Acquiring Dutch quantitative ER

Berends, S.

Publication date
2019

Document Version
Final published version

License
Other

Citation for published version (APA):
Acquiring Dutch quantitative ER

Very few studies have been concerned with the acquisition of the Dutch quantitative pronoun ER, leaving the question unanswered as to why this particular pronoun seems to be difficult to acquire. In this dissertation it is investigated which factors play a role in the acquisition of the Dutch quantitative pronoun ER.

Four factors that might influence the acquisition of quantitative ER were investigated: learner population (monolingual children, bilingual children, adult second language learners of Dutch), mother tongue (French or English) in the case of bilingual or second language acquisition, the type of constraints on the use of the quantitative pronoun ER (syntactic or semantic) and the type of knowledge that is targeted (implicit or explicit).

To answer the main research question of this dissertation, five studies were carried out, in which different types of methodology were used to investigate the learners’ knowledge of quantitative ER: spontaneous speech, untimed grammaticality judgement tasks, an elicited imitation task and a sentence completion task.

It was shown that successful acquisition of the Dutch quantitative pronoun ER depends on learner population, the mother tongue of the learner, and the type of knowledge that is targeted (implicit or explicit), but not on the type of constraints (syntactic or semantic) on the use of the quantitative pronoun ER.

This dissertation is relevant to those who are interested in the acquisition of quantitative constructions and pronouns. More broadly, it contributes to the understanding of Dutch monolingual, bilingual and adult second language acquisition.

Acquiring Dutch quantitative ER
ACQUIRING DUTCH QUANTITATIVE ER

ACADEMISCH PROEFSCHRIFT
ter verkrijging van de graad van doctor
aan de Universiteit van Amsterdam
op gezag van de Rector Magnificus
prof. dr. ir. K.I.J. Maex
ten overstaan van een door het College voor Promoties ingestelde
commissie, in het openbaar te verdedigen in de Agnietenkapel
op donderdag 12 december 2019, te 14.00 uur
door Sanne Berends
egeboren te Emmen
Promotiecommissie:

Promotor: prof. dr. A.C.J. Hulk Universiteit van Amsterdam
Copromotores: prof. dr. J.C. Schaeffer Universiteit van Amsterdam
  dr. A.P. Sleeman Universiteit van Amsterdam
Overige leden: prof. dr. F. Kuiken Universiteit van Amsterdam
  prof. dr. J.E. Rispens Universiteit van Amsterdam
  dr. S.P. Aalberse Universiteit van Amsterdam
  prof. dr. M.E. Ruigendijk Universität Oldenburg
  dr. A.M.H. van Hout Rijksuniversiteit Groningen

Faculteit der Geesteswetenschappen
Table of contents

Acknowledgements .................................................................................................................. v
Author contributions .............................................................................................................. vii
Chapter I. Introduction ........................................................................................................... 1
  1. Introduction ....................................................................................................................... 1
  2. Syntactic and semantic constraints on the Dutch quantitative pronoun .................. 2
  3. Different learner populations, different L1s, different hypotheses ...................... 5
      3.1 Child versus adult language acquisition ............................................................... 5
      3.2 Bilingual children and the Cross-linguistic Influence Hypothesis ................. 6
      3.3 Adults and the Transfer Hypothesis ...................................................................... 7
      3.4 Quantitative constructions in French ................................................................. 9
      3.5 Quantitative constructions in English ............................................................... 10
  4. Different types of knowledge: implicit and explicit ................................................. 11
  5. Research questions and outline ................................................................................... 11
Chapter II. Emergence of ER and EN in L1: a corpus study ............................................. 15
  1. Introduction ....................................................................................................................... 15
  2. The syntactic functions of ER and EN ....................................................................... 16
  3. The acquisition of ER and EN ....................................................................................... 18
  4. Syntactic complexity ....................................................................................................... 20
      4.1 Syntactic complexity of ER .................................................................................. 23
          4.1.1 Obligatory movement ................................................................................... 23
          4.1.2 Optional movement .................................................................................... 24
      4.2 Syntactic complexity of EN .................................................................................. 25
          4.2.1 Obligatory movement ................................................................................... 25
          4.2.2 Optional movement .................................................................................... 26
      4.3 Cross-linguistic syntactic complexity ................................................................... 26
  5. Methodology ..................................................................................................................... 27
      5.1 Participants ............................................................................................................... 27
### Table of Contents

3.4.1 General group predictions .............................................. 65  
3.4.2 Within-group predictions ............................................. 65  
3.4.3 Between-group predictions ........................................... 66  
4. Results .............................................................................. 66  
4.1 General group results and between-group results .................. 67  
4.2 Within-group results ...................................................... 68  
5. Discussion ....................................................................... 68  
6. Conclusion ....................................................................... 73  

Chapter V. Adult L2 acquisition of ER: testing implicit knowledge ....... 75  
1. Introduction ....................................................................... 75  
2. Syntactic and semantic features of sentences with a quantitative pronoun ... 76  
   2.1 Syntactic properties of quantitative pronoun constructions .......... 76  
   2.2 Semantic properties of quantitative pronoun constructions .......... 77  
   2.3 Previous studies on L2 acquisition of syntactic and semantic  
      constraints on ER ............................................................. 80  
   2.4 Explicit versus implicit knowledge ...................................... 82  
   2.5 Research question, hypothesis and general predictions ............ 83  
3. Methodology ..................................................................... 83  
   3.1 Participants and base-line measures .................................... 83  
   3.2 Materials and procedure Elicited Imitation Task and specific  
      predictions ........................................................................ 84  
   3.3 Analysis ......................................................................... 86  
4. Results and Discussion ....................................................... 87  
5. Concluding remarks ........................................................... 91  

Chapter VI. Acquisition of ER by bilingual children ....................... 93  
1. Introduction ....................................................................... 93  
2. Background ...................................................................... 94  
   2.1 Cross-linguistic influence .................................................. 94  
   2.2 Quantitative pronoun constructions in Dutch and English ....... 95  
   2.3 Previous research on the acquisition of quantitative pronoun
constructions ................................................................. 96
2.4 Research question, hypothesis and predictions ......................... 98
3. Method ........................................................................ 99
  3.1 Participants .................................................................. 99
  3.2 Materials ...................................................................... 100
  3.3 Testing procedure .......................................................... 102
  3.4 Scoring and statistical analyses ........................................ 102
4. Results ........................................................................... 103
  4.1 Peabody Picture Vocabulary Test ...................................... 103
  4.2. Sentence Completion Task – target versus non-target responses .... 103
  4.3. Sentence Completion Task – further analysis of non-target responses .. 104
5. Discussion ......................................................................... 106
6. Conclusion ........................................................................ 111
Chapter VII. General discussion and conclusion .................................. 113
  1. The four potential factors: Are they all influential? .................... 113
    1.1 Learner populations ..................................................... 113
    1.2 L1s ........................................................................... 115
    1.3 Explicit versus implicit knowledge ................................... 118
  2. Summary and concluding remarks .......................................... 120
References ........................................................................... 121
Appendices ........................................................................ 133
  Appendix A ....................................................................... 134
  Appendix B ....................................................................... 137
  Appendix C ....................................................................... 140
  Appendix D ....................................................................... 142
Summary ............................................................................ 145
Samenvatting (Summary in Dutch) .................................................. 151
Curriculum Vitae .................................................................. 159
Acknowledgements

As a member of the Amsterdam Center for Language and Communication (ACLC) at the University of Amsterdam, I have been privileged to work with a fantastic team of researchers, some of whom I was entitled to call my supervisors: Aafke Hulk, Jeannette Schaeffer, and Petra Sleeman. I am incredibly thankful for the hours of collaborative brainstorming and insightful feedback from your side. Aafke, I would like to thank you for your firm but friendly approach to supervising, which kept me on track and thinking positively. Jeannette, without you emphasizing the importance of doing research in the right order, as well as your excellent editing skills, this dissertation would not have been as well-structured as it (hopefully) is now. Petra, I want to thank you for all the wisdom you shared with me about theoretical linguistics, and for always reading everything I sent you, regardless of time and place. My reading committee must also be thanked for the time they took to read and evaluate this work: Folkert Kuiken, Judith Rispens, Suzanne Aalberse, Esther Ruigendijk, and Angeliek van Hout.

Besides my supervisors and reading committee, I owe thanks to a great number of other people at the ACLC. First of all, thanks to the members of the weekly Grammar & Cognition meetings for all the interesting discussions on research, and to the capaciteitstgroep Neerlandistiek for giving me the opportunity to gain valuable research and teaching experience. I would like to thank in particular Jan Hulstijn for his explanations about elicited imitations, Paul Boersma and Sybren Spit for the time they have spent giving me a crash course in R, and Dirk-Jan Vet for his incredibly quick assistance in helping me design the experiments. Additionally, I would like to express my gratitude to Seid and Matthias: I was lucky to have you as officemates when I started, not necessarily for our linguistics discussions but mostly for our discussions about everything else. I also owe a big thanks to Caitlin and Patrick, who I could not just rely on to discuss my work problems, but who also served as my emergency contacts outside of work. I do not take for granted how much you have both helped me with many things in the past years. Caitlin, you proofread my articles, taught me how to teach and helped me with the editing of this book when I was too enraged to do so, and most importantly you were always there with pizza and wine, at all the right times. Patrick, I am so glad to have met you while you stayed in Amsterdam. You always put my life in perspective by not only focusing on work, but on other things that matter too, like must-see television shows and sushi. I would also like to thank Hans Bennis for sharing his thoughts on ER during several borrels, and Lilian and Marion, for creating a cosy atmosphere in the department.
This dissertation would not have been possible without including people from outside the University of Amsterdam. First of all, I want to thank all the adult and child participants (and their parents) who took part in the pilot studies and actual studies that are presented in this dissertation. I greatly enjoyed chatting with all of you about your interesting stories and about my research. A special thanks goes to Mente, who put me in contact with a significant amount of Dutch second language learners at Elsevier, and to the Petrus Dathenus primary school in Hilversum, where I tested a substantial number of children at once. Also, my visit to the University of Massachusetts, Amherst, in the cold winter of 2017 improved this dissertation considerably. I would like to sincerely thank Tom Roeper for his interest in my research, his many, many ideas for experiments, and for making this visit possible and letting me be a part of the UMass linguistics community for a while. This also includes the other members of the linguistics department with whom I discussed my research: Jeremy Hartman, Barbara Pearson, Luiz Amaral, Seth Cable, Michael Clauss and Magda Oiry. Thanks to the Jo Kolk Studiefonds, which contributed financially to this study-trip. Many thanks to Gisi and Tijmen too; your editing of parts of this dissertation was of great value.

I am pleased that I also happen to have some good friends and family members outside of academia (some of whom all the way over in Bavaria), who I do want to mention here as a token of my appreciation for allowing me to meet with them without talking about ER. Alma, as the person who lured me into linguistics and whom I gratefully hold responsible for this academic career I have had so far, I want to thank you separately. Without you, I would probably not even have been in the position to start this dissertation. Thank you so much for your great company to many conferences during the last decade, your hospitality during the 4-daagse, and your willingness to always help me with whatever I ask of you.

The support I have always received from my parents, Gerard and Aartje, lies at the root of this accomplishment. I would like to thank you for the steady flow of encouragement and relevant cut out newspaper articles over the last years. I appreciate it very much!

Finally, my most profound appreciation goes to Albert. Thank you for your love, your support, and for always believing in me and us, for making dinner when I don’t have time (and for making dinner when I do have time), for being the best dad for our little girl, Saartje, but most of all for being wonderful.
Author contributions

Chapter I  Introduction
Sanne Berends is the sole author of this chapter that has not been submitted for publication elsewhere.

Chapter II  Emergence of ER and EN in L1: a corpus-study
Berends, Hulk & Sleeman explored the emergence of several types of ER pronouns (Dutch) and EN pronouns (French) in L1 acquisition from a language-internal and a cross-linguistic perspective in order to identify the role of syntactic complexity in this acquisition process. Berends carried out a corpus-based analytical study in the spirit of Van Dijk & Coopmans (2013), after which she wrote down the first version of this chapter. On the basis of valuable feedback from Hulk and Sleeman, Berends rewrote and revised the manuscript into its published form. She made minor changes to the text and formatting for the version printed here.

Chapter III  Adult L2 acquisition of ER: syntactic constraints
Berends, Schaeffer & Sleeman explored whether adult L2 acquisition of syntactic constraints on Dutch quantitative pronoun ER is influenced by L1. In collaboration with her supervisors, Berends designed an experimental study in order to gain insight into this potential syntactic transfer matter. She applied for approval from the Ethics Committee, recruited participants, and ran the experiment. She also scored, processed, and analysed the data. After that she ran statistical analyses and created the first version of this text. On the basis of valuable feedback from Schaeffer and Sleeman, Berends rewrote and revised the manuscript into its published form. She made minor changes to the text and formatting for the version printed here.

Chapter IV  Adult L2 acquisition of ER: semantic constraints
Berends, Sleeman, Hulk & Schaeffer explored whether adult L2 acquisition of semantic constraints on Dutch quantitative pronoun ER is influenced by L1. In collaboration with her supervisors, Berends designed an experimental study in order to gain insight into this potential semantic transfer matter. She applied for approval from the Ethics Committee and ran the experiment on the same participants as in the previous chapter. She also scored, processed, and analysed the data. After that she ran statistical analyses and created the first version of this text. The text was discussed during several supervisory meetings, as well as during a study trip to the University of Massachusetts with professor Roeper and the other members of his lab. On the basis of valuable feedback from Sleeman, Hulk and Schaeffer, Berends
rewrote and revised the manuscript into its final version printed here, and submitted it.

**Chapter V  ** Adult L2 acquisition of ER: testing implicit knowledge
In collaboration with her supervisors, Sanne Berends designed an experimental study – with the same participants as in Chapters III and IV – in order to gain insight into this potential syntactic and semantic transfer matter, but with the difference that in this experiment implicit knowledge is tested, as opposed to explicit knowledge (as in Chapters III and IV). She applied for approval from the Ethics Committee and ran the experiment. She also scored, processed, and analysed the data. After that she ran statistical analyses and created the first version of this text, which was discussed during several supervisory meetings with Sleeman, Schaeffer & Hulk. On the basis of their valuable feedback, Berends rewrote and revised the manuscript into its final version printed here.

