3) being preceded by a phrase such as 'Lisa has a bruise on her arm', so this makes a sentence like (3) potentially ambiguous in three ways. It is however impossible for her to be bound to *Sarah's mother* since it both c-commands *her* and is local to it because they are in the same clause together.

Compared to Principle A, children from certain language backgrounds appear to struggle with Principle B until they are much older (For English: Chien and Wexler, 1990, Grimshaw and Rosen, 1990, Grodzinsky and Reinhart, 1993 and for Dutch: Koster, 1993, Philip and Coopmans, 1996, both qtd. in van Koert et al., 2014). This means that they will at chance level accept sentence (3) with the interpretation that Sarah's mother hit herself. This difference in learning speed of the two principles is often described as the Delayed Principle B Effect (DPBE). This effect has been found in multiple languages, including again English (Chien and Wexler, 1990, Grodzinsky and Reinhart, 1993) and Dutch (Koster 1993, Philip and Coopmans 1996 as qtd. in Rooryck and Vanden Wyngaerd, 2013). However, an

interesting side note is that this effect does not occur in the learning of all languages, and children learning languages like Italian (McKee 1992, as qtd. in Rooryck and Vanden Wyngaerd, 2013) and French (Hamann, Kowalski and Philip 1997, Hamann 2002, both qtd. in Rooryck and Vanden Wyngaerd, 2013) have been shown to not show this delay.

One of the most influential attempts at trying to understand the DPBE was coined by Chien and Wexler. Their experiments discovered a phenomenon called the Quantificational Asymmetry (QA). This phenomenon was later confirmed by both Thornston and Wexler (1999) and Marinis and Chondrogianni (2011). QA is the name for a phenomenon that occurs when English children are presented with sentences such as (3), which instead contain a quantified subject, such as in (4), their performance on correctly interpreting such sentences significantly improves.

(4) The dog says every cat is tickling him.

While this sentence still requires the correct appropriation of principle B, as in sentence (3), English children's performance increases significantly on these types of sentences (Chien and Wexler, 1990, Thornston and Wexler 1999, Marinis and Chondrogianni, 2011). In Chien and Wexler's experiments this concretely meant the following. Children were asked something about a picture. The question would either contain a pronoun and a name, a pronoun and a quantifier, a reflexive and a name or a reflexive and a quantifier. An example could be *Is Mama Bear touching her?* and the children were shown a picture of Goldilocks and Mama Bear, where Mama Bear is touching herself. The correct answer would obviously be 'no' in this case, and only these mismatch conditions were in the end considered by the experimenter to avoid a 'yes-bias', an effect where children prefer to say yes, in order to agree with an adult (McKee 1992, as qtd. in Van Koert et al. 2014). When the question was asked as in the example, children between 5 and 6 rejected it only around 50% of the time. However, when the question was asked 'Is every bear touching her?' and a picture was shown

that contained Goldilocks and three bears who were all touching themselves, children between 5 and 6 correctly rejected this sentence about 84% the time, seemingly performing much better on this task that required equal knowledge of principle B.[2]

Another interesting effect of QA is that performance levels in the supposedly easy sentences with Principle A actually go down, whereas performance levels go up in the sentences that require the appropriation of the apparently difficult Principle B. Children perform only at chance level in 'easy' cases that require them to correctly bind a reflexive (Principle A) when a quantified subject is introduced. In Chien and Wexler's experiment, when children were asked 'Is Mama Bear touching herself', but shown a mismatching picture where Mama Bear was in fact touching Goldilocks, children between 4-5 correctly rejected this around 67% of the time, but the question 'Is every bear touching herself?' when showing three bears touching Goldilocks was rejected only around 41% of the time by that same age group.

Chien and Wexler's explanation for these results is that children do in fact have an innate knowledge of both Principle A and Principle B. The reason they perform poorly on Principle B in the non-quantifier condition is caused by the lack of a certain pragmatic principle. They use the following example to explain this (p. 256):

(5) He's wearing John's coat. Therefore, he must be John.

In the second sentence of this example, *he* and *John* are logically co-referential. This thus seems to show that in some cases a pronoun can have a local, non-c-commanding referent.[3] The grammar itself appears to allow this binding relation in fringe cases. This makes Principle

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[2] The methodology of Chien and Wexler has been subject of some scrutiny concerning how reliable it is, but repeated experiments have been able to reliably produce the same results. See i.a. Elbourne (2005) and Van Koert et al. (2014) for a more detailed discussion.

[3] This is technically a violation of the so called Principle C because *John* is bound by *he*, and not the other way around. Principle C roughly states that proper nouns such as names should be free, they cannot be bound. In any case the example shows that non-reflexives can sometimes break de binding principles.

B potentially ambiguous in its possible referents and not as strictly limited to the constraints that were described before. Chien and Wexler claim that adults have learned a certain pragmatic principle, which they call Principle P, that causes us to use reflexives for local antecedents and pronouns for non-local ones in general cases. Their explanation for children's poor performances on principle B is thus that children are not yet familiar with this pragmatic principle.

What does not follow from this explanation, however, is the fact that children perform worse on the reflexive-quantifier conditions. Chien and Wexler suggest in their appendices that especially younger children do perhaps not yet fully grasp the concept of quantifiers (p. 289 and following). This faces two problems, however. Firstly, how come this difficulty only surfaces in the reflexive condition and not in the pronoun condition? Quantifiers seem to actually facilitate the understanding of pronouns rather than making things difficult, which would be strange if quantifiers were indeed just difficult items for these children to understand. And secondly, the experiments by Van Koert et al. (2014) show that Dutch children react very differently to quantifiers, which suggests even more that the quantifiers themselves are not necessarily the deciding element.

Van Koert et al. (2014) discovered this by repeating the experiments of Marinis and Chondrogianni (2011) with Dutch children instead of English children and the results were surprising. Dutch children ended up scoring much lower on the critical QP-pronoun condition, which concerned sentences containing a quantified subject and a pronoun, while scoring significantly better on the QP-reflexive condition, containing sentences with a quantified subject and a reflexive. This raises two questions. First, if the quantifier/pronoun condition turned out to be relatively easy for English children, why do these Dutch children struggle with it so much? And second, how come the Dutch children perform so well on the quantifier/reflexive condition, in contrast to the English children? These unanswered

questions mean that Chien and Wexler's conclusion leave to much unaccounted for the be the complete answer.

Van Koert et al. came up with a potential answer to these questions: the so-called Collective Distributive Preference Hypothesis. This hypothesis states that English and Dutch children have different preferences when it comes to interpreting universal quantifiers. While Dutch children prefer a distributive reading, English children favour a collective interpretation. They explain this difference in preference as follows (Van Koert et al., 2014, p. 148):

(6)   a. All men are carrying a piano upstairs.

         b. All men are carrying his piano upstairs.

(7)   a. Each man is carrying a piano upstairs.

         b. Each man is carrying his piano upstairs.

Sentence 6a will usually receive a collective meaning. Because of the object, sentence 6 almost automatically implies a collective event, which gives this sentence the meaning that there is only one 'carrying event' in which all men participate. Sentence 7a however only has a distributive reading, because of the quantifier 'each', which only ever gets a distributive meaning. This sentence can therefore only have the meaning of the unlikely scenario in which every man is carrying a piano upstairs by himself, implying an equal amount of carrying events as there are men. If each of these sentences instead contained a pronoun, rather than a reflexive, as in 6b and 7b, this does not change the interpretation of the sentences. In 6b the pronoun seems to refer to some sentence external referent, making it possible to retain the collective interpretation. In contrast, in 7b *his* gets bound by the subject *each man* which thus retains its distributive meaning. In other words, to get a certain interpretation of a pronoun, a different binding relationship has to be formed.

Let us now turn to the quantifiers used in the experiments, namely the English 'every' and the Dutch translation 'elk(e)'.[4] Van Koert et al. suggest that the assumption that children prefer a certain reading could potentially explain both the poor performance on the QP-pronoun condition from Dutch children as well as the improved performance of English children. Let us explore this hypothesis by taking another look at example sentence (4):

(4)   The dog says every cat is tickling him.

        De hond zegt dat elke kat hem kietelt.

This sentence would normally be a typically difficult Principle B-sentence. However, English children perform rather well on these types of sentences. To correctly reject sentence (4) when the picture shows every cat scratching himself, an English child would need to not allow *him* to refer back to the quantified subject *every cat*. Whether this is possible or not depends on the interpretation of the sentence. If an English child prefers a collective interpretation of the quantifier, rejecting sentence (4) as a description of a picture in which a cat is scratching himself becomes quite logical. After all, a collective interpretation would require the pronoun not to be locally bound. A Dutch child, who prefers a distributive reading, would more easily allow *him* to be bound by the local quantified subject *every cat* since it gives him the preferred distributive interpretation.

A consequence of this analysis is that Dutch children can apparently override Principle B, and allow 'him' to have a local, c-commanding antecedent. If Principle B is taken to be an innate principle, this is rather unexpected. Van Koert en al. account for this by assuming the analysis of Spenader, Smits and Hendriks (2009). This analysis claims that reflexives and pronouns are in fact handled the same syntactically and both can in principle be locally

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[4] 'Every' can also be translated with 'ieder(e)', which according to the literature is synonymous in meaning to 'elk(e)' (Drozd and van Loosbroek, 2006; Philip, 2005; van der Ziel, 2008, 2011, all qtd. in Van Koert et al., 2014). However, both adults and children prefer 'elk(e)' in production (Hendriks et al., 2012).

bound. Spenader et al. assume an explanation in which a pragmatic principle blocks the use of pronouns whenever a reflexive can be used. This would mean that a pronoun can, syntactically, be bound to a local antecedent. A Dutch child would therefore not be blocked in his interpretation of *him* (hem) being bound to *every cat* (elke kat) if it ignores the pragmatic constraint. The same is true for an English child but this effect only shows up if the antecedent for a pronoun is non-quantificational. Since ignoring this constraint would give the sentence a distributive meaning, a Dutch child will prefer this option and interpret the sentence as if every cat is scratching himself.

These preference differences raise the question where they originate from. As van Koert et al. state, a complete answer to this would require further research. However, they do mention two factors could play an important role. Firstly, Dutch is a scope-rigid language (Van Koert at al, 2014, p. 151). This means that the surface order of a sentence generally determines the meaning of any sentence. A sentence such as 'Elke man heeft een paard' (Every man owns a horse) will practically always mean that for every man it is such that he owns a horse. The collective reading, in which there is one horse such that every man owns it, can be taken to follow from the inverse scope reading. However, in Dutch this inverse reading is practically unavailable and almost never used in this way. This preference in the input could very well create a bias for such a distributive interpretation. Since 'Elke' c-commands 'een paard' and thus takes scope over it on the surface level, the scope rigidity of Dutch will almost exclusively give sentences like these a distributive interpretation. A child could then quite easily carry this rigidity over to sentences like in (4) and thus come to a distributive reading, with 'elke + noun' taking scope over 'hem'. The other factor Van Koert et al. mention pertains to the English children. The English preference for a collective interpretation is connected to the existence of the English pronoun 'each'. This pronoun has a very clear distributive meaning and a distributive meaning only. Novogrodzky et al. (2012, as qtd. in

Van Koert et al.) suggest that English children start out without a complete interpretation of both 'each' and 'every'. They then show that when children start to grasp the distributive meaning of 'each' they also increase in their collective interpretations of 'every', suggesting that perhaps the existence of a specific distributive quantifier makes them believe 'every' is its collective counterpart. This could thus mean that they believe 'every' to only have a collective meaning and interpret sentences that contain 'every' in this way, which then happens to increase their performance on Principle B.

For reflexives the situation is a little more complicated. The Dutch children act almost precisely in the way that was expected. Considering they prefer a distributive interpretation and thus want to bind the reflexive locally, they only need to stick to that. The expectations are borne out, since Dutch children perform very well on this condition. While it might now also seem logical that English children perform relatively poor, this is not quite the case. An example could be the following sentence:

(8) The sheep says that every bear is tickling himself.