**Chapter VI  ** Acquisition of ER by bilingual children
Berends, Hulk, Schaeffer & Sleeman explored whether English-Dutch bilingually raised children are cross-linguistically influenced with regard to the production of Dutch quantitative ER constructions. Berends designed and carried out an experimental study in order to gain insight into this potential cross-linguistic influence matter. She applied for approval from the Ethics Committee, recruited participants and ran the experiment. She also scored, processed, and analysed the data. After that she ran statistical analyses and created the first version of this text, which was discussed during several supervisory meetings. On the basis of valuable feedback from Hulk, Schaeffer and Sleeman, Berends rewrote and revised the manuscript into its final version printed here, and soon to be published.

**Chapter VII  ** General discussion and conclusion
Sanne Berends is the sole author of this chapter that has not been submitted for publication elsewhere.
Chapter I

Introduction

1. Introduction
Recently, an interesting email was forwarded to me. A conductor, whose native language is English, and who has been living in The Netherlands for more than 40 years, wrote the following sentence in his search for female singers: *Ik heb minstens vier vrouwen nodig voor een eenvoudige liturgie, maar ik heb nog maar twee.* ‘I need at least four women for a simple liturgy, but I only have two so far’. The conductor, who is considered a highly proficient second language learner of Dutch, formulated his request almost flawlessly, were it not for the missing word *er* (henceforth referred to as ER). According to prescriptives of Dutch grammar (like the *Algemene Nederlandse Spraakunst* of Haeseryn, Romijn, Geerts, De Rooij & Van den Toorn 1997), ER needs to be inserted to make the sentence grammatical. This is exemplified in (1).

(1)  
\[
\text{… ik heb er nog maar twee.}  
\]
\[
\text{… I have ER only but two}  
\]
\[
\text{‘... I only have two so far.’}  
\]

This particular instantiation of ER is referred to as the quantitative pronoun ER. As illustrated by the example of the conductor, even very advanced, near-native L2 speakers of Dutch have trouble with this quantitative pronoun. The struggle with this particular pronoun is not limited to adults learning Dutch at a later age. A study by Van Hout, Veenstra & Berends (2011) demonstrates that Dutch monolingual children still encounter problems with this pronoun at the age of five, whereas other morpho-syntactic phenomena such as, for example, subject-verb agreement, word order, diminutives, and question formation have long been acquired by that age (Schaerlaekens 1977). When eliciting a sentence such as *Oma neemt ER twee mee* ‘Grandma brings two’ in a story about grandma going on a trip and bringing suitcases, the vast majority of the five-year-old children tested by Van Hout et al. (2011) avoided the use of the quantitative pronoun ER. Instead, they uttered a grammatical sentence using the full NP (2a), or they provided an ungrammatical sentence by simply omitting ER (2b), or they expressed both ER and the full NP (2c).
To date, very few studies have been concerned with the acquisition of the Dutch quantitative pronoun ER, leaving the question unanswered as to why this particular pronoun seems to be difficult to acquire. The goal of this dissertation is to answer the following question: What factors play a role in the acquisition of the Dutch quantitative pronoun ER in different populations?

The rest of this introduction chapter first briefly describes the behaviour of Dutch quantitative ER constructions, subject to different syntactic and semantic constraints (Section 1). We then introduce the L1 and L2 learner populations we are interested in, including the equivalent of Dutch quantitative constructions in the other L1s, and the relevant existing hypotheses regarding these populations (Section 2). This is followed by an initial description of the various methodologies that are used to measure the acquisition of Dutch quantitative ER in the different learner populations (Section 3). The last section of this chapter lays out the research questions in more detail, followed by an outline of the rest of the dissertation (Section 4).

2. Syntactic and semantic constraints on the Dutch quantitative pronoun
Example (1) illustrates that elision of the noun phrase in Dutch quantificational discourses requires insertion of the Dutch quantitative pronoun ER. The current section elaborates on the syntactic and semantic licensing conditions of the quantitative pronoun ER, as there may be a difference between these two linguistic subdomains with regard to successful acquisition.

1 In some regional dialects this sentence would be considered grammatical (Cornips 2003), but in this dissertation we follow standard Dutch.
2 The term language acquisition is originally used to refer to a subconscious process during which children acquire language, and the term language learning is originally used to refer to direct instruction of the rules of language and mostly applies to adults learning a language. Throughout this dissertation, however, we refer to language learning by children with the term acquisition, while we refer to language learning by adults with the terms learning and acquisition interchangeably.
CHAPTER I. INTRODUCTION

According to prescriptives of Dutch grammar (Haeseryn et al. 1997), the quantitative pronoun ER obligatory combines with a complex elliptical noun phrase, subject to a cardinal numeral or a weak quantifier in object position, e.g., twee ‘two’ (1). It also requires a preceding discourse with an antecedent expressing a set that licenses the pronoun’s occurrence: vrouwen ‘women’ in (1). There are, however, more constraints that limit the occurrence of quantitative ER. Consider the dialogues in (3) and in (4).

(3) _Verkoopt u boeken over ruimtevaart?_  
Sell you books about space-travel

a. *Ja, ik er heb nog vier._  
   yes I ER have still four

b. _Ja, ik heb er nog vier._  
   yes I have ER still four

‘Do you sell books about space travel? Yes, I have four.’

(4) _Heeft u nog rozen te koop?_  
have you still roses for buy

a. *Ja, ik heb er nog vijftig witte._  
   yes I have ER still fifty white

b. _Ja, ik heb nog vijftig witte._  
   yes I have still fifty white

‘Do you still have roses for sale? Yes, I have fifty white ones left.’

Example (3) demonstrates that ER in Dutch main clauses needs to appear in a certain position, following the finite verb, otherwise the sentence is considered ungrammatical. Example (4) shows that in order to license the quantitative pronoun ER, the complex elliptical noun phrase cannot be subject to a cardinal numeral in combination with an adjective. We refer to these constraints (presence of ER with numeral, absence of ER with numeral and adjective, and post-finite-verb position of ER) as syntactic licensing conditions of quantitative ER.

Besides the syntactic constraints, the occurrence of the Dutch quantitative ER pronoun is also subject to semantic constraints. Consider examples (5) and (6).
The overarching semantic property of the quantifiers used in (5) and (6), is [+/-presuppositional], which, in turn, can be split up into the properties [+/-definite] and [+/-strong]. The presupposition for the [+definite] quantifier de helft ‘half’ in (5a) is that another half exists (Barwise & Cooper 1981). The [+strong] quantifier sommige ‘some’ in (6a) presupposes that other referents exist, e.g., andere planken ‘other shelves’ (De Hoop 1992; De Jong 1983). The presuppositional sentences with ER, (5a) and (6a), are ungrammatical because the Dutch quantitative pronoun ER encodes the referential properties [-definite] and [-strong] and can only appear with quantifiers that encode the same properties, as is the case in sentences (5b) and (6b). Thus, when the referential properties of ER and those of the quantifier match, the expression of ER results in grammatical sentences. In contrast, when the properties of ER and those of the quantifier clash, the occurrence of ER results in ungrammatical sentences (Haeseryn et al. 1997).³

³ Ungrammatical sentences that feature ER in combination with a [+definite] quantifier or a [+strong] quantifier, can quite easily be made grammatical by adding the preposition van ‘of’ after the quantifier: e.g., ze slikt er de helft van ‘she takes half of them’ and ik heb er sommige van geschilderd ‘I have painted some of them’. In these examples, ER is no longer classified as being quantitative, but instead it receives a partitive interpretation. This dissertation
To test whether the acquisition of quantitative ER is influenced by syntactic and semantic constraints, we include the following grammatical syntactic constraints: (1) the presence of ER in complex elliptical noun phrases modulated by a cardinal numeral in object position, (2) the presence of ER in post-finite-verb position, and (3) the absence of ER in complex elliptical noun phrases modulated by a cardinal numeral and an adjective. The specific grammatical semantic constraints we include are: (1) ER in combination with complex elliptical noun phrases modulated by a [-definite] quantifier, and (2) ER in combination with complex elliptical noun phrases modulated by a [-strong] quantifier. For all grammatical constraints, we have ungrammatical counterparts.

3. Different learner populations, different L1s, different hypotheses
The example of the conductor, corrected in (1), illustrates the speech of an advanced L2 speaker of Dutch, whose L1 is English. Despite his near-native proficiency, he obviously experiences issues with the implementation of the Dutch quantitative pronoun ER. Furthermore, the examples in (2) show that Dutch monolingual children also experience difficulties with quantitative ER constructions. This raises the question as to whether difficulties with this pronoun are typical for all learners of Dutch, and if yes, whether this is so for the same reasons. We wonder whether it matters that a learner is an L2 adult or a monolingual or bilingual child, and allied to that, what the influence of the other language is. The sections below provide some background relevant to addressing these questions.

3.1 Child versus adult language acquisition
The general consensus regarding language acquisition seems to be: the earlier, the better. Children acquire their mother tongue(s) quickly, effortlessly, and without explicit instructions. In contrast, adults usually struggle a lot more when acquiring an additional language and they often make use of formal and explicit teaching settings. The easy acquisition of children and the struggle that adults face, has, among other theories, been explained by the theory of Universal Grammar (UG), including a language acquisition device (Chomsky 1965). This theory proposes that every child possesses an innate language blueprint that contains the basic principles of human language. This blueprint needs to be completed for the particular language to be acquired with the aid of sufficient natural language input. The language acquisition device helps the child ‘decide’ which elements in the input to pay attention to. It is a matter of debate how long in life the language acquisition device is available to a learner. The Critical Period Hypothesis, originally formulated by Penfield & Roberts (1959) and popularised by Lenneberg (1967), states that, as we focuses on the acquisition of quantitative ER, although other types of ER are elaborated on in Chapter II, and partitive ER van is explained in Chapters IV and V.
age, our ability to attain language successfully gradually declines. As such, there is a critical period in childhood during which an individual can more or less ‘automatically’ acquire a language without any conscious and laboured effort. It was originally thought that this ideal time window closes around the age of thirteen, when the cerebral hemispheres’ functions separate and become set, making language acquisition more difficult during adolescence and adulthood (Lenneberg 1967). More recent researchers have adjusted the formulation of the Critical Period Hypothesis to an optimal or sensitive period for language acquisition, rather than a critical one, and suggest that language acquisition can also take place after this ideal time window that is apparently not permanently sealed (Gass, Behney & Plonsky 2013; Muñoz & Singleton 2011). Moreover, Hartshorne, Tenenbaum & Pinker (2018), who collected a massive dataset from more than half a million participants, argue that the critical/optimal/sensitive period for language acquisition, in specific grammar-learning ability, even lasts until age seventeen and four months, and then declines steadily. This holds for both difficult syntactic phenomena, normally learned relatively late in acquisition, and for easy syntactic phenomena, normally learned relatively early in acquisition.

These assumptions regarding language acquisition, belonging to the Universal Grammar Hypothesis and the Critical Period Hypothesis described above, make the L1 population potentially different from other populations, such as bilingual children or L2 adults. That is, the initial state for monolingual first language acquisition is UG alone, while for bilingual first language acquisition this is UG, perhaps along with knowledge of another language, and for adult second language acquisition this is L1 knowledge, perhaps along with UG. In order to answer the question as to whether the Dutch-specific instantiation of the quantitative construction with the overt pronoun ER is easier to acquire for monolingual children, bilingual children, or L2 adults, the following two sections (3.2 and 3.3) elaborate more on these populations and their corresponding hypothesis.

3.2 Bilingual children and the Cross-linguistic Influence Hypothesis
If children acquire Dutch and another language, say English, simultaneously from very early on, does this influence their acquisition of Dutch quantitative ER? Traditionally, it was hypothesised by the Unitary Linguistic System Hypothesis of

---

4 ER is not directly part of Universal Grammar, so there is no reason to believe that the acquisition of ER in and of itself should be early. ER is a language-specific instantiation of quantitative constructions (that may be part of Universal Grammar) and apparently it is a complex instantiation that takes time to be acquired.

5 Different theories exist about the influence of Universal Grammar on L2 acquisition. While some researchers argue that there is no access to UG (Bley-Vroman 1989; Clahsen & Muysken 1986; Schachter 1988; Schachter 1989), others claim that there is (Flynn 1987; Flynn & Martohardjono 1994; Schwartz & Sprouse 1996; White 1989).
Volterra & Taeschner (1978) that children who are raised bilingually acquire both languages by developing a unitary linguistic system that includes three stages: a single language system in which both languages are completely mixed (stage 1), a system in which the two languages are split on a lexical level, but not on a syntactic level (stage 2), and a system in which the two languages are split on a lexical level and on a syntactic level (stage 3). Roughly a decade later another hypothesis arose; the Separate Systems Hypothesis that claimed that children who are raised bilingually from a very early age acquire both languages by developing two separate language systems instead of one unitary linguistic system (Genesee 1989; De Houwer 1990; Meisel 1989). In more recent years, however, the idea of having two completely separate language systems has been challenged to make place for the hypothesis that the two language systems can interact with each other. This idea of interaction between the two languages has been labelled cross-linguistic influence. Cross-linguistic influence has been argued to be a child-internal process that boils down to children using the less complex analysis of the same grammatical phenomenon in the respective other language for both languages temporarily, when confronted with a highly complex grammatical phenomenon in one language (Hauser-Grüdl, Arençibia Guerra, Witzmann, Leray & Müller 2010). This idea has been capsulised in the Cross-Linguistic Influence Hypothesis of Hulk & Müller (2000) that states that cross-linguistic influence can happen in linguistic domains that are also problematic for L1 learners, more specifically, regarding phenomena situated in the C(omplementizer) domain: the interface between pragmatics and syntax (condition (1)). Moreover, partial structural overlap at the surface level between the two languages is required for cross-linguistic influence to occur (condition (2)). The existence of cross-linguistic influence has been endorsed by multiple studies (Argyri & Sorace 2007; Austin 2007; Hacohen & Schaeffer 2007; Lee, Kwak, Lee & O’Grady 2010; O’Grady, Kwak, Lee & Lee 2011; Pérez-Leroux, Cuza & Thomas 2011), although the necessity of condition (1) of the Cross-Linguistic Influence Hypothesis was questioned when studies also reported cross-linguistic influence in domains that do not operate on the interface with pragmatics, but instead are considered purely syntactic (Paradis & Navarro 2003; Serratrice & Sorace 2003; Serratrice, Sorace & Paoli 2004; Yip & Matthews 2000), semantic (Anderssen & Bentzen 2013; Brouwer, Özkan & Künst 2017), or pragmatic (Fabiano-Smith & Goldstein 2010; Keshavarz & Ingram 2002; Paradis 2001). Condition (2), that the languages concerned show (partial) overlap regarding the relevant linguistic construction, still seems to hold.