The English children may not necessarily like to have the local QP-subject as the antecedent, but it seems better than the alternative. In sentences without a QP, English children hardly ever show that they might be able to bind reflexives over clause boundaries, so the fact that they accept a picture of all the bears tickling the sheep when hearing sentence (8) is rather surprising. To explain this discrepancy, Van koert et al argue that 'himself' might actually not function as a reflexive altogether, but is instead interpreted as a pronoun *him* plus the intensifier *self*. The full explanation is outside the scope of this thesis as its focus lies on Dutch children, but a more detailed account of this can be read in Van Koert et al. section 5.3 (page 150).

So far, it would seem as if the existence of a preference for either a distributive or collective interpretation could be used to explain differences between the Dutch and English manifestations of the QA. The CDPH seems to neatly capture the facts of these differences and a logical next step seems to determine the origin of these preferences. The current research will try to take a first step towards answering this question. Van Koert et al. (2014) suggest the interpretation of 'elke' makes all the difference here, and so far only sentences with the ambiguous quantifiers 'every' and 'elk(e)' have been analysed. This research will test two new types of sentences on Dutch children to see where the suggested distributive preference might be coming from. Both of these new types of sentences contain objects that are semantically plural, but different from the universal quantifiers in specific ways. The answers suggested by Van Koert et al. seem to argue that these preferences would only appear in quantifiers. After all, they claim that English children have a collective preference for 'every' because of the existence of 'each', while Dutch children prefer a distributive interpretation because of the scope rigidity of their language. Both of these predictions could only hold as long as these preferences are unique to quantifiers. If they are more general, the scope rigidity cannot be the only reason for the preference in Dutch since not all elements take scope in the way quantifiers do. If the preference were to extend to more than just universal quantifiers in English, this could mean that the existence of a distributive quantifier has an effect on the whole language. However, this does seem somewhat unlikely and is also beyond the scope of this research.

The new sentences are of the following types:

(9)   Twee   mannen   bouwen   een   huis.

        Two   men   build   a   house.

        'Two men build a house'

(10) Frank en Bas bouwen een huis.

Frank and Bas build a house.

'Frank and Bas build a house'

Sentences like (9) contain an existential quantifier instead of a universal quantifier. An existential quantifier can take scope over and under indefinites in the same way universal quantifiers can, so given Van Koert et al.'s theory about the rigidity of Dutch, these sentences are not expected to behave all that different. The conjoined DP's in sentence (10) however make for a very different element. It is no longer a quantifier at all and simply a semantic plural. This means it cannot take scope in the way quantifiers do and there is no reason to expect a distributive preference caused by the scope rigidity of Dutch. In total, the three elements will each have their own specific properties: [+Q(uantificational) +U(niversal)] for 'elke', which is the condition that has been previously tested, [+Q -U] for 'twee' and [-Q -U] for the conjunctions.

The results of this research could have some very interesting ramifications. If it were to turn out for example that Dutch children only stick to their distributive preference for the universal quantifier sentences, then this raises the question why such a preference has manifested itself in only one specific area of the language. The suggestion by Van Koert et al. was that the Dutch scope rigidity could perhaps be the cause of such a preference, but if this turns out not to hold in sentences with an existential quantifier in its subject, this suggestion does not seem tenable in its current form anymore. After all, the scope of a quantifier as in *Two men own a car* is no different from the quantifier in a sentence such as *Every man owns a car*. If the preference were to extend to these existential quantifiers, this could suggest Van Koert et al. to be on the right track, since the scope relation, as mentioned, is no different and a similar kind of preference could thus be expected. The existential and universal quantifiers both interact with scope rigidity in the same way, so a difference in interpretation would then

be strange. The [-Q, -U]-subjects are different in that they are no longer quantifiers at all, they are simply a semantic plural. If the preference were to hold in these cases as well, then it cannot be the case that quantifiers are the deciding element. This would suggest that all semantically plural elements evoke a distributive preference and at that point the suggestion by Van Koert et al. would no longer be fully tenable.
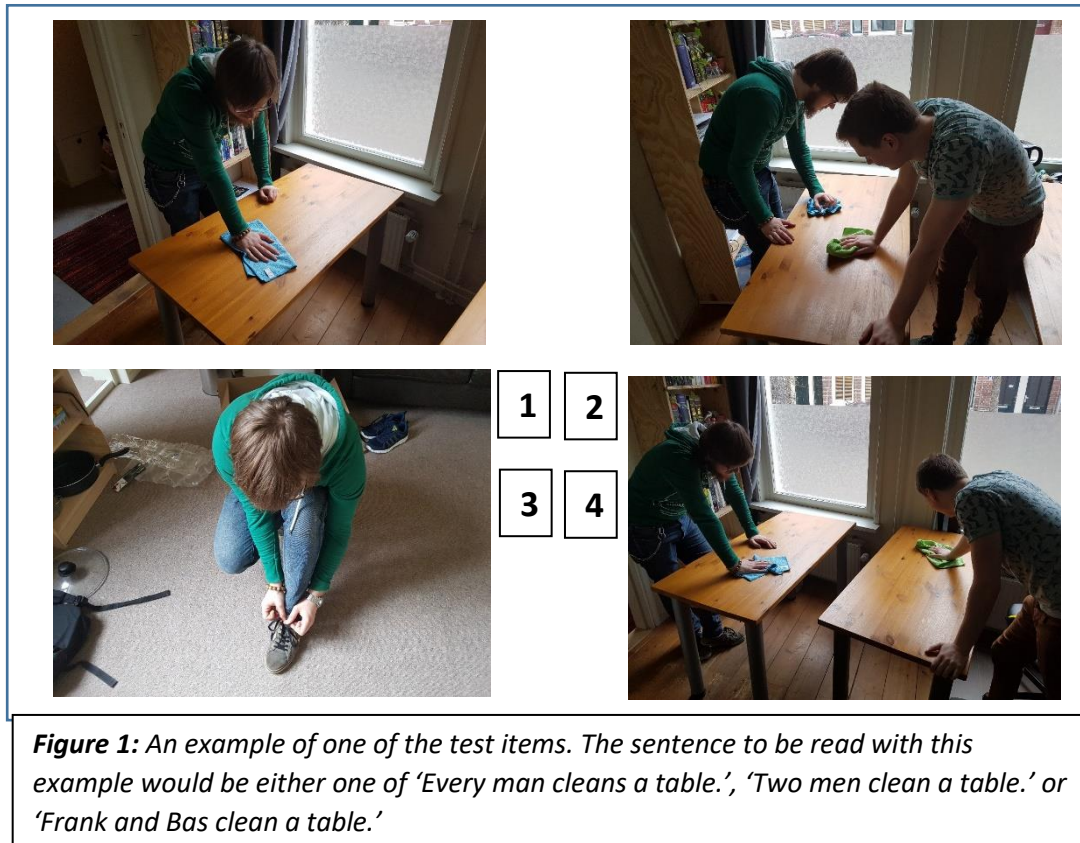
3. Methodology