3.3 Adults and the Transfer Hypothesis
Given our questions regarding the influence of one language on another in bilingually raised English-Dutch children, a similar question may be posed for
adults who have already been ‘filled in’ with knowledge of one, or maybe even more, languages. This knowledge may interfere with the acquisition process of the new language. If this happens, this is called transfer (Lightbown & Spada 2006; Nation 2003; Schmitt 2010). This idea was first formulated by Lado (1957) in the Contrastive Analysis Hypothesis. The Contrastive Analysis Hypothesis states that the influence of L1 on L2 is enhanced when similar linguistic elements are present in both the native and the target language (known as positive transfer), but that a difference between L1 and L2 creates difficulties in learning the target language (known as negative transfer). Several decades later, an adjusted hypothesis was proposed by Schwartz & Sprouse (1994; 1996), known as the Full Transfer Full Access Hypothesis. The Full Transfer Full Access Hypothesis has two components: (i) L1 grammar constitutes the initial state of L2 acquisition (Full Transfer); and (ii) L2 learners have full access to UG at all times during the acquisition process (Full Access), which means that, for example, parameter resetting is possible. In this dissertation the Contrastive Analysis Hypothesis and Full Transfer Full Access Hypothesis are combined by taking the Full Transfer part of Schwartz and Sprouse’s (1994; 1996) hypothesis (and extend it to advanced learners), and the distinction between positive and negative transfer effects of Lado’s (1957) hypothesis. We refer to this new hypothesis as the Transfer Hypothesis, in which no presumptions are made with regard to access to UG (contra the Full Access part of Schwartz and Sprouse’s hypothesis (1994; 1996)). To test the Transfer Hypothesis, we include two languages in this dissertation: French that does have a quantitative pronominal element (EN), and English that does not have a quantitative pronoun. Perhaps surprisingly, the predictions following from the Transfer Hypothesis are not as straightforward as to claim that French learners of Dutch always outperform the English learners of Dutch, based on the fact that French has a quantitative pronoun. Reason for this is that the linguistic constraints on French quantitative EN are not completely similar to those on Dutch quantitative ER, as briefly described in the following section.

---

6 The Full Transfer component of the Full Transfer Full Access Hypothesis by Schwartz & Sprouse (1994; 1996) was originally concerned with the initial state of L2 acquisition only, but we have extended this Full Transfer part to advanced learners, in the spirit of, e.g., Simiou (2014).

7 The quantitative pronoun is not universally present in all languages and dialects, but some do have it, like French. Furthermore, in the German Central Hessian dialect the partitive pronouns ERE and SEN are used (Strobel 2017), while in the Romance languages – besides the French quantitative clitic EN – also the Italian quantitative clitic NE and the Catalan quantitative clitics EN/NE are considered counterparts of the Dutch quantitative pronoun (Varlokosta et al. 2016).
3.4 Quantitative constructions in French

As mentioned above, French has an overt quantitative pronoun, namely, *en* (henceforth referred to as EN), similar to Dutch ER. The use of the French quantitative pronoun is exemplified in (7) and (8):

(7)  
J’aime caresser les chats  →  J’en caresse cinq par jour
I like to-pet the cats      I EN pet five per day
‘I like petting cats.’     ‘I pet five a day.’

(8)  
Combien de chiens as-tu?  →  J’en ai deux blancs
how-many of dogs have-you I EN have two whites
‘How many dogs do you have?’ ‘I have two white ones’

Example (7) demonstrates that French quantificational constructions with an elided noun phrase require the insertion of EN, just like in Dutch. However, when looking at example (8), two syntactic differences with Dutch ER arise (see also Chapters III and V; Sleeman 1996): EN moves to a clitic position preceding V, and EN occurs in complex elliptical noun phrases modified by a cardinal numeral and an adjective. In Dutch, ER moves to a position post V, cf. (3), and the presence of the adjective prohibits the occurrence of ER in a Dutch sentence: *Ik heb ER twee witte ‘I have two white ones’, cf. (4).

Besides these syntactic similarities and differences between Dutch ER and French EN, there are also similarities and differences at the semantic level. Whereas Dutch quantitative ER can only appear in sentences with a [+definite] quantifier or a [-strong] quantifier (see examples (5) and (6), and fn. 3), French quantitative EN can occur in sentences with [+/-definite] quantifiers, see (9), or [+/-strong] quantifiers, see (10).

(9)  
Le médecin lui a prescrit des pilules.
the doctor her has prescribed pl.ind.art pills

  a.  elle en prend la moitié.       [+definite] quantifier
     she EN takes the half

  b.  elle en prend un grand nombre. [-definite] quantifier
     she EN takes a large number

‘The doctor prescribed her pills. She takes half of them / a lot.’
Les planches de bois sont arrivées.

the planks of wood are arrived

a. *J’en ai peint certaines* [+strong] quantifier
   I EN have painted some

b. *J’en ai peint quelques-unes* [-strong] quantifier
   I EN have painted some

‘The wooden shelves have arrived. I have painted some of them / some.’

At first glance, the occurrence of French EN does not seem to be constrained by quantifiers being [+/-definite] or [+/-strong]. Nevertheless, closer examination of the meaning of French EN with [+definite] or [+strong] quantifiers reveals that these render a partitive, rather than a quantitative interpretation, equivalent to Dutch partitive ERvan (see fn. 3). In contrast, if EN occurs with a [-definite] or [-strong] quantifier, its meaning is quantitative. This will be elaborated on in Chapters IV and V.

3.5 Quantitative constructions in English

As indicated by the English translations of the Dutch ER examples, English does not feature an overt quantitative pronoun. This is illustrated once more in (11):

(11) How many hats do you have? → I have six.

The NP in English quantificational constructions can be elided without being replaced by a pronoun or clitic. Thus, unlike Dutch and French, English does not have a linguistic marker such as ER or EN that expresses quantity pronominally.\(^8\)

Yet, as the translations of examples (4) and (8) suggest, the presence of a numeral together with an adjective in English quantificational constructions with an elided noun phrase does require the occurrence of an additional element, namely, *one.*\(^9\)

---

\(^8\) Despite not having a quantitative pronoun, English does have the distinction between a quantitative and a partitive interpretation. This becomes visible by adding a prepositional phrase, e.g., ‘of them’, after the quantifier, see the English translations of examples (5a), (6a), (9a), and (10a).

\(^9\) These examples show that *one* is needed in sentences in which an attributive adjective is present besides the numeral. In accordance with Llombart-Huesca (2002), we analyse *one* as Number, see also Barbiers (2005) and Kayne (2017). However, other linguists consider *one* to be a pronoun (Panagiotidis 2002; Panagiotidis 2003; Schütze 2001).
4. Different types of knowledge: implicit and explicit
As mentioned in Section 3.1, children seem to have an advantage over adults in terms of the effort it takes them to learn a language. However, if we ask young children to explain certain features of the language they speak, they cannot do so because their metalinguistic knowledge has not yet developed (Vygotsky 1986). On the contrary, adults who speak Dutch as a second language can often explain several structural properties of the Dutch language. This disparity results from the type of knowledge children and adults have. Children learning one or more languages have never received formal instructions about those languages, which means that most of their knowledge is implicit: the result of a combination of innate knowledge and input, rather than from explicit rules. In contrast, adults have often received formal instruction about their second language, allowing them to clarify and explain linguistic properties. This is referred to as explicit knowledge.

Although adult L2 learners possess more explicit knowledge regarding a language than children do, this does not mean that they do not have implicit knowledge. To test implicit knowledge, it is important to collect data in such a way that participants are not directly aware of how they are expressing themselves. That is, implicit knowledge is uttered subconsciously, whereas explicit knowledge is uttered consciously (Ellis 2005, 2009).

The data that play a role in this dissertation come from various sources, namely, spontaneous speech transcripts, untimed Grammaticality Judgement Tasks, an Elicited Imitation Task, and a Sentence Completion Task. The spontaneous speech transcripts (Chapter II) and the Elicited Imitation Task (Chapter V) test implicit knowledge, while the untimed Grammaticality Judgement Tasks (Chapters III and IV) and the Sentence Completion Task (Chapter VI) are more likely to test explicit knowledge (Ellis 2005, 2009; Erlam 2006). Because of the more ‘automatic’ character of implicit knowledge compared to explicit knowledge (see also Hulstijn & De Graaff 1994 about this difference), we argue that implicit knowledge approximates natural language situations more closely. As a result it better represents the current underlying grammatical knowledge of a certain linguistic construction in a learner. We refer to this as the Implicit Knowledge Hypothesis.

5. Research questions and outline
As can be deduced from the sections above, the main research question (‘What factors play a role in the acquisition of the Dutch quantitative pronoun ER in different populations?’) can be split up into four subquestions, listed in (12):

(12)  
(i) Does successful acquisition depend on learner population?  
(ii) Does successful acquisition depend on L1?  
(iii) Does successful acquisition depend on the nature of constraints?  
(iv) Does implicit knowledge differ from explicit knowledge?
By addressing these four subquestions, we hope to uncover what factors facilitate and what factors hinder successful acquisition of the Dutch quantitative pronoun ER.

The core of this dissertation consists of five chapters (Chapters II-VI) addressing the research questions presented above. Four of these chapters were written as separate research papers that were either published or are about to appear in various linguistics journals, while one chapter (Chapter V) was written especially for this dissertation. We will submit this study at a later moment in time. This means that the chapters can be read independently and, although they each address one or multiple subparts of the main research question, there is some overlap between them.

The rest of the dissertation is organised as follows. Chapter II describes the results of a corpus analysis that investigates the emergence of child L1 Dutch ER pronouns and child L1 French EN pronouns in spontaneous speech. Specifically, it focuses on the syntactic complexity load of quantitative ER and EN and of other, homophonous ER and EN pronouns on the basis of the Derivational Complexity Metric by Jakubowicz (2005).

Chapter III presents the results of an untimed Grammaticality Judgement Task that focuses on the influence of L1 French and L1 English on the adult acquisition of L2 Dutch quantitative pronoun ER constructions, subject to syntactic constraints. Predictions are made on the basis of the Transfer Hypothesis.

Chapter IV expands on the study reported in Chapter III by conducting an untimed Grammaticality Judgement Task with the same adult participants as in Chapter III on the basis of the same hypothesis. However, this time the study concentrates on the acquisition of L2 Dutch quantitative pronoun ER constructions, subject to semantic constraints.

Chapter V adds implicit knowledge data to the explicit knowledge data collected in the studies in Chapters III and IV by administering an Elicited Imitation Task to, once again, the same adult participants. The acquisition of L2 Dutch quantitative pronoun ER constructions is tested in contexts bound by syntactic constraints and in contexts bound by semantic constraints. Predictions are formulated on the basis of both the Transfer Hypothesis and the Implicit Knowledge Hypothesis. We compare the implicit knowledge data from the Elicited Imitation Task to the explicit knowledge data from the Grammaticality Judgement Task presented in Chapters III (syntax) and IV (semantics).

Chapter VI examines a different population, namely, English-Dutch bilingual children, employing a Sentence Completion Task. This study investigates if English influences the acquisition of Dutch quantitative ER in children who grow up acquiring Dutch and English simultaneously. The study’s predictions are based on Hulk & Müller’s (2000) Cross-Linguistic Influence Hypothesis.
Chapter VII discusses and summarises the findings of this dissertation, provides suggestions for future research, and ends with some concluding remarks.
Chapter II

Emergence of ER and EN in L1: a corpus-study*

1. Introduction
Creating sentences while applying the correct morpho-syntactic rules is intrinsically an intuitive process in adult language use. Speakers generally do not think about sentence structure while conversing, but do subconsciously possess the linguistic competence required to adequately map thoughts onto the appropriate structures and lexical items. However, this linguistic competence may be different in child language. This chapter exposes a segment of this child language territory by taking a closer look at the emergence of pronouns in early monolingual language acquisition and the role complexity plays in this. We focus specifically on two pronouns with comparable functions in the two languages: the Dutch pronoun ER and the French pronoun EN. Although production of these pronouns in early child language is studied in some previous work (Van Dijk & Coopmans 2013; Gavarró, Guasti, Tuller, Prévost, Belletti, Cilibrasi, Delage & Vernice 2011; Van Hout et al. 2011; Sleeman & Hulk 2013), to our knowledge, no language-internal or cross-linguistic study exists that investigates ER and EN in multiple usages. Investigation of these usages is nonetheless critical as these forms embed different types of pronouns that although homophonous, involve different derivations. These homophonous types of pronouns appear to carry different syntactic complexity loads, which we believe influence their order of emergence.

In this chapter, we first give a synopsis of the different syntactic properties that the Dutch pronoun ER and the French pronoun EN can have (Section 2). We subsequently review the most relevant literature with respect to the acquisition process of these specific pronouns (Section 3), and explore what a syntactic approach, namely syntactic complexity, would predict for the order of emergence of these pronouns (Section 4). After describing the methodology (Section 5) we build upon the findings of previously conducted studies and fill a gap in the literature by reporting the data of our innovative and exploratory corpus-based study (Section 6). The discussion is a broader exploration of the role of syntactic complexity on quantitative pronoun use (Section 7). We end this chapter with some concluding remarks (Section 8).

* A slightly different version of this chapter was published as: Berends, Sanne, Aafke Hulk & Petra Sleeman. 2016. The emergence of the pronouns Dutch ‘er’ and French ‘en’ in child L1 and the role of complexity. Language Sciences 60, 144–159.
2. The syntactic functions of ER and EN
The Dutch pronoun ER and the French pronoun EN can have different syntactic functions. Table 1 presents these functions (Bennis 1986; Hulk 1982; Van Riemsdijk 1978; Sleeman 1996; Van der Wouden 1995).1,2

Table 1: Different syntactic functions of Dutch ER and French EN.

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expletive:</td>
<td>subject in passive constructions with auxiliary verb</td>
</tr>
<tr>
<td></td>
<td><em>Er wordt gedanst.</em></td>
</tr>
<tr>
<td></td>
<td>ER becomes danced</td>
</tr>
<tr>
<td></td>
<td>‘There is dancing going on.’</td>
</tr>
<tr>
<td>Existential:</td>
<td>provisional subject</td>
</tr>
<tr>
<td></td>
<td><em>Er hipt een vogel in de tuin.</em></td>
</tr>
<tr>
<td></td>
<td>ER hops a bird in the garden</td>
</tr>
<tr>
<td></td>
<td>‘A bird hops in the garden.’</td>
</tr>
<tr>
<td>Prepositional:</td>
<td>complement of a preposition</td>
</tr>
<tr>
<td></td>
<td><em>Zij heeft het glas er in gezet.</em></td>
</tr>
<tr>
<td></td>
<td>she has the glass ER in put</td>
</tr>
<tr>
<td></td>
<td>‘She has put the glass in it.’</td>
</tr>
<tr>
<td>Quantitative:</td>
<td>part of a complex NP modified by a numeral or weak quantifier</td>
</tr>
<tr>
<td></td>
<td><em>Ik heb er zes gezongen.</em></td>
</tr>
<tr>
<td></td>
<td>I have ER six sung</td>
</tr>
<tr>
<td></td>
<td>‘I have sung six.’</td>
</tr>
<tr>
<td>Locative:</td>
<td>indication of place: substitute for <em>daar</em> ‘there’</td>
</tr>
<tr>
<td></td>
<td><em>Het meisje woont er al lang.</em></td>
</tr>
<tr>
<td></td>
<td>the girl lives ER already long</td>
</tr>
<tr>
<td></td>
<td>‘The girl has been living there for a long time.’</td>
</tr>
<tr>
<td>Expression:</td>
<td>part of a fixed expression</td>
</tr>
<tr>
<td></td>
<td><em>Je bent me er een je.</em></td>
</tr>
<tr>
<td></td>
<td>you are me ER one</td>
</tr>
<tr>
<td></td>
<td>‘You are quite a character.’</td>
</tr>
</tbody>
</table>

1 In French, EN can also be a real preposition, besides pronominal EN: *EN l’air*, ‘in the air’. The preposition EN is not included in this dissertation.
2 For a more detailed discussion about the different properties of ER, we refer the reader to Bech (1952), Grondelaers (2009), or Kirsner (1979).
3 Prepositional ER is underlyingly the complement of a preposition. We use the traditional term ‘prepositional ER’, as introduced by Bennis (1986), although ER does not replace a preposition or a PP.
French

**Prepositional:** substitute of de ‘of’ + complement

- J’en parle.
  - I EN talk
  - ‘I talk about it.’

**Quantitative:** part of complex NP modified by a numeral or weak quantifier

- Il en a lu trois.
  - he EN has read three
  - ‘He has read three.’

**Expression:** part of a fixed expression

- J’en ai marre.
  - I EN have enough
  - ‘I am fed up with it.’

Table 1 reveals that different syntactic functions can be attributed to pronominal ER and EN; expletive pronouns, existential pronouns and pronouns that occur as part of a fixed expression have an autonomous function, whereas prepositional pronouns, quantitative pronouns and locative pronouns are considered anaphoric stand-ins that need to be bound by an antecedent in the preceding discourse. At first glance it looks as if all three types of French EN constructions have Dutch ER equivalents, but a closer look reveals disparities regarding these seemingly similar constructions. One of these disparities concerns the prepositional pronouns, henceforth referred to as prepositional ER for Dutch and prepositional EN for French: prepositional ER pronominalises the inanimate nominal complement of any preposition in the prepositional phrase and can consequently combine with many different prepositions, e.g., erover ‘over’, erop ‘on’, erin ‘in’, erlangs ‘to the side’, whereas prepositional EN always substitutes the whole prepositional phrase de ‘of’ + DP in which the complement is inanimate, see examples (1a) and (1b).

(1) a. Ik droom erover.
    - I dream ERabout
    - ‘I dream of it.’

b. J’en rêve.
    - I EN dream
    - ‘I dream of it.’

As can be seen in (1a), in Dutch the preposition is still present after pronominalisation has taken place, whereas (1b) shows that in French it is not. French prepositional EN is essentially comparable to its Dutch counterpart ERvan.

---

4The terms ‘genitive EN’ and ‘partitive EN’ are also used. However, for comparison reasons with Dutch we stick to the term ‘prepositional EN’. In Dutch and French, prepositional ER and EN can be subdivided into the complement of a verb, an adjective or a noun. For quantitative EN it is generally assumed that it replaces the NP ‘head’ of the DP (Sleeman 1996). In a NP analysis, however, it is the N that is replaced.
‘of’ and EN ‘about’. In the context of other French prepositions (e.g., à ‘in, to’, dans ‘in’, sur ‘on’) taking an inanimate complement, the prepositional phrase is replaced by the pronoun y, as in the French equivalent of the Dutch example (2). An analysis of y is beyond the scope of this dissertation.

(2) Dutch: Ik denk eraan. ‘I think about it.’
French: J’y pense. ‘I think about it.’

The fact that prepositional EN is bound to be associated with de ‘of’, while prepositional ER may appear with various prepositions, leads to the assumption that prepositional ER is more widespread in Dutch than prepositional EN in French.

Quantitative ER and quantitative EN respectively exhibit some contrasting distributive properties too. In both languages the quantitative pronoun is syntactically part of a complex noun phrase modified by a cardinal numeral or weak quantifier in an indefinite NP in object position. However, if the remnant of an elided noun contains a numeral in combination with an adjective, a quantitative pronoun can appear in French (Bouchard 2002), but not in Dutch. Accordingly, the French example (3a) is grammatical, but the Dutch equivalent in (3b) is not.

(3) a. Elle en a choisi deux rouges.
   she EN has chosen two reds
   ‘She has chosen two red ones.’

   b. *Zij heeft er twee rode gekozen.
      she has ER two red chosen
      ‘She has chosen two red ones.’

In the following section we review some relevant studies that concentrated on the emergence or developmental processes of Dutch ER and/or French EN.

3. The acquisition of ER and EN

Some of the limited number of studies that focused on ER and EN pronouns in first language acquisition have taken an experimental approach, while others performed corpus-analyses on spontaneous speech files.

Van Hout et al. (2011) experimentally examined the production of quantitative ER pronouns in monolingual Dutch five-year-old children, while Gavarró et al. (2011) did the same for quantitative EN pronouns in monolingual French five-year-old children. Both studies comprised an Elicited Speech Production Task and an Elicited Imitation Task. In the Elicited Speech Production Task, the Dutch children and the French children produced approximately the same amount of target-like utterances: 36% for Dutch and 35% for French. It is remarkable that even though
quantitative ER and quantitative EN were produced sparsely in both languages, if they were used, their use was syntactically correct. The infrequent use was a result of the pronoun being subject to omission (D:10%, F:5%), usage of the full NP (D:49%, F:52%), or other (D:5%, F:8%). Nonetheless, if the outcomes of the Dutch and French Elicited Imitation Tasks are compared, a discrepancy appears: French children master this specific construction better than their Dutch peers. The French Elicited Imitation Task yielded 98% target-like responses, while the Dutch tasks resulted in 81% for target-like responses.

Taking a different approach, Sleeman & Hulk (2013) analysed a small number of spontaneous speech files in Dutch and French, in which they focused on the age of emergence of nominal ellipsis constructions without a numeral remnant, see (4), and compared these with the age of emergence of quantitative ER and quantitative EN constructions that occurred in the same speech files.

(4)  a.  Ik kies de rode.  b.  Je choisis la rouge.
     I choose the red        I choose the red
     ‘I choose the red one.’    ‘I choose the red one.’

The authors selected a limited number of spontaneous speech production files from five monolingual French children (aged between 1;8 and 3;0) and five monolingual Dutch children (aged between 1;8 and 3;6) from the CHILDES database (MacWhinney 2000). The French files were part of the Lyon (Demuth & Tremblay 2008) and Paris (Morgenstern & Parisse 2007) corpora, and the Dutch files were part of the Groningen (Bol 1995) and Van Kampen (Van Kampen 1994) corpora. It was discovered that regular nominal ellipsis, exemplified in (4), emerges at the same time in French and Dutch children, around 1;8 years. Contrarily, Dutch quantitative ER emerges at a considerable later age (around 2;4 years) than French quantitative EN (around 1;11 years), thereby emphasizing a cross-linguistic difference between Dutch and French first language development of constructions with quantitative pronouns.

The results from these previous studies suggest that French children are earlier and more advanced in the production of EN pronouns in early childhood compared to ER pronouns in Dutch children, but the existing evidence is limited. As only quantitative ER and quantitative EN were included in these analyses, we know nothing about the ranking of the emergence of these quantitative pronouns in comparison with the emergence of homophonous types of ER and EN (as described in Table 1). To the best of our knowledge, no study has reported on this for French (yet), and only a basic, initial study has been conducted for Dutch (Van Dijk & Coopmans 2013). Van Dijk & Coopmans (2013) looked at the ages of emergence of various types of Dutch ER pronouns: expletive, locative, prepositional, and quantitative. A total of one-hundred-fifty spontaneous speech files of five young
children from the Groningen corpus (Bol 1995) from the CHILDES database, aged between 1;8 and 3;7 years, were analysed. The investigators discovered that the prepositional ER pronoun emerges prior to all other ER pronouns. Subsequently the quantitative pronoun follows, and approximately more than a year after the first emergence of prepositional ER sparse instances of locative ER are found. Expletive ER emerges at different ages in the different children. Hence, the emergence of ER in Dutch can be described in the following sequence (5).

(5)  prepositional < (expletive) < quantitative < (expletive) < locative

In conclusion, four studies have looked at the emergence and production of ER and EN pronouns, all of them being remarkably limited in their scope. We build upon the aforementioned studies by providing a broader picture regarding the emergence of Dutch ER pronouns and French EN pronouns. We add to the work by Van Dijk & Coopmans (2013), Gavarró et al. (2011), Van Hout et al. (2011), Sleeman & Hulk (2013) in three ways by: (i) including a large(r) number of spontaneous speech files, (ii) focusing on the relative complexity of multiple syntactic functions of ER and EN, (iii) providing a cross-linguistic perspective, and (iv) making an important distinction between non-adjacent and adjacent prepositional pronouns (an explanation of these terms will be given in Section 4.1.2).

In the following section we will evaluate syntactic complexity per construction and per language, including the complexity differences between non-adjacent and adjacent prepositional pronouns, which Van Dijk & Coopmans (2013) did not address.

4. Syntactic complexity

In order to account for the cross- and inter-linguistic differences of the emergence pattern of ER and EN pronouns, we call upon relative syntactic complexity. Informally defined we consider syntactic complexity to be equivalent to the number of merge operations that constituents undergo: if the number of movements of a constituent in a derivation increases, syntactic complexity increases. If syntactic complexity increases, we expect a later age of emergence in child L1 acquisition. Compare a Dutch sentence containing an object pronoun (6) with a Dutch sentence containing a quantitative pronoun (7).

---

5 There is the idea in the literature (and already present in Chomsky 1995) that movement (i.e., internal merge) is costlier than external merge. Movement being cyclic, each instance of internal merge on the way to the landing site is a costly operation. Thus, movement in one stretch will always be less complex than movement through intervening positions implying deletion of many copies, an operation that Nunes (2004) defines as being costly. We will show that children sometimes do not delete the doubling constituent after copying the pronoun, which provides evidence for Nunes’ copy theory of movement.
<table>
<thead>
<tr>
<th>Original</th>
<th>Ik zie de knikkers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>( \rightarrow )</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

‘I see the marbles. I see them.’

<table>
<thead>
<tr>
<th>Original</th>
<th>Ik zie twee knikkers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>( \rightarrow )</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td>( \rightarrow )</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

‘I see two marbles. I see two.’

In the object pronoun sentence, see (6), the full NP is pronominalised by the pronoun ze ‘them’, i.e., both the determiner and the NP are replaced, no movement is needed and no visible remnant is left behind. In the quantitative pronoun sentence, see (7), only the NP is pronominalised by the pronoun ER, while the numeral is left behind as a remnant of the original noun phrase. Moreover, movement is needed because the quantitative pronoun cannot stay in its base position. Thus, besides the pronominalisation (step 1) that happens in sentences (6) and (7), only in sentence (7) step 1 has to be followed by step 2, a syntactic movement. Due to the presence of this syntactic movement, we consider this latter construction to be more complex than comparable sentences with object pronouns. Van Kampen (1997) claims that syntactic complexity is equivalent to the number of merges, which in turn influences the emergence of certain constructions. Based on this idea, we expect sentences with quantitative pronouns to emerge later than sentences with object pronouns, due to a higher syntactic complexity load. Van Hout et al. (2011) confirmed this, as they found that Dutch monolingual five-year-old children have a better command of object pronouns than quantitative ER pronouns: more pronoun forms on the object pronoun task were produced than on the quantitative pronoun task. Hulk & Zuckerman (2000) claim something similar, namely that if a language allows for

---

6 On this view, constructions involving movement will always emerge later than their non-movement counterparts. So in French *Je veux la poupée* ‘I want the doll’ will precede *Je la veux* ‘I want it’.
different options, young children will initially use the more economical one, i.e., the option that involves the least movements. Jakubowicz (2002; 2011) and Soares (2002; 2003) make a distinction between external and internal merges and claim that young children prefer the former over the latter because of external merge being an operation with a lower complexity load. To clarify this claim, Jakubowicz (2005) proposes a metric whereby computational complexity can be precisely defined, the Derivational Complexity Metric, as explained in (8).