This study will attempt to take a first step towards the origin of the distributive preference for Dutch children by trying to establish what types of subjects induce this preference. To achieve this, an experiment was conducted where two additional conditions will be tested in addition to the one with a universal quantifier, to see what contexts conform to this preference, and which do not. A group of Dutch monolingual children were tested via a picture-selection-task to attempt to discover a preference in these new conditions. The question that this experiment will try to answer is thus: does the distributive preference Dutch children have in sentences with universal quantifiers persist with other semantically plural subjects?

Thirty typically developing Dutch monolingual children ranging from 6;4 (six years and four months old) to 10;3 years old were selected for this experiment. The mean age of the group was 8;2 (SD: 1:5,55 year). An attempt was made to make a clear differentiation between a younger and older age group, which means there was a gap around the age of 8. The range of the younger group in the end came down to 6;4 to 7;3 with a mean of 6;9 (SD: 4,26 months), while the older group ranged from 8;7 to 10;3 with a mean of 9;7 (SD: 5,46 months). These ages were based on the previous studies by Van Koert et al. (2014) and Marinis and Chondrogianni (2011). The children all came from a school in Veghel, Noord-Brabant, the Netherlands and were tested by a single experimenter in a quiet room at their school.

The children were administered a picture selection task made by the author himself. The children were presented with a sentence and four pictures and were then asked to choose the picture they thought best matched the situation described by the sentence. In the experimental conditions, they were shown one picture that did not have anything to do with the sentence, one picture in which a single person was performing the action and two pictures where two people were performing the actions. In one of these they would be acting

collectively, for example cleaning a single table together, and on the other they would be

acting individually, where every man cleans his own table. In the control sentences the

pictures would consist of four random pictures, one of which would then match the spoken

sentence. All of the pictures were made specifically for this experiment.

Figure 1: An example of one of the test items. The sentence to be read with this example would be either one of 'Every man cleans a table.', 'Two men clean a table.' or 'Frank and Bas clean a table.'

The sentences contained a critical subject, a verb and an object. The verbs and object

were chosen carefully to be as neutral as possible, and not contain any collective or

distributive bias. A verb like 'carry' is an appropriate choice in this regard, since carrying is

an action you could perform on your own, but could easily be done by two people together as

well. A verb like 'read' works less well in this regard. While people could be reading

something together, there is a definite chance that the verb evokes a distributive preference,

since reading is generally done alone. The same level of care applies to the objects. While

carrying a chair is ambiguous, as this could be done alone or by two people together. It seems

unlikely that two people would each carry their own piano.

The three experimental conditions were built up in the following way. Twelve verbs and objects were collected as test items and were then matched with the three relevant subjects. A full list of the items is included in Appendix A, but the general idea is as follows:

(11)   Elke   man   draagt een   stoel   naar   boven.

Every   man   carries a   chair   to   upstairs.

'Every man carries a chair upstairs.'

(12)   Twee   mannen   dragen   een   stoel   naar   boven.

Two   men   carry   a   chair   to   upstairs.

'Two men carry a chair upstairs.'

(13)   Frank   en   Bas   dragen een   stoel   naar   boven.

Frank   and   Bas   carry   a   chair   to   upstairs.

'Frank and Bas carry a chair upstairs.'

There were also two types of control sentences. These control conditions either contained a singular subject 'Bas', which was one of the two recurring characters, or was a completely irrelevant type of sentence, mostly having a certain object such as 'car' or 'ball' as the subject.

At the start of the experiment, two recurring characters were introduced, namely Frank and Bas, two generic Dutch names. They would be the subject in the conjunction-sentences and one of them, namely Bas, would also feature in half of the control sentences that used a singular character performing certain actions. After this the participants would get two practice trials, which consisted of four pictures collected from a database of royalty free images. The experimenter would present the children with the four pictures and subsequently read out the sentence. The child would then reply by saying the respective number or simply point to the picture of his or her choice. The experimenter then confirmed the relevant number

and wrote it down on a piece of paper, before continuing on to the next item. If a child decided to change its mind before the picture was taken away the experimenter would repeat their new choice and then write this down. Occasionally a child would ask for the repetition of a sentence and this would be provided once. However, no situation occurred in which a child requested more than one repetition.

The choice was made to show each child only one condition of each verb. This meant the child was only faced with either the sentence containing 'elke', the sentence containing 'twee' or the sentence containing 'Frank en Bas', for any particular verb. This design was chosen for the following reason: if a child saw a certain verb twice, it might be inclined to give the first sentence a certain interpretation and then simply stick to it when it occurred again. If a child was faced with for example 'Two men clean a table' and interpreted this as a collective sentence, he or she might simply return to this interpretation when faced with 'Frank and Bas clean a table'. This potential influence on the child's actual initial idea about the specific sentence would therefore be eliminated. The downside of this approach is the fact that no single child will be faced with every sentence. There is therefore no direct comparison of the answers of a single child. Instead, the children's answers were taken together, giving an overall percentage of preference per condition. Apart from the change of subject in the experimental conditions, the three lists used were completely identical. If a child failed to give a correct answer on the control items in more than 10% of the cases he or she would be excluded from the trial. This was not the case for any of the children.