(8) a. Merging $a_i$ $n$ times gives rise to a less complex derivation than merging $a_i (n + 1)$ times.

b. External Merge of $a$ gives rise to a less complex derivation than Internal Merge of $a + \beta$.

In this metric Jakubowicz does not take into account the number of external merges that are needed to build the whole sentence, neither does she count other internal merges, such as V-to-T movement that could occur in such constructions as well. Jakubowicz & Strik (2008) argue that the Derivational Complexity Metric in (8) is valid, as it correctly describes the relative frequency of interrogative constructions in French L1 acquisition. In their investigation, typically developing French monolingual children (aged three, four, and six) and atypically developing French monolingual SLI children (aged eight and eleven) were tested in an Elicited Speech Production Task on their use of direct interrogatives. The authors found that both SLI groups, as well as typically developing children who were three and four years old, made more use of the (grammatical) in situ pattern in locative and object root questions, in comparison with typically developing children who were six years old, and the control adults. In the in situ pattern the wh-phrase is placed in the position where the grammatical object would have been if the assertive sentence was uttered, see (9).

(9) a. *Le poisson nage dans l’eau.*
   the fish swims in the water
   ‘The fish swims in the water.’

b. *Le poisson nage où?*
   the fish swims where
   ‘Where is the fish swimming?’

Whereas the locative question in (9) only involves external merge of the wh-phrase ($n$), the wh-movement construction in (10) also requires internal merge of the wh-
phrase \((n + 1)\), making this latter derivation more complex according to the first rule of the Derivational Complexity Metric (8a).

(10) \textit{Qui tu as vu?}  
who you have seen  
‘Who did you?’

According to the second rule of the Derivational Complexity Metric (8b), a \textit{wh}-fronting sentence that contains internal merge of the subject pronoun, i.e., subject inversion (11), which is written as \(\alpha + \beta\), is more complex than the sole internal merge of \(\alpha\) in (10).

(11) \textit{Qui as-tu vu?}  
who have you seen  
‘Who did you see?’

This section illustrated that syntactic movement is costly in children’s language production. We will adopt this approach in the following sections, in which we will explain in more detail what Dutch (Section 4.1) and French (Section 4.2) syntactic complexity involves in the case of ER and EN.

4.1 Syntactic complexity of ER

As shown in Table 1, there are many functions that ER can have in Dutch. In this section we will specifically focus on the complexity of two of them: prepositional ER and quantitative ER, as these two exist in Dutch and in French.

4.1.1 Obligatory movement

There is some obvious overlap between quantitative ER and prepositional ER in the sense that both structures involve external merge of the pronoun or pronominalisation (step 1) and that in neither function ER is allowed to stay in its base-generated position (step 2) (Kranendonk 2010). See (12) for an example of quantitative ER and (13) for an example of prepositional ER.

(12) Original \(Hij koopt twee knikkers.\)  
he buys two marbles  

Step 1 \(\rightarrow\)  
\(\ast Hij koopt twee er.\)  
he buys two ER
Step 2 → *Hij koopt er twee.
   he buys ER two

‘He buys two marbles. He buys two.’

(13) Original
   Ik kijk in de doos.
   I look in the box

Step 1 → *Ik kijk in er.
   I look in ER

Step 2 → Ik kijk erin.
   I look ERin

‘I look in the box. I look in it.’

The first obligatory step involves external merge of ER: the pronominalisation of the full DP. However, this pronominalisation alone does not lead to a grammatical sentence. Therefore, both constructions need to go through step 2, in which ER is merged internally. For quantitative ER this involves movement from the in situ original NP position to a position left-adjacent to the quantifier, and for prepositional ER this involves movement from the in situ original NP position to the position immediately to the left of the preposition. After these two obligatory steps, both sentences are grammatical and acceptable, which – because of this same number of merges – leads to the prediction that quantitative ER will emerge at the same time as prepositional ER.

4.1.2 Optional movement
Under specific pragmatic conditions, both quantitative ER and prepositional ER may undergo extra optional movement that involves one more instance of internal merge. In order for this to happen an extra constituent needs to be inserted in the sentence.

Quantitative ER step 3 → *Hij kocht er gisteren twee.
   he bought ER yesterday two
   ‘He bought two yesterday.’

Prepositional ER step 3 → *Ik keek er gisteren in.
   I looked ER yesterday in
   ‘I looked in it yesterday.’
These examples add another characteristic to prepositional and quantitative ER constructions, what we will call adjacent and non-adjacent constructions. Adjacent constructions entail those constructions in which ER immediately precedes the preposition or quantifier, as in ER in ‘in’ or ER drie ‘three’, while non-adjacent constructions entail those constructions that contain an adverb between ER and its obligatory counterpart, as in er vaak in ‘ER often in’ and er morgen drie ‘ER tomorrow three’.

Based on the Derivational Complexity Hypothesis we predict that all further movement after the obligatory initial two steps increases complexity. Because of the increased complexity that is brought along together with optional movement of step 3, we predict the following order of emergence in child language.

P1: adjacent prepositional constructions < non-adjacent prepositional constructions (obligatory movement) (optional movement)

P2: adjacent quantitative constructions < non-adjacent quantitative constructions (obligatory movement) (optional movement)

P3: prepositional ER = quantitative ER

4.2 Syntactic complexity of EN
The functions of French quantitative and prepositional EN are syntactically similar to their Dutch counterparts. That is, French quantitative EN needs an antecedent and is syntactically part of a complex indefinite noun phrase modified by a numeral or weak quantifier, such as aucun ‘none’ or plusieurs ‘many’. French prepositional EN is considered an anaphoric stand-in that needs to be bound by an antecedent in the preceding discourse in order to identify the syntactic relationship between the two constituents.

4.2.1 Obligatory movement
Since the prepositional complement in French pronominalises both the complement of the preposition and the preposition de ‘of’ itself, no movement inside PP is involved, unlike in Dutch. Instead, only clitic movement to the verbal host is needed, similar to what we see for other anaphoric clitic pronouns. A similarity with Dutch is that EN is not allowed to appear in situ, but instead has to move. See (14) for an example of quantitative EN and (15) for an example of prepositional EN.

(14) Original Elle achète parfois deux billes.
   she buys sometimes two marbles
Step 1 \[\rightarrow \quad *\text{Elle achète parfois deux en.}\]
she buys sometimes two EN

Step 2 \[\rightarrow \quad \text{Elle en achète parfois deux.}\]
she EN buys sometimes two

‘She sometimes buys two marbles. She sometimes buys two.’

(15) Original \[\text{Il parle de ce livre.}\]
he speaks of this book

Step 1 \[\rightarrow \quad *\text{Il parle en.}\]
he speaks EN

Step 2 \[\rightarrow \quad \text{Il en parle.}\]
he EN speaks

‘He speaks about this book. He speaks about it.’

Similar to Dutch, step 1 is the pronominalisation of the full NP and step 2 involves movement from the original NP position to a clitic position immediately preceding \(V_{in.}\). After these two obligatory steps both sentences are grammatical and acceptable. Because quantitative EN and prepositional EN are of similar derivational complexity, we predict quantitative EN to emerge at the same time as prepositional EN.

P4: prepositional EN = quantitative EN

4.2.2 Optional movement

There is no optional movement in the case of prepositional EN and quantitative EN. Adding an extra constituent does not cause an increase in merges for quantitative EN in French, since EN is a clitic and is therefore always dependent on the finite verb. It does not scramble but cliticises in a single step to the pre-verbal position. As mentioned, we follow Jakubowicz here and do not count other operations that do not relate to the pronouns themselves.

4.3 Cross-linguistic syntactic complexity

Given the properties of ER and EN as described above, we can now evaluate what these similarities and differences mean for our cross-linguistics comparison. We have seen that both pronouns share similar derivational complexity, and that the
same number of obligatory steps seems to be needed in French and in Dutch to make sentences with prepositional pronouns and quantitative pronouns grammatical and acceptable. We therefore predict the following:

P5: adjacent prepositional ER = prepositional EN
P6: adjacent quantitative ER = quantitative EN

5. Methodology

In order to investigate whether the syntactic complexity of the different functions of ER and EN has an influence on the emergence pattern in Dutch and French monolingual language development, and to find out whether there are cross-linguistic differences, we used CHILDES (MacWhinney 2000) to compose a dataset consisting of two-hundred-six spontaneous speech files from seven normally developing and longitudinally followed Dutch L1 children (Groningen corpus, Bol 1995) and two-hundred-thirteen spontaneous speech files from seven normally developing and longitudinally followed French L1 children (Lyon corpus, Demuth & Tremblay 2008, and Paris corpus, Morgenstern & Parisse 2007).

5.1 Participants

We analysed all spontaneous speech recordings of the Dutch children, aged between 1;6 and 3;7 years, and of the French children, aged between 0;11 and 3;3 years. Recordings were created on an average basis of twice a month. Besides age, for all children the mean length of utterance (MLU) ratio was calculated per recording using the CLAN programme in CHILDES. See Table 2 for an overview of the participant specifics.

---

7 Of the Dutch children, Josse, Iris, Abel, Daan and Matthijs’ files were also studied by Van Dijk & Coopmans (2013). Sleeman & Hulk (2013) studied the Dutch children Abel, Daan and Matthijs, and the French children Anaïs, Marie, Nathan and Theotime on the production of pronouns, but only in five files for each child: at the ages 1;8, 2;0, 2;4, 2;8, and 3;0.
Table 2: The quantity of recordings.
Age is presented in months and mean length of utterance is presented between brackets.

<table>
<thead>
<tr>
<th>Children</th>
<th>First Recording</th>
<th>Final recording</th>
<th>Nr of recordings</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dutch</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tomas</td>
<td>Age (MLU)</td>
<td>19 (1)</td>
<td>37 (3)</td>
</tr>
<tr>
<td>Peter</td>
<td>Age (MLU)</td>
<td>18 (1)</td>
<td>32 (3)</td>
</tr>
<tr>
<td>Josse</td>
<td>Age (MLU)</td>
<td>24 (1)</td>
<td>40 (3)</td>
</tr>
<tr>
<td>Iris</td>
<td>Age (MLU)</td>
<td>25 (1)</td>
<td>42 (2.5)</td>
</tr>
<tr>
<td>Abel</td>
<td>Age (MLU)</td>
<td>22 (1)</td>
<td>40 (3.5)</td>
</tr>
<tr>
<td>Daan</td>
<td>Age (MLU)</td>
<td>20 (1)</td>
<td>39 (2.5)</td>
</tr>
<tr>
<td>Matthijs</td>
<td>Age (MLU)</td>
<td>25 (1.5)</td>
<td>43 (3.5)</td>
</tr>
<tr>
<td><strong>French</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anaïs</td>
<td>Age (MLU)</td>
<td>12 (1)</td>
<td>36 (2.5)</td>
</tr>
<tr>
<td>Marie</td>
<td>Age (MLU)</td>
<td>12 (1)</td>
<td>37 (3.5)</td>
</tr>
<tr>
<td>Nathan</td>
<td>Age (MLU)</td>
<td>12 (1)</td>
<td>36 (2)</td>
</tr>
<tr>
<td>Theotime</td>
<td>Age (MLU)</td>
<td>11 (1)</td>
<td>36 (3)</td>
</tr>
<tr>
<td>Antoine</td>
<td>Age (MLU)</td>
<td>17 (1)</td>
<td>36 (3)</td>
</tr>
<tr>
<td>Leonard</td>
<td>Age (MLU)</td>
<td>20 (1)</td>
<td>38 (3.5)</td>
</tr>
<tr>
<td>Anae</td>
<td>Age (MLU)</td>
<td>18 (1)</td>
<td>39 (3)</td>
</tr>
</tbody>
</table>

Table 2 demonstrates that the MLU is similar among all children, around 1.0 for the first recording to approximately 3.0 for the last recordings.

5.2 Counting
Using the CLAN programme, we found and analysed all ER and EN pronouns, and assigned each individual instance to one of the following categories: adjacent or non-adjacent constructions with prepositional complements of verbs, and adjacent or non-adjacent constructions with a quantitative pronoun.  

8 Omissions in both languages were not counted for practical reasons: omitted words cannot be entered and filtered out of the text by using the CLAN programme. Recurrences of the same utterance have also been excluded, unlike Van Dijk & Coopmans (2013), because we opine that if a sentence with a certain pronoun is repeated multiple times, and counted as new single instances, this causes a distorted view on real production. In Dutch, a couple of utterances have been found in which ER is used both in the adjacent and in the non-adjacent position, like *kan er niet eruit ‘cannot go out’, uttered by Abel (2;10). This happened sixteen times in total at an average age of two years and eight months. The fact that these constructions occur in Dutch sentences with prepositional complements indicates that the use of ER is not always syntactically correct, until at least a couple of months after its emergence.

9 Although erbij in erbij zijn ‘be present’ and erbij kunnen ‘to be able to reach’ may be considered a prepositional ER, because bij can also introduce a complement of the verbs
6. Results

In the presentation of our results we follow Van Dijk and Coopmans (2013), but recall that they did not make a distinction between adjacent and non-adjacent prepositional ER and quantitative ER.

Not all constructions that we looked for were found in the data files: prepositional complements of nouns and complements of adjectives were not produced in Dutch, nor in French. Therefore, starting with Dutch, Figure 1 presents the ages of first emergence per prepositional complements of verbs and quantitative pronouns per child.

![Figure 1: The ages of emergence per type of ER per child. The vertical information represents the ages of emergence (in years and months) | MLU | absolute number of utterances.](image)

Figure 1 graphically demonstrates that all Dutch children utter adjacent prepositional ER constructions, as in (16), while not all children produce non-adjacent prepositional ER constructions, as in (17).

\[\text{kunnen} \text{ and } \text{zijn} \text{ with the same meanings, we counted } \text{erbij zijn} \text{ and } \text{erbij kunnen} \text{ as fixed expressions. Fixed expressions are not included in the data analysis.}\]

10 We also checked for ER’s allomorphs \(d'r\) and \(l'r\) in the Dutch files. In the French files we also counted EN preceded by an elided first, second, or third person pronoun (\(m'en, t'en, l'en\)), a reflexive pronoun (\(s'en\)), or an elided negation (\(n'en\)).
(16)  
a.  *Komt eruit.*  
comes ERout  
‘It comes out.’  
(Abel 2;10)  
b.  *Ga eraf.*  
go ERoff  
‘Go off.’  
(Josse 2;4)

(17)  
a.  *Die moet er niet in.*  
that must ER not in  
‘That one must not be put in.’  
(Matthijs 2;9)  
b.  *Die moet er weer in.*  
that must ER again in  
‘That one must be put in again.’  
(Peter 2;4)

Adjacent quantitative ER constructions in sentences without an extra constituent, as in (18), are not produced by Peter, Tomas, and Iris, while non-adjacent quantitative ER constructions in sentences with an extra constituent, as in (19) are produced by everybody except Peter.

(18)  *Daar ligt er één.*  
there lies ER one  
‘There lies one.’  
(Daan 3;0)

(19)  *Ik heb er maar twee.*  
I have ER only two  
‘I only have two.’  
(Abel 3;0)

Table 3 provides the average ages of emergence of the various ER constructions per group.

<table>
<thead>
<tr>
<th></th>
<th>prepositional ER</th>
<th>quantitative ER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average age</td>
<td>2;2</td>
<td>2;5</td>
</tr>
<tr>
<td>Average MLU</td>
<td>1.5</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Table 3 demonstrates that both adjacent and non-adjacent quantitative ER constructions emerge approximately around the same age, but in comparison to
prepositional ER relatively late: approximately seven months later than adjacent prepositional ER and four months later than non-adjacent prepositional ER. Thus all children start with the production of adjacent prepositional complements in sentences without an extra constituent between the finite verb and the preposition.\textsuperscript{11}

Figure 2 presents the ages of first emergence per prepositional complement of verbs and quantitative pronoun per child in French. This table makes no distinction between adjacent and non-adjacent constructions, as this distinction does not exist in French, as explained earlier: in French the pronoun always cliticises directly onto $V_{\text{fin}}$.

![Figure 2: The ages of emergence per type of EN per child. The vertical information represents the ages of emergence (in years and months) | MLU | absolute number of utterances.](image)

Figure 2 graphically demonstrates that all French children utter quantitative EN constructions, while only one child, Anae, produces prepositional EN as a complement to a verb, as in (20). She produced this sentence in a conversation about playing the piano.

(20) \textit{Moi j’en joue.} \hspace{1cm} (Anae 2;11)

\begin{flushleft}
me I EN play
\end{flushleft}

\begin{flushright}
‘I play it.’
\end{flushright}

\textsuperscript{11}In Matthijs’ files the prepositional pronoun ER emerges at 1;11 (\textit{die erop}, ‘that one on it’) but is used only once until 2;5, then it appears on a frequent basis. In the files of the other children there is not such a big gap between the subsequent occurrences of the same type of pronoun.
Table 4 provides the average ages of emergences of the various EN constructions per group.

**Table 4: Average ages of first emergences of prepositional EN and quantitative EN.**

<table>
<thead>
<tr>
<th></th>
<th>prepositional EN</th>
<th>quantitative EN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average age</td>
<td>-</td>
<td>2.0</td>
</tr>
<tr>
<td>Average MLU</td>
<td>-</td>
<td>1.8</td>
</tr>
</tbody>
</table>

It is clear that all children (including Anae) start with the production of quantitative EN, while the prepositional complement emerges much later (average age of emergence and MLU cannot be given due to insufficient production of this construction).

From a cross-linguistic perspective, the acquisition patterns of both constructions differ in one glaringly obvious way: French children start with the production of quantitative pronouns, while Dutch children start with the production of prepositional complements. In both languages the construction that emerges earliest is also uttered the most extensively: in French there is a single instance of a sentence with a prepositional complement and in Dutch the quantitative pronoun is in quantitative respect an ancillary construction.

7. Discussion
In this chapter we investigated and compared the ages of emergence of quantitative and prepositional ER and EN pronouns in the spontaneous speech of monolingual Dutch and monolingual French children. Our overall finding is that not all pronouns emerge simultaneously, i.e. some pronouns appear sooner than others. In Dutch, the prepositional pronouns appear before quantitative pronouns, while in French this is vice versa. Interestingly, when ER and EN were uttered it was done mostly correctly: we detected some cases of doubling in Dutch but in neither of the languages the pronouns were inappropriately left in situ or used in an otherwise syntactically unacceptable fashion.

Based on the Derivational Complexity Hypothesis that claims that an increased number of movements results in increased syntactic complexity, which in turn entails a later age of emergence, we proposed several predictions. For Dutch these were:

(P1) Dutch adjacent prepositional complements emerge before Dutch non-adjacent prepositional complements in sentences with an extra constituent.
This prediction is confirmed by the results of our study. Adjacent prepositional complements in sentences without an extra constituent emerge earliest, around 2 years and 2 months (MLU 1.5). In sentences containing an extra constituent, non-adjacent prepositional complements appear around 2 years and 5 months (MLU 2.1). This order of emergence is found in the data of all children, apart from Iris – who only produces adjacent prepositional ER – and Tomas, whose adjacent and non-adjacent prepositional ER emerge simultaneously. Sentences without an extra constituent are grammatical after two merges, while three merges are needed in order to correctly construct sentences with an extra constituent. Therefore, we draw the conclusion that syntactic complexity plays a role in this specific order of emergence.

(P2) Dutch adjacent quantitative pronouns emerge before Dutch non-adjacent quantitative pronouns in sentences with an extra constituent.

Our second prediction was that all further movement – after the obligatory initial two steps – increases derivational complexity. As a result, we predicted the order of emergence as stated in P2. This prediction does not seem to be borne out: non-adjacent quantitative pronouns in sentences with an extra constituent and adjacent quantitative pronouns in sentences without an extra constituent emerge around the same time, respectively at 2 years and 9 months (MLU 2.8) and at 2 years and 10 months (MLU 3.0). However, the fact that quantitative pronouns emerge much later than prepositional ER, and the fact that adjacent and non-adjacent quantitative ER emerge at the same time, may suggest that even adjacent quantitative ER is a three-step operation, just like non-adjacent quantitative ER. Thus, three steps are obligatory in both sentence types.

The suggestion that quantitative ER involves three obligatory steps instead of two obligatory steps followed by an optional one may be supported by the fact that adjacent quantitative ER never occurs in sentences without a verb, see (21), contrary to adjacent prepositional ER, see (22).

(Father: Hoeveel wil je er? ‘How many do you want?’)

(21) a. *Er twee of er drie?
   ER two or ER three
b. *Er twee of drie?
   ER two or three
c. Twee of drie?
   two or three?
d. Wil je er twee of drie?
   want you ER two or three
   ‘Do you want two or three?’
Based on this theory, quantitative ER moves to a position immediately preceding its licensor (comparable to prepositional ER), but cannot stay in this position because of its incapacity to cliticise onto the quantifier. Instead, quantitative ER seeks an appropriate host to ‘lean’ on, which is the verbal constituent on its left. Once non-adjacent prepositional ER has emerged in child language, this obligatory third step in quantitative ER can develop (in both adjacent and non-adjacent quantitative ER constructions). This rationale influences our previous claim as stated in Section 4.1.2: the third step is no longer optional, but obligatory in adjacent and non-adjacent quantitative ER constructions, see (23).

(23) Original  

<table>
<thead>
<tr>
<th>Step</th>
<th>Step Description</th>
<th>Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>→</td>
<td>*Hij heeft twee er gekocht.  he has two ER bought</td>
</tr>
<tr>
<td>Step 2</td>
<td>→</td>
<td>*Hij heeft (gisteren) er twee gekocht  he has yesterday ER two bought</td>
</tr>
<tr>
<td>Step 3</td>
<td>→</td>
<td>Hij heeft er (gisteren) twee gekocht  he has ER yesterday two bought</td>
</tr>
</tbody>
</table>

‘He bought two marbles (yesterday).’

The idea that both adjacent and non-adjacent quantitative ER require three obligatory steps, whereas in the case of prepositional ER the third step is optional, is further supported by the fact that the children in our dataset never produce the order ‘extra constituent - quantitative ER’, whereas they do produce the order ‘extra constituent - prepositional ER’, see Figure 3.
Figure 3: The ages of emergence per adjacent type of ER per child. The vertical information represents the ages of emergence (in years and months) | MLU | absolute number of utterances.

Thus, if a sentence is created with prepositional ER and with an extra constituent, prepositional ER can be left in the position immediately preceding its licensor, see (24). The average age for this construction to appear is two years and seven months (MLU 2.4).

(24)  \( Ik \text{ kan ze al eruit doen.} \)  \( \text{(Matthijs 2;11)} \)

I can them yet ER out do
‘I can get them out already.’

If a sentence is created with quantitative ER and with an extra constituent, quantitative ER is never left in the position immediately preceding its licensor. Although the Dutch children do not produce this construction, it is marginally acceptable in their target language, see (25).

(25)  \( ?? Ik \text{ heb maar er twee teruggezien.} \)

I have only ER two back-seen
‘I have only seen two back.’

This example shows that there is a landing site for ER immediately preceding the quantifier, although it is preferably not a permanent landing site.
We have used our acquisition data to argue that adjacent quantitative ER involves three obligatory steps instead of two. This means that the child data helped us to determine the number of steps in a derivation, which we could not determine on the basis of the target language data or the literature. If adjacent quantitative ER involves three steps instead of two, our reformulated P2 is borne out:

(P2)' Dutch adjacent quantitative pronouns emerge at the same time as Dutch non-adjacent quantitative pronouns in sentences with an extra constituent.

The revised number of steps in adjacent quantitative ER constructions also has consequences for P3.

(P3) Dutch quantitative pronouns will emerge simultaneously with Dutch prepositional complements.
(P3)' Dutch quantitative pronouns will emerge after Dutch prepositional complements.

Whereas P3 is not borne out, P3’ is: prepositional complements emerge on average and also on an individual level earlier than quantitative pronouns. The constructions with prepositional complements (that involve two steps) emerge on average around two years and two months, while constructions with quantitative pronouns (that involve three steps) emerge on average around two years and ten months. This outcome is in line with the findings of Van Dijk & Coopmans (2013).

For French, we predicted the following:

(P4) French prepositional complements emerge simultaneously with French quantitative pronouns.

This prediction is undoubtedly disproven. Quantitative constructions emerge at a relatively early age (around two years and zero months), before any other EN construction, while only one instance of a prepositional complement has been found, at a relatively late age (two years and eleven months). Therefore, the average data of all children prove this assumption false.

Now that we have discussed the role of syntactic complexity per language, these outcomes will serve as the basis for cross-linguistic comparisons. We made two cross-linguistic predictions.

(P5) French prepositional complements emerge simultaneously with Dutch prepositional complements.
Regarding prepositional complements we have to keep in mind that French prepositional EN can only be compared with a small subset of the Dutch prepositional pronouns (ERvan, E Rover).\textsuperscript{12} When we compare these, we see that Anae uttered the only French prepositional complement at two years and eleven months with the sentence moi j’en joue (see (20)), and the Dutch variant ERvan was uttered, also once, by Abel at two years and ten months, see (26).

(26) \textit{je weet niets ERvan.} \hspace{1cm} (Abel, 2;10)

you know nothing ERof

‘You know nothing about it.’

This age of emergence is comparable, but due to the limited number of instances further experimental research is needed.

(P6) French quantitative pronouns emerge simultaneously with Dutch quantitative pronouns.

If quantitative ER involves three obligatory steps instead of two, as we argued earlier, this prediction needs to be revised. Notice that for quantitative EN an extra step cannot be motivated. After pronominalisation, quantitative EN moves in one step to its verbal host.

(P6’) French quantitative pronouns emerge earlier than Dutch quantitative pronouns.

This reformulated prediction is borne out. French constructions with a quantitative pronoun emerge on average around two years and zero months, while Dutch constructions with a quantitative pronoun emerge on average around two years and nine or ten months. The data show that, on an individual level, nearly all of the French children precede the Dutch children in the production of quantitative constructions, except for Nathan, whose first emergence of quantitative EN is at two years and five months, while Abel and Daan produce quantitative ER at two years and four months. This outcome is in line with the findings of previous studies (Gavarró et al. 2011; Van Hout et al. 2011; Sleeman & Hulk 2013).

In summary, we studied the emergence of prepositional and quantitative pronouns in French and Dutch, both separately and comparatively. Our acquisition

\textsuperscript{12} In Section 2 we showed that prepositional ER in Dutch and prepositional EN in French have diverse characteristics and are therefore difficult to compare. Whereas prepositional ER is able to occur with all pronouns, prepositional EN only replaces \textit{de} ‘of’-complements. Complements introduced by locative prepositions are replaced by the pronoun \textit{y} or by the adverbs \textit{dessus} ‘above’ or \textit{dessous} ‘under’.
data led us to revise three of our six predictions, which were then borne out. Ultimately, only one prediction was not borne out, P4, because French prepositional complements do not emerge simultaneously with French quantitative pronouns, as we predicted, but instead French quantitative pronouns emerge before French prepositional complements. In order to account for this relative occurrence, we believe that this may be explained by the fact that in French prepositional complements of verbs introduced by *de ‘of’* are not as omnipresent as quantitative pronouns are. This results in the assumption that young L1 acquirers do not frequently hear this construction and consequently it is unlikely that they will produce them as much as constructions that are widely available in their input. This suggestion is supported by a quick child directed speech search that made it obvious that French parents use quantitative EN far more often than EN as the complement of a verb. In Dutch, parents use ER as the prepositional pronoun more frequently than ER as a quantitative pronoun. Although this Dutch result could be explained by syntactic complexity alone, we nonetheless believe that a frequency effect reinforces this particular finding.