4. Results

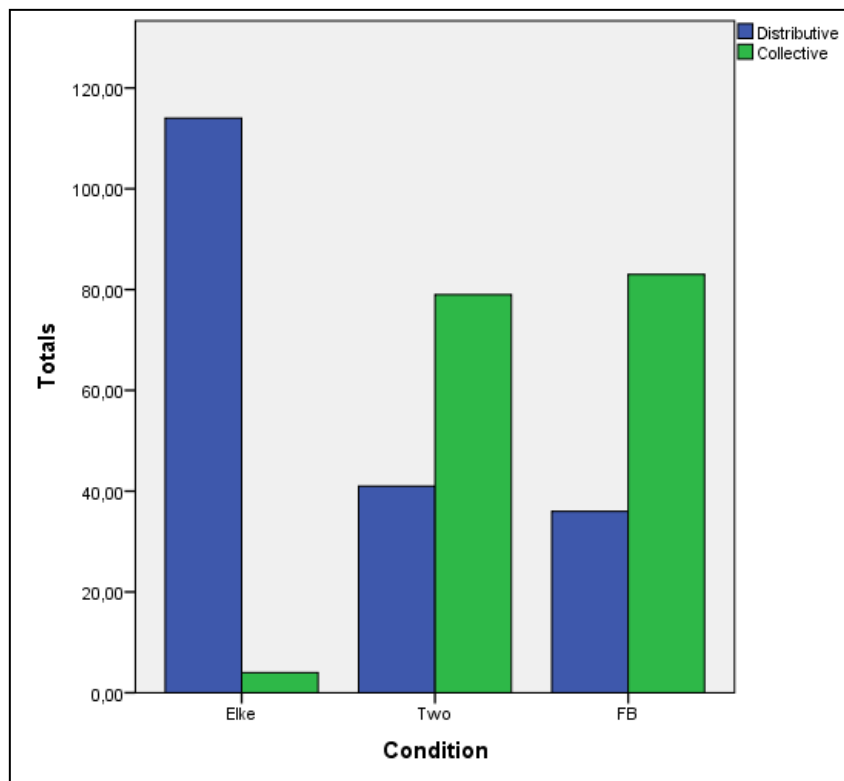The full results of the experiments were as follows:

Figure 2: The full test results. Each bar shows the total amount of answers given per condition, per interpretation.

This chart shows the total amount of answers the children gave per condition. As explained in the methodology chapter, each child was faced with twelve experimental items in total, four per condition. In total, since there were thirty children, this means there are 120 answers per condition. In total, there are three answers not included in this figure. In the full 360 critical conditions presented to these children, on three occasions they selected neither the collective nor the distributive interpretation, but the picture of the person acting alone. This happened twice on an 'elke' (each) trial and once on a 'Frank en Bas' trial. Considering this happened in less than 1% of the trials this can reasonably be ascribed to simple performance errors and they were not included in the chart.

Figure 2 shows the total amount of answers. For the sentences with the universal quantifier 'elke' children chose a collective picture 114 out of the total 120 times. 25 of the

children only chose distributive pictures when faced with sentences with 'Elke man' as the subject and none of them chose more collective pictures than distributive pictures. Only four times was a collective picture chosen and the other two instances were, as mentioned, instances where the children chose a single person acting out the action. In the sentences with the existential quantifier 'twee', children chose a distributive picture 41 out of the total 120 times. The remaining 79 choices were all collective. Nine children chose only collective answers and another seven chose collective answers three out of four times. Only six children chose more distributive than collective pictures but none of them picked exclusively distributive pictures. Finally, in the sentences with the conjoined subject 'Frank en Bas' a distributive picture was picked only 36 out of the total 120 times. 83 times the children chose a collective picture and once a child picked an image where a single person was performing the action. Nine children chose only collective pictures in this condition, and another seven picked collective answers three times out of the possible four. Only two children chose more distributive than collective answers and neither of them chose exclusively distributive answers. Looking at all of the answers, combined with the performance of the control sentences, there was no need to remove any of the test subjects from the data set. In total there were only three performance errors spread over three children who performed perfectly logically otherwise.

The complete numbers have all been compiled into the following table:

Table 1: *The complete numberset.*

Subject	Elke man	Twee mannen	Frank en Bas
Total distributive answers	114	41	36
Total collective answers	4	79	83
Percentage of distributive answers	95%	34,2%	30%
Percentage of collective answers	3,33%	65,8%	69,2%
Percentage of children with more distributive than collective answers	96,7%	20%	6,7%
Percentage of children with more collective than distributive answers	0%	53,3%	53,3%

95% of the sentences with 'Elke man' as the subject were interpreted distributively. Within this, 83,3% of the children chose exclusively distributive pictures and 96,7% of the children chose more distributive answers than collective answers. For sentences with the subject 'Twee mannen' (Two men) only 34,2% of the sentences were interpreted distributively and 65,8% of the sentences were interpreted collectively. 53,3% of the children chose more collective than distributive pictures and only 20% chose more distributive than collective pictures. Finally, for the conjoined subject 'Frank en Bas' a sentence was interpreted distributively in only 30% of the cases with 69,2% of the sentences receiving a collective interpretation. Again, 53,3% of the children chose more collective than distributive pictures but this time with only 6,7% of children choosing more distributive than collective pictures.

A dependent T-test was performed on each of the conditions to see whether there was a significant difference between the mean number of distributive answers versus the mean number of collective answers. This was the case for all three conditions. For the [+Quantifier

+Universal]-condition ([+Q, +U], elke), considering the means of the two conditions (3,8

answers for distributive and 0,13 for collective) it can be concluded that there were

statistically significantly more distributive answers than collective answers (p < 0,0005). In

the [+Q, -U]-condition (twee), considering the means of the two conditions (1,367 for

distributive and 2,633 for collective) it can be concluded that there were statistically

significantly more collective answers than distributive answers (p = 0,005). Finally, for the [-

Q, -U]-condition (Frank en Bas), considering the means of the two conditions (1,2 for

distributive and 2,767 for collective) it can be concluded that there were statistically

significantly more collective answers than distributive answers (p < 0,0005).

Additionally, a one-way ANOVA was run to check for differences between the

conditions. The One-Way ANOVA determined that there was a statistically significant

difference between the groups (F(2,87) = 81,107, p < 0,0005). A Tukey post hoc test revealed

that there was a significant difference between the [+Q, +U]-condition and both of the other

conditions (both p < 0,0005). However, the difference between the [+Q, -U]-condition and the

[-Q, -U]-condition was not significant (p = 0,793). Within this ANOVA a test group was

added which scored perfectly ambiguous, and both the [+Q, +U]-condition (p < 0,0005), the

[+Q, -U]-condition (p = 0,01) and the [-Q, -U]-condition (p = 0,001) differed significantly

from this group.