8. Conclusion
The results of this corpus-based chapter shed light on the emergence in child language of syntactically different ER pronouns in Dutch and EN pronouns in French, and the role that complexity plays in this order of emergence. We have argued that it is not always possible to determine how many steps are needed in a derivation on the basis of the target language, because the Dutch syntactic quantitative ER movement that we considered to be optional was in fact not. As a result, it were the data themselves that forced us to redefine our initial predictions, which were then (apart from one) all borne out. All predictions concerning the Dutch language and all cross-linguistically based predictions came to pass: adjacent prepositional ER emerges before non-adjacent prepositional ER, quantitative ER emerges after prepositional ER, adjacent and non-adjacent quantitative ER emerge simultaneously, prepositional EN and prepositional ER emerge simultaneously, and quantitative EN emerges before quantitative ER. The only prediction that is not borne out is that French prepositional EN emerges simultaneously with quantitative EN, because the data clearly reveal that prepositional EN emerges later than quantitative EN. We have attributed this later emergence of prepositional EN to the fact that it only replaces *de ‘of’* and the complement, which would also account for its low frequency in child-directed speech and (hence) in the child data.
Chapter III

Adult L2 acquisition of ER: syntactic constraints*

1. Introduction
One of the core aspects of human communication revolves around the choice of linguistic expressions for object identification, i.e., the use of full noun phrases – NPs – *(de bloemen, ‘the flowers’) versus object pronouns *(ze, ‘them’)*. Interestingly, in Dutch, if a quantity of flowers is expressed, the NP is no longer pronominalised into an object pronoun but instead a pronoun appears along with the remnant quantifier: the quantitative pronoun ER, see (1).

(1)  
*Ik zie acht bloemen.*  
→  
*Ik pluk er vijf.*  

‘I see eight flowers.’  
‘I pick ER five.’

Like Catalan *(en)*, French *(en)* and Italian *(ne)*, Dutch is one of the few languages that possesses this pronoun that is inherently linked to quantity. Recent work on ER in L1 acquisition revealed that its production is relatively late in Dutch early child language; this holds both intra-linguistically when compared to the emergence of regular nominal ellipsis *(Sleeman & Hulk 2013)* and to the emergence of homophonous types of ER *(Chapter II; Van Dijk & Coopmans 2013)*, and cross-linguistically when compared to the emergence of its French counterpart EN *(Chapter II; Gavarró et al. 2011; Van Hout et al. 2011; Sleeman & Hulk 2013)*.

To the best of our knowledge no study has examined adult L2 grammaticality judgements of morpho-syntactic sentence constructions with ER. In the present study we intend to fill this gap in the literature and moreover combine it with a second line of inquiry, which is the transfer effect of (semantically similar but) syntactically different L1 sentence constructions on L2 acquisition.

The role of transfer has been made explicit in the Contrastive Analysis Hypothesis with the key point being made far back in the previous century by Lado *(1957)*, who stated that the influence of L1 on L2 is enhanced when similar linguistic elements are present in both the native and the target language, known as

positive transfer, but that a difference between L1 and L2 will create difficulties in learning the target language, known as negative transfer. In the generative literature one of the first references to transfer was made by Schwartz & Sprouse (1996) in their Full Transfer Full Access Hypothesis. We have included the division between positive and negative transfer of the former hypothesis and the full transfer part of the latter hypothesis in what we from now on will call the Transfer Hypothesis. We assume linguistic patterns in L2 to be largely predicted on the basis of L1 characteristics, which transfer to L2 either positively or negatively (Gass et al. 2013).

In the present study we will investigate how sentences with Dutch quantitative ER constructions, modified within multiple morpho-syntactic contexts, are being judged by adult speakers from two contrasting language backgrounds: L1 French that does feature quantitative pronoun constructions and L1 English that does not feature quantitative pronoun constructions. These groups are compared to an adult L1 Dutch group.

2. Background

2.1 Syntactic constraints on Dutch quantitative constructions
The Dutch quantitative pronoun ER refers to an object antecedent that has previously been mentioned in the discourse: it is syntactically part of a complex noun phrase modified by a cardinal numeral or weak quantifier in an indefinite NP in object position. Its exact licensing conditions are sensitive to a number of structural, semantic and discourse-pragmatic constraints. It is proposed by Corver, Van Koppen & Kranendonk (2009) that ER originates in the NP, see (2a), and then moves out of it, see (2b).

(2) a.   \textit{Ik pluk} [\textit{DP} [\textit{QP vijf} [\textit{NP \text{ER}}]]] \hspace{2cm} \text{Corver et al. (2009)}

b.   \textit{Ik pluk \text{ER} i} [\textit{DP} [\textit{QP vijf} [\textit{NP t}]]]

2.2 Syntactic constraints on French quantitative constructions
Although Dutch and French both possess quantitative pronouns, ER in Dutch (3a) and EN in French (3b) exhibit similar and different distributive properties. A comparable property is that in both languages the presence of a quantitative pronoun is obligatory in an indefinite elliptical noun phrase that is modified by a cardinal numeral or weak quantifier in object position. So absence of the quantitative pronoun is not allowed in either language, see (3a) and (3b).
CHAPTER III. ADULT L2 ACQUISITION OF ER: SYNTACTIC CONSTRAINTS

As can be seen in (3), the syntactic position of the quantitative pronoun differs between these two languages: in Dutch main clauses ER moves to a position post $V_{fin}$ (4a), whereas in French EN moves to a clitic position preceding $V_{fin}$ (4b).

Another disparity comes up if the remnant of an elided noun contains a numeral and an adjective. In those constructions a quantitative pronoun can appear in French (5a) (Bouchard 2002; Sleeman 1996), but not in Dutch (5b) (Kranendonk 2010; Sleeman 1996).

The inequality between (5a) and (5b) comes from a difference in structural size of the constituent that the quantitative pronoun replaces in its underlying position within the noun phrase.\(^1\) In Dutch, ER can underlyingly be the complement of a quantifier but not of an adjective (Kranendonk 2010), and in French, EN can

---

\(^1\) In standard Dutch, ER pronominalises nP and the adjective occupies a position within this nP, hence the incompatibility in case of pronominalisation (Kranendonk 2010). In standard French, EN pronominalises NP and the adjective is outside of this NP, which makes it compatible with pronominalisation (Sleeman 1996).
underlyingly be the complement of a quantifier and an adjective (Sleeman & Ihsane 2017).

Recapitulating, we have compared French morpho-syntactic features in sentences with quantitative EN with Dutch morpho-syntactic features in sentences with quantitative ER and pointed out three conditions, the first one being similar between Dutch and French, the other two being different between Dutch and French: (i) ER [+/*-present] with numeral, (ii) ER [post Vfin/*post quantifier] with numeral, and (iii) ER [*+/-present] with numeral and adjective. We will now have a closer look at quantitative constructions in English.

2.3 Syntactic constraints on English quantitative constructions
Unlike Dutch and French, English does not have a quantitative pronoun. This means that in some of the previous mentioned conditions the presence of the numeral suffices without any addition, compare (6a) and (6b) for presence of the quantitative pronoun and (7a) and (7b) for position of the quantitative pronoun.

(6) a. Dutch    *Ik pluk ER vijf.
   b. English  I pick five.

(7) a. Dutch    Ik pluk ER, vijf t.
   b. English  I pick five.

In the condition in which an adjective is present along with a numeral, English deviates from the previously mentioned conditions, as an additional element is required: one, see (8a) for Dutch and (8b) for English.

(8) a. Dutch    *Ik heb vijf rode geplukt.
               *Ik heb er vijf rode geplukt.
               I have (*ER) five red picked
               ‘I have picked five red ones.’
               b. English I have picked five red ones.

These examples show that one is needed in sentences in which an attributive adjective is present, but it can be left out in case no adjective is mentioned. In accordance with Llombart-Huesca (2002), we analyse one as Number, see also
Kayne (2017) and Barbiers (2005). However, other linguists consider *one* to be a pronoun (Panagiotidis 2002; Panagiotidis 2003; Schütze 2001).

3. Predictions

In order to look at transfer in second language acquisition, we include the three above described morpho-syntactic environments of quantitative constructions in which Dutch, French and English sometimes share distributive properties and sometimes do not. Our Transfer Hypothesis declares that the acquisition of L2 may be hindered in case L1 features different constraints, while the acquisition of L2 may be facilitated in case the L1 features similar constraints. Based upon this statement we make different predictions per L1 group on the L2 target language, Dutch.

L1 French is expected to exert positive transfer in the ‘ER [*+/*-present] with numeral’ condition (exemplified in (3)) because of the shared distributive property that omitting the quantitative pronoun in a quantitative context is incorrect. In the other two conditions, ‘ER [post Vfin/*post quantifier] with numeral’ (exemplified in (4)) and ‘ER [*+/*-present] with numeral and adjective’ (exemplified in (5)), L1 French is expected to exert negative transfer as EN behaves differently from ER in these conditions: in main clauses EN precedes the Vfin, whereas ER follows the Vfin, and the occurrence of EN with a numeral and an adjective is legitimate, while in Dutch the occurrence of ER with a numeral and an adjective is considered ungrammatical.

L1 English is expected to exert negative transfer in the condition ‘ER [+/*-present] with numeral’ (exemplified in (6)) and no prediction is made for the condition ‘ER [post Vfin/*post quantifier] with numeral’ (exemplified in (7)). Both predictions arise from the non-existence of an English counterpart of ER. That is, because English does not have such a pronoun we expect the L1 English group to do worse than the L1 Dutch group when looking at presence, but because of the same reason we cannot make a prediction about a preferred position of ER by L1 English participants. In the other condition, ‘ER [*+/*-present] with numeral and adjective’ (exemplified in (8)), L1 English is expected to provide positive transfer because of the lack of ER in this condition, and because we assume *one* to not be a pronoun.

These predictions are summarised per language and per condition in Table 1.

---

\(^2\) Kayne (2017) proposes that although it looks like a pronoun, *one* should be considered a complex determiner. In this theory *one* contains at least two subparts, namely a classifier and an indefinite article (*I pick a blue one*) and sometimes a third subpart being plural -s (*I pick five blue ones*). Barbiers (2005) also analyses *one* as Number and claims that this type of noun ellipsis is only possible with count nouns.
Table 1: Transfer predictions per language and per condition.

<table>
<thead>
<tr>
<th>Language</th>
<th>Transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 French</td>
<td>Positive</td>
</tr>
<tr>
<td>L1 English</td>
<td>Negative</td>
</tr>
<tr>
<td>L1 French</td>
<td>Negative</td>
</tr>
<tr>
<td>L1 English</td>
<td>No prediction</td>
</tr>
<tr>
<td>L1 French</td>
<td>Negative</td>
</tr>
<tr>
<td>L1 English</td>
<td>Positive</td>
</tr>
</tbody>
</table>

4. Method

After our study received ethical approval by the University of Amsterdam Research Ethics Committee, participants were recruited in and around the city of Amsterdam through advertisements posted in several educational institutes, supermarkets, social media websites and through networks of relatives and friends. All participants signed a consent form and were financially compensated. The L1 French and L1 English groups were required to have a minimum level of proficiency in Dutch, preferably > B2 according to the Common European Framework of Reference, however only a small subset of the participants had followed a formal language course that had provided them with this valuation. To ensure that all our participants met the > B2 criterion, we asked them for a self-assessment and we conducted a proficiency task before the actual experiment started. Participants with hearing problems and those with insufficient command of Dutch, initially only based on conversation, were excluded from the study (N=6). The final sample included seventy-five adults, divided over three groups: L1 French (N=25), L1 English (N=25) and L1 Dutch (N=25). Table 2 provides descriptive statistics for the three groups in terms of mean age and years of exposure.

Table 2: Mean Age and Years of Exposure of the participants.

<table>
<thead>
<tr>
<th>Language</th>
<th>Age Mean (SD)</th>
<th>Years of Exposure (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 French (N=25)</td>
<td>47.0 (12)</td>
<td>22.1 (11)</td>
</tr>
<tr>
<td>L1 English (N=25)</td>
<td>48.11 (12)</td>
<td>19.7 (13)</td>
</tr>
<tr>
<td>L1 Dutch (N=25)</td>
<td>32.5 (15)</td>
<td>since birth</td>
</tr>
</tbody>
</table>

All participants participated in the same test battery, consisting of a questionnaire specifically designed for this study, a Grammaticality Judgement Task, and a Dutch proficiency task (Test of Dutch Vocabulary).

Through the questionnaire we collected (i) general information about the participant, such as age, gender, highest level of education, and current occupation; (ii) linguistic information about the use of, exposure to, and knowledge about the participants’ native language and potential other languages; and (iii) a self-
CHAPTER III. ADULT L2 ACQUISITION OF ER: SYNTACTIC CONSTRAINTS

assessment proficiency task, which in addition to the Test of Dutch Vocabulary was administered before the actual experiment started in order to ensure a minimum level of proficiency in Dutch.