5. Discussion

The data shows that each of the three conditions contain a statistically significant preference. For the 'Elke'-condition (every, henceforth E-condition) this preference is impressively distributive. This is both as expected and as previously tested (Van Koert et al. 2014). On both the 'Twee'-condition (two, henceforth T-condition) and the 'Frank en Bas'-condition (Frank and Bas, henceforth FB-condition) the preferences are in fact collective. This chapter will examine all of these results in detail.

First, the E-condition behaved as was expected. The prediction that was made by Van Koert et al. was borne out with almost perfect accuracy and the Dutch children chose the distributive interpretation with overwhelming preference. This was the condition that Van Koert et al. (2014) made the strongest predictions for, since their own test material only contained this type of quantifier. It therefore matches with their test results and validates them further. Since the distributive preference now seems to be established, this is in line with the Collective Distributive Preference Hypothesis as proposed by Van Koert et al.

The T-condition however, behaved rather differently. It turned out that the children in fact had a collective preference rather than a distributive preference. This result is somewhat surprising in the light of the predictions made by Van Koert et al. (p. 151). Van Koert et al. suggests the scope rigidity of Dutch as perhaps the cause of the preferences, but these numerals are also a scope taking element, just like universal quantifiers are. Since both of these items are quantifiers, 'elke' being a universal quantifier and 'twee' being an existential quantifier, they behave the same in terms of scope taking and this should therefore not make any difference for Dutch children.[5] In Dutch a sentence such as '*Elke man bezit een auto*'

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[5] At the moment, the predictions made by Van Koert et al. can only be applied to children specifically. It is not fully clear yet what the discrepancies are between adults and children nor how strong they are. For a more detailed analysis see Van Koert (2016,).

(Every man owns a car) almost exclusively receives the surface scope interpretation, meaning that for each man it is the case that he owns a car. Now, if one translates this to a sentence with 'twee' this now becomes '*Twee mannen bezitten een auto*' (Two men own a car), which should not make any difference as far as scope is concerned. In the surface scope interpretation, the quantifier 'twee' takes scope over 'een auto', meaning that again for each of the two men it is the case that they own a car. However, in the T-condition the results do not behave the same. This counters the hypothesis that the scope rigidity of Dutch is the direct cause of this preference, since this scope rigidity is equally present in the T-condition as it is in the E-condition. It seems that the cause of this preference can therefore not be solely attributed to the scope rigidity.

Finally, the FB-condition was a bit more of an unknown. Van Koert et al. do not make any direct predictions concerning conjoined subjects, meaning that they have no immedeate expectations according to the interpretation of these elements either way. Conjoined subjects are obviously very different from quantifiers and are not scope-taking elements in the same way universal and existential quantifiers are. Considering this was the main point of Van Koert et al's prediction, they would not necessarily expect conjoined subjects to behave similarly. In the end it turned out that conjoined subjects indeed did not turn out similar to the quantifiers, as the FB-condition turned out to have a very significant collective preference.

There is however other research however that specifically looked into conjoined subjects and conjunctions in general. Flor et al. (2017) recently published the preliminary results of a large scale typological study which attributed a distinct non-distributive (i.e. collective) interpretation to conjunctions or more specifically, coordinates such as 'and'. It turned out that formally speaking, purely distributive meanings of coordinates with conjunctive meanings were always significantly more complex than their non-distributive counterpart (p. 24). In other words, it appeared that the basic semantic meaning of a

coordinate such as 'and' was in fact collective, while forcing a purely distributive meaning onto for example 'and' requires a lot more semantic clarification for that coordinate. Earlier research by Clifton and Frazier (2012) already pointed in this direction as well. In their experiments, speeded grammaticality judgement tasks conducted on university students showed that sentences with a conjoined subject NP and a collectively-biased predicate yielded significantly faster reaction times than a conjoined subject NP with a distributively-biased predicate. The research in this paper also gives an argument that this might be the case, since in a basic non-biased sentence the collective reading turned out to be preferred, at least for Dutch children.

Taking the three conditions together, the situation now looks like this. As mentioned before, both 'elke' (every) and 'twee' (two) are quantifiers. In the predictions made by Van Koert et al. (2014, p. 151), the scope rigidity of Dutch was perhaps the cause of the preferences, but this can no longer be the full explanation. Both 'elke' and 'twee' are quantifiers, which means that they are both scope-taking elements in the sentence. If the scope rigidity of Dutch causes a certain preference to arise for universal quantifiers like 'elke' only, while this does not happen for numerals like 'twee', there would have to be some other factor that is perhaps able to override this preference. Interestingly enough, 'twee' seems to instead be more similar to 'Frank en Bas'. This now creates a clear split in the preferences. On the one hand, there is the universal quantifier 'elke' with a distributive preference and on the other there are the existential quantifier 'twee' and the conjoined subject 'Frank en Bas' with a collective preference. The clear deviant in the group when considering the predictions made beforehand is 'twee' and this creates the necessity for a different type of explanation.

There now appear to be two options. First, it could be the case that in Dutch the distributive preferences are tied to universal quantifiers but not to quantifiers in general. This would mean Van Koert et al's prediction is incorrect and that the scope rigidity cannot be the

full story. To argue this, a certain quality of universal quantifiers would have to be found that is able to instigate such a preference. Specifically, it would need to be a quality that is not found in existential quantifiers. The other option is that Van Koert et al's ideas are in fact correct, which would imply that distributive preferences are indeed tied to quantifiers in general, but something else is interfering. A good starting point for the discussion of this second option would then be to see if the aforementioned analyses of the conjoined subjects could perhaps give any arguments in favour of this option, and that is the idea that this thesis will now explore further.

The results of the experiments have provided two collective elements: the existential quantifier 'twee' and the conjoined subject 'Frank en Bas'. Firstly, there is one clear difference between these two items and the universal quantifier on the other end of the spectrum. This can be easily shown with the following examples:

(16)   Elke   man   schopt een   schaap.

Every man   kicks a   sheep.

'Every man kicks a sheep.'

(17)   Twee   mannen   schoppen   een   schaap.

Two   men   kick   a   sheep.

'Two men kick a sheep.'

(18)   Frank en   Bas   schoppen   een   schaap.

Frank and   Bas   kick   a   sheep.

'Frank and Bas kick a sheep.'

While all the subjects are semantically plural, only (17) and (18) are syntactically plural. The universal quantifier 'every' is matched with a third person singular 'kicks', while the other two verbs are matched with the plural verb forms instead. On top of that, 'every' gets the singular DP 'man', but 'twee' gets the plural 'men' instead.[6] This difference in syntactic plurality makes it quite possible to suggest that the word 'and' inherently contains some form of plurality itself. After all it is able to turn two singular items, e.g. Frank and Bas, into a syntactic plural. This plurality could then be purely syntactic, semantic or both. Considering these overlaps in the two collectively favoured items, there are perhaps more answers to be found in the conjoined subjects.

To sum up, we now have the following situation. On the one hand, we have a distributive preference for the universal quantifier 'elke'. This is a universal quantifier that is syntactically singular. On the other hand, there are the existential quantifier 'twee' and the conjoined subject 'Frank en Bas'. Both of these are syntactically plural and have a collective bias. Previous research seems to lead to a semantically collective meaning that can be attributed to conjoined subjects and, more specifically, to coordinates with a conjunctive meaning. Further research would be required to confirm this, but it is plausible that perhaps numerals like 'twee' also give an inherent semantic bias towards a collective interpretation.

A first step towards an analysis of this type is taken by Schmitt (2017). She makes a case for the fact that plural DP's and conjunctions could be part of one natural class of expressions. She determined that conjunctions act analogously to plural DP's in both homogeneity and cumulativity.[7] On top of that, there are a number of lexical elements that do not distinguish between plural DPs and conjunctions in general, 'neither with respect to their

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[6] All of these grammatical changes are consistent in Dutch. In Dutch grammar the 'third person singular -s' is in fact a 'second and third person singular -t', but the main point about the difference in number remains the same.
[7] These terms both determine certain semantic qualities in which these elements are said to behave the same. For a more detailed explanation, see Schmitt (2017).

selectional restrictions nor concerning their semantic impact in the context' (p. 15). She gives the example of the word *both*, which can just as easily be combined with a plural DP such as *The boys*, making *Both the boys*, as it can be with a conjunction such as *John and Liam*, giving *Both John and Liam*. The fact that these elements can be analysed so similarly only strengthens the case of potential semantic overlap. If this turned out to be true, a case could be made for an analysis where there are two types of conflicting preferences. The first preference is the one predicted by Van Koert. et al, stating that Dutch children prefer a surface scope interpretation. The second preference could then perhaps be, based on the results of the present study, that a subject which is both syntactically and semantically plural is preferred to be interpreted collectively. Apparently then, this second preference is the stronger one of the two and will overrule the first one if it is present. This is perhaps simply caused by the lexical semantics of the numeral itself and the conjunction 'and'. The semantic plurality of 'twee' and 'and' is consistent with the plurality of the syntax. It could perhaps just be a bit easier to understand this to mean a single, and thus collective, action than it is to understand a sentence with a semantically plural universal quantifier and a syntactically singular DP. A spontaneous-speech analysis by Haslinger and Schmitt (2017) made a first suggestion that children as young as three years old are able to perform at adult-like level concerning conjunctions of multiple semantic categories, even in sentences without logical operators. This suggests that conjunctions are in fact easier to comprehend for children than universal quantifiers, starting at a very young age. For a distributive interpretation a bit more syntax is required. The semantic plurality of the subject has to be combined with the singular verb form, which then leads to an interpretation in which each individual part of the semantically plural subject individually performs the actions, in other words, a distributive interpretation. This is perhaps simply more taxing for a child, or even just for people in general, which could be the reason that the other option is preferred and overrules the surface scope preference

when it is available. Although this hypothesis would be in line with all the currently available data at this time, further research would be necessary to confirm this suggestion.

6. Conclusion

This thesis aimed to further analyse the origin of the Collective Distributive Preference Hypothesis. This hypothesis, posed by Van Koert et al. (2014), claims that Dutch children prefer a distributive reading of universal quantifiers and made a preliminary suggestion towards its origin, namely the fact that Dutch is such a scope rigid language and the surface-scope reading of sentence with a universal quantifier gives the sentence a distributive meaning. As a contribution to Van Koert et al, the current study added to their data, because for universal quantifiers a distributive preference was indeed found. However, sentences with an existential quantifier as subject that were tested did not behave similarly and Dutch children instead preferred a collective interpretation in this case. This means that the Dutch scope-rigidity cannot be the complete answer, since existential quantifiers are scope-taking elements in the same way that universal quantifiers are. Conjoined subjects were also tested and they too turned out to have a collective preference. This lead to two possible solutions. Either Van Koert et al.'s theory has to be dismissed and only universal quantifiers received a preferred interpretation, or their idea was maintained and some other preference interfered. Work from Schmitt (2017) and colleagues lead to the decision to follow up on this second option.

The hypothesis that was argued in this thesis was therefore that existential quantifiers are more closely related to conjoined subjects in this regard. Both of these elements are not only semantically plural but also agree with syntactically plural verbs instead of syntactically singular verbs like the universal quantifier does. This could simply be easier to do than connecting a semantically plural verb to a syntactically singular verb, which is supported by the ideas of Haslinger and Schmitt (2017). This preference for choosing a simpler option of having both a semantic and syntactic plural would then override the preference of the surface

scope interpretation. This hypothesis would fully cover the results obtained in the current study as well as the data obtained in previous research.

Future research could focus on taking a closer look towards the connection between existential quantifiers and conjoined subjects could be very enlightening. As mentioned in the discussion, Schmitt (2017) already proposed that they should belong in a natural class of expressions together (p. 15) and it would be interesting to see in what ways they behave similarly and if there is more semantic overlap to be found. Perhaps it would even be possible to show that numerals behave differently among the existential quantifiers. That immediately runs into another potentially interesting research project, namely that an attempt could be made to further clarify and restrict the boundaries of the different preferences, perhaps exploring the preferences of semantic plurals this thesis has not covered yet. This could provide a useful insight into exactly what types of elements evoke a distributive or collective preference and may allow for the creation of a sharper set of rules concerning which qualities triggers which preference.

Finally, van Koert et al. did not limit themselves to Dutch children. It used the data provided by Marinis and Chondrogianni (2011) to compare the responses of Dutch children to their English peers. A replication study of this thesis with English children instead of Dutch children could provide for some very interesting insights. If the English children also show a collective preference for the existential quantifiers and conjoined subjects, this could either be attributed to them following their already existing preference, or it could mean they could follow in the footsteps of their Dutch peers and choose the easiest option. If future research would be able to clearly separate these two options and discover what actually drives the children to the choices they make, this could provide evidence either in favour of the proposal made in this thesis, or it could strengthen the case about the effect of the existing preferences. If they would show a certain preference for either one of these but not for the other, it would

suddenly seem a lot less likely that these two items are as closely related as this thesis argues. Finally, if they would show a more distributive preference for both categories it might call for a complete reanalysis of the ideas suggested in this thesis. This would mean that the preferences linked to the universal quantifiers apparently do not match at all with preferences in other areas and maybe call for an analysis where universal quantifiers are in fact analysed separately and differently from other quantifiers. In this case, the other option that was mentioned where universal quantifiers are instead truly separate from the other two items would now deserve more attention, although it would still leave the question why this manifests itself so differently in English then it does in Dutch. Considering the idea coined in this thesis, the first option would be the expected outcome. Though again, in that case the question would still remain what the exact driving force behind the preferences is. All in all, this thesis has tried to add another stepping stone upon which to build further in this discussion concerning Binding in children's linguistics. Hopefully, it will provide useful insights and data on which further research may find an interesting breeding ground.

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Appendix A

The complete list of test items can be found below; note that a child was only tested on either list 1, 2, or 3. Please refer to the Methodology Chapter for details. The italicized items are the experimental conditions.

	List 1	List 2	List 3
1	*Elke man bakt een taart*	*Twee mannen bakken een taart*	*Frank en Bas bakken een taart*
2	Bas kiest een boek uit	Bas kiest een boek uit	Bas kiest een boek uit
3	Er staan zes stoelen bij de tafel	Er staan zes stoelen bij de tafel	Er staan zes stoelen bij de tafel
4	*Twee mannen dragen een stoel naar boven*	*Frank en Bas dragen een stoel naar boven*	*Elke man draagt een stoel naar boven*
5	De TV staat niet aan	De TV staat niet aan	De TV staat niet aan
6	Bas zet de lamp aan	Bas zet de lamp aan	Bas zet de lamp aan
7	*Frank en Bas bouwen een kaartenhuis*	*Elke man bouwt een kaartenhuis*	*Twee mannen bouwen een kaartenhuis*
8	Bas strikt zijn veters	Bas strikt zijn veters	Bas strikt zijn veters
9	Op het gras ligt een bal	Op het gras ligt een bal	Op het gras ligt een bal
10	*Elke man speelt met een bal*	*Twee mannen spelen met een bal*	*Frank en Bas spelen met een bal*
11	De bloemen zijn paars en wit	De bloemen zijn paars en wit	De bloemen zijn paars en wit
12	Bas schrijft een verhaal	Bas schrijft een verhaal	Bas schrijft een verhaal
13	*Twee mannen hakken een boom om*	*Frank en Bas hakken een boom om*	*Elke man hakt een boom om*
14	Bas belt zijn oma	Bas belt zijn oma	Bas belt zijn oma
15	In de kast liggen twee borden	In de kast liggen twee borden	In de kast liggen twee borden
16	*Frank en bas graven een gat*	*Elke man graaft een gat*	*Twee mannen graven een gat*
17	Op de grond ligt een mat	Op de grond ligt een mat	Op de grond ligt een mat
18	Bas geeft de plant water	Bas geeft de plant water	Bas geeft de plant water
19	*Elke man verplaatst een tafel*	*Twee mannen verplaatsen een tafel*	*Frank en Bas verplaatsen een tafel*
20	Bas eet een koekje	Bas eet een koekje	Bas eet een koekje
21	De mand zit vol schoenen	De mand zit vol schoenen	De mand zit vol schoenen
22	*Twee mannen duwen een kliko weg*	*Frank en Bas duwen een kliko weg*	*Elke man duwt een kliko weg*
23	Er staat een kom op de aanrecht	Er staat een kom op de aanrecht	Er staat een kom op de aanrecht
24	Bas poetst zijn tanden	Bas poetst zijn tanden	Bas poetst zijn tanden
25	*Frank en Bas kijken een film*	*Elke man kijkt een film*	*Twee mannen kijken een film*
26	Bas schopt de bal	Bas schopt de bal	Bas schopt de bal
27	In de la ligt het bestek	In de la ligt het bestek	In de la ligt het bestek
28	*Elke man trekt aan een touw*	*Twee mannen trekken aan een touw*	*Frank en Bas trekken aan een touw*
29	Bas trekt zijn trui aan	Bas trekt zijn trui aan	Bas trekt zijn trui aan
30	Er staat een auto op de oprit	Er staat een auto op de oprit	Er staat een auto op de oprit

31	*Twee mannen tekenen een hond*	*Frank en Bas tekenen een hond*	*Elke man tekent een hond*
32	Op de tafel staan twee kopjes	Op de tafel staan twee kopjes	Op de tafel staan twee kopjes
33	Bas drinkt een glas water	Bas drinkt een glas water	Bas drinkt een glas water
34	*Frank en Bas poetsen een tafel*	*Elke man poetst een tafel*	*Twee mannen poetsen een tafel*
35	Bas leest een stripboek	Bas leest een stripboek	Bas leest een stripboek
36	In de stoel ligt een boek	In de stoel ligt een boek	In de stoel ligt een boek

Appendix B

ENGELSE TAAL EN CULTUUR

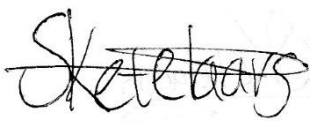Teacher who will receive this document: O. Koeneman & A. van Kemenade

Title of document: Distributing preferences: Distributing Preferences: Putting the Collective Distributive Preference Hypothesis to the test. An experiment with Dutch children.

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Signed

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