All participants were administered a computer-based version of a Grammaticality Judgement Task, specifically designed for this study. Grammaticality Judgement Tasks are particularly suitable for measuring participants’ command of a specific grammatical feature that may not be elicited easily in production, and moreover, it provides information on both grammatical and ungrammatical sentences. Our Grammaticality Judgement Task comprised thirty pre-recorded audio sentence pairs. All of them included a correct preamble sentence that carried the antecedent and a numeral, sometimes in combination with an adjective, and a target sentence that contained a contrasting numeral. The target sentences were either grammatical (N=15) or ungrammatical (N=15), due to the presence or absence of ER. All sentence pairs belonged to one of the three aforementioned conditions: ‘ER [+/*-present] with numeral’ (N=10), ‘ER [post V] with numeral’ (N=10) and ‘ER [+/*-present] with numeral and adjective’ (N=10). In the ungrammatical sentences belonging to the ‘ER [+/*-present] with numeral’ condition, ER was left out. In the ungrammatical sentences belonging to the ‘ER [post V] with numeral’ condition, ER was positioned in its object base position (stand-in for NP without having undergone movement). In the ungrammatical sentences belonging to the ‘ER [+/*-present] with numeral and adjective’ condition, ER was combined with an attributive adjective. Additionally two pre-recorded sentence pairs that were designed similarly to the experimental trials were added as practice trials and thirteen pre-recorded sentence pairs that were designed similarly to the experimental trials were added as distractor items and as a measure of validity of judgements regarding the experimental trials. The only difference between the experimental trials on the one hand and the practice/distractor items on the other hand was that the latter ones were not correctly or incorrectly modified by ER but by verb-second word order: in Dutch the placement of the finite verb in root clauses can only be preceded by a single major constituent, generating the finite verb to always be placed in second position. All forty-five trials were divided into two experimental versions and presented in randomised orders. See Table 3 for the conditions of the Grammaticality Judgement Task.

In these ungrammatical sentences ER was not provided in pre V position (as EN in French) but in sentence final position, thus in the incorrect post quantifier position. Reason for not applying the French structure is the violation of the verb second word order rule in Dutch; a phenomenon we expected all participants to master.
Table 3: The conditions of the Grammaticality Judgement Task.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Sentences</th>
<th>Presence</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Presence</strong></td>
<td></td>
<td><strong>Introduction</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Vorige week hebben jullie drie films bekeken</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>last week have you three films seen</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Target gram.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Deze week hebben wij vier bekeken.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>this week have we ER four seen</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘Last week you have seen three films. This week we have seen four.’</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Target ungram.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Deze week hebben wij vier bekeken.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>this week have we ER four seen</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘Last week you have seen three films. This week we have seen four.’</td>
<td></td>
</tr>
<tr>
<td><strong>Position</strong></td>
<td></td>
<td><strong>Introduction</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Gisteren hebben wij drie boeken gelezen.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>yesterday have we three books read</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Target gram.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Vandaag hebben jullie twee gelezen.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>today have you ER two ER read</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘Yesterday we have read three books. Today you have read two.’</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Target ungram.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Vandaag hebben jullie twee gelezen.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>today have you ER two ER read</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘Yesterday we have read three books. Today you have read two.’</td>
<td></td>
</tr>
<tr>
<td><strong>Adjective</strong></td>
<td></td>
<td><strong>Introduction</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Vorig jaar heb ik vijf grote cadeaus gekregen.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>last year have I five big presents received</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Target gram.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Dit jaar heb jij vijf kleine gekregen.*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>this year have you ER five small received</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘Last year I have received five big presents. This year you have received five small ones.’</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Target ungram.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Dit jaar heb jij er vijf kleine gekregen.*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>this year have you ER five small received</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘Last year I have received five big presents. This year you have received five small ones.’</td>
<td></td>
</tr>
<tr>
<td><strong>Distractor</strong></td>
<td></td>
<td><strong>Introduction</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>In de schoorsteen heeft de vogel twee-honderd takjes verzameld.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>in the chimney has the bird two-hundred twigs collected</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Target gram.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Hij heeft daarmee een groot nest gebouwd.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>he has there-with a big nest has built</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘In the chimney the bird collected two hundred twigs. He built a big nest with it.’</td>
<td></td>
</tr>
</tbody>
</table>

The target sentences of the sentence pairs had to be judged on grammaticality according to Dutch prescriptive grammar. Visual stimuli were not provided, only audio recordings. Participants sat in front of a 15.6” computer screen and made use of a keyboard with colour-coded buttons to indicate their judgements: red on the left for incorrect trials and green on the right for correct trials. After a judgement was given, the following sentence pair was initiated automatically. Before the experiment started there were two unrelated practice trials (without ER) with
feedback, initiated by the experimenter by pressing the space bar. No participants had to be discarded because they did not understand the practice trials. The test was programmed and run via E-Prime in order to automatically record response accuracy.

In addition to the Grammaticality Judgement Task, we used the Test of Dutch Vocabulary as one of the measures of language proficiency in Dutch in order to ensure that the L1 French and the L1 English groups had acquired the minimum level of proficiency in Dutch that we requested: >B2 according to the CEFR. The Test of Dutch Vocabulary is a standardised, computer-administered, receptive multiple-choice test that measures passive knowledge of vocabulary. Target vocabulary words (N=60) were presented in a carrier sentence from which the meaning of the target word could not be deduced. Participants had five options to choose from: four potential synonyms and the fifth option being ‘I really don’t know’. The target words were selected on the basis of frequency information from the CELEX lexical database (Baayen, Piepenbrock & Gulikers 1995), with the frequency of the target words gradually decreasing as the task continues. Originally the task was developed for speakers of Dutch as a second language (Hazenberg & Hulstijn 1996), but after new low frequency trials were added, the test was suitable for native speakers too (Andringa 2014). We made use of this latter variant so that all the participants could be administered the exact same experiments. For the purpose of this study, participants were assigned a score that corresponded to the number of correct answers, range 0-60, based on prescriptive meaning of the words in Dutch dictionaries. We also administered this task in E-Prime so that accuracy on each trial was automatically recorded. Statistical analyses were performed in R (R Core Team 2016).

5. Results

5.1 Questionnaire and Test of Dutch Vocabulary

The L1 French and L1 English learners of Dutch do not reveal influential inequalities relating to gender, age, years of exposure, highest degree obtained, method of acquisition, percentage of exposure to L2, or Test of Dutch Vocabulary score. The non-significant comparison of Test of Dutch Vocabulary scores, p > .05, means that both groups are equally proficient in Dutch. Nevertheless, we have controlled for proficiency in all of the given p-values in the results below by including the Test of Dutch Vocabulary scores in our model.

5.2 Between-group results

To analyse the Grammaticality Judgement Task, we started by simplifying our dataset by combining grammatical and ungrammatical trials in such a way that a
A single score per participant could be given for each of the conditions. See Figure 1 for the average percentage scores per condition and per L1 group.

**Figure 1: Graphical representation of the means per condition per L1 group.**
We used ‘Fisher’s protected Least Significant Difference (LSD) method (Fisher 1949) for comparing the results between the three language groups. This involves two steps: (1) doing an omnibus analysis of variance, to test whether the omnibus null hypothesis \((\mu_1=\mu_2=\mu_3)\), which claims that all L1 groups score equally, can be rejected. If this test yielded a \(p\)-value above 0.05, we would have declared that no significant differences between the means were found and we would not have proceeded with any further analyses. However, in all our three morpho-syntactic conditions the omnibus null-hypotheses could be rejected, allowing us to continue with step (2) that includes performing three uncorrected \(t\)-tests between the groups \((\mu_1-\mu_2, \mu_1-\mu_3, \mu_2-\mu_3)\) in which each \(t\)-test that yields a \(p\)-value below 0.05 is declared to have given a significant result. No corrections need to be administered in this specific statistical method, as the LSD is protected by the omnibus ANOVA’s significance. Because we did not want any significant findings to be dependent on the participants’ proficiency of Dutch, we included proficiency – based on the scores of the Test of Dutch Vocabulary – as a dependent variable in our model. See Table 4 for the means per condition and per L1 group.

### Table 4: Means per L1 group and per condition.

<table>
<thead>
<tr>
<th></th>
<th>L1 Dutch</th>
<th>L1 French</th>
<th>L1 English</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER [+/*-present] with numeral</td>
<td>9.04/10</td>
<td>7.44/10</td>
<td>6.56/10</td>
</tr>
<tr>
<td>ER [post V_inf/*post quantifier] with numeral</td>
<td>9.84/10</td>
<td>7.48/10</td>
<td>8.24/10</td>
</tr>
<tr>
<td>ER [+/--present] with numeral and adjective</td>
<td>5.56/10</td>
<td>3.20/10</td>
<td>4.56/10</td>
</tr>
<tr>
<td>Distractor</td>
<td>14.84/15</td>
<td>13.68/15</td>
<td>13.60/15</td>
</tr>
</tbody>
</table>

As can be seen in the mean scores provided in Table 4, the L1 Dutch group performs at ceiling in two out of three conditions: ‘ER [+/*-present] with numeral’ and ‘ER [post V\_inf/*post quantifier] with numeral’, thereby showing that Dutch native speakers are in agreement with prescriptive of Dutch grammar (Haeseryn et al. 1997) that declares that ER should be present in these types of sentences, and that it should be in a position following V\_inf. However, judgements on the ‘ER [+/--present] with numeral and adjective’ condition appear to be less clear-cut: the L1 Dutch group scores at chance-level for this condition. The L1 English and L1 French group do not convincingly score at ceiling in any of the conditions, indicating that the conditions ‘ER [+/*-present] with numeral’ and ‘ER [post V\_inf/*post quantifier] with numeral’ are less obvious for them than for the L1 Dutch group. Moreover, both L1 English and L1 French score lowest on the ‘ER [+/--present] with numeral and adjective’ condition. Table 5 shows whether the three language groups differ significantly among each other by presenting the results from the omnibus analysis and the uncorrected \(t\)-tests: significance is indicated by *** \((p < 0.001)\), ** \((p < 0.01)\), * \((p < 0.05)\).
All omnibus ANOVA’s yield highly significant results, indicating the presence of significant differences between (some of) the means of the three L1-groups. Separate t-tests reveal that the L1 French group differs significantly from the L1 Dutch group on all conditions, while the L1 English group only significantly differs from the L1 French group on the ‘ER [post V_in/post quantifier] with numeral’ condition and from the L1 Dutch group on the ‘ER [+/-present] with numeral’ condition.

6. Discussion

The aim of this study was to explore the influence that L1 has on L2 Dutch morphosyntactic constructions with ER. By including L1 French and L1 English, we addressed the role of transfer of properties belonging to quantitative constructions (sometimes in combination with an adjective) in the L1 of the participants. Based on these properties we formulated five transfer predictions, divided over three conditions (ER [+/-present] with numeral; ER [post V_in/post quantifier] with numeral; ER [+/-present] with numeral and adjective), which we will discuss one-by-one in this section.

(1) For the ‘ER [+/-present] with numeral’ condition we predicted positive transfer in the L1 French group (because in both L1 and L2, omission of the quantitative pronoun is disallowed) and negative transfer for the L1 English group (because English does not feature an overt quantitative pronoun).

The positive transfer prediction regarding L1 French is not borne out, as the L1 French scores are significantly lower than those of the L1 Dutch group. Apparently, the French speakers struggle with the presence and absence of ER in Dutch quantified constructions with a numeral, despite the fact that French EN behaves the same as Dutch ER in this condition. This raises the question as to whether the L1 French speakers associate the Dutch quantitative pronoun ER with the French quantitative pronoun EN at all. Such ‘non-association’ may be due to the fact that in French and Dutch the quantitative pronoun is licensed under different conditions and that ER and EN occupy different syntactic positions. Moreover, besides the morphosyntactic features that are analysed in this chapter, there are also semantic (and

---

4 The distractor items yield a significant ANOVA as well, and the t-tests reveal that the L1 French group differs significantly from the L1 Dutch group.
perhaps pragmatic) factors, such as presuppositionality and definiteness, that influence the appearance of ER in quantified constructions and that may have influenced the responses of the L1 French group. The semantic features are elaborated on in Chapter IV of this dissertation.

In contrast, for L1 English the negative transfer prediction is borne out as the L1 English group yields a judgement score that is significantly lower than that of the L1 Dutch group. This suggests that the absence of a quantitative pronoun in English indeed negatively influences the knowledge of obligatory presence of such a pronoun in L2 Dutch.

(2) For the ‘ER [post Vfin/*post quantifier] with numeral’ condition we predicted that L1 French would negatively influence L2 Dutch (because EN appears in a different syntactic position than ER), while for L1 English no prediction was made.

The data show that the L1 French group judges sentences in this condition significantly more often in a non-target-like manner than the L1 Dutch group, despite the fact that the incorrect position does not follow French syntax: in the ungrammatical items ER was placed in its basic object position (sister-of-V), without having undergone movement. This basic object position for the pronoun is incorrect in both Dutch and French. As a result, this finding cannot be exactly interpreted as evidence for direct (negative) transfer, but it could be the result of indirect negative influence. The L1 French speakers may reason that any position of ER that is different from the position of French EN is incorrect.

For L1 English we made no prediction in this condition because English does not feature a quantitative pronoun. Our results show that the L1 English group does not differ significantly from the L1 Dutch group, but does score significantly higher than the L1 French group. This suggests that existence of a similar element in the L1, but in a different position (such as French EN), hinders L2 acquisition more than absence of a similar element.

(3) Our predictions for the ‘ER [*+/-present] with numeral and adjective’ condition (in which presence of ER is prohibited according to prescriptives of Dutch grammar) were as follows. Negative transfer was expected for the L1 French group (because in French, EN must appear in sentences with a numeral and an adjective). For the L1 English group we predicted positive transfer (because English does not have a quantitative pronoun).

The prediction regarding L1 French is confirmed, as the French speakers score significantly lower in this condition compared to the native Dutch speakers, despite the unexpected behaviour of this latter group. This means that having a similar pronoun in the home language negatively influences the acquisition of the Dutch quantitative ER when its syntactic licensing conditions are different.

As for the English L1 group, no differences with the L1 Dutch group were found. As this is a null result, it cannot strictly confirm our prediction that English
L1 positively influences L2 Dutch acquisition in terms of this construction (Aberson 2002). Nevertheless, it does show that there was no negative transfer from English to Dutch for quantitative constructions with a numeral and an adjective. If the L1 English group had reached significantly higher scores than the L1 French group in this condition, this would have suggested positive transfer from English. However, this is not the case and therefore we should in theory stick to the conclusion that English L1 does not negatively influence the L2 Dutch acquisition of quantitative constructions with a numeral and an adjective, were it not for the off-target responses of the Dutch L1 group. That is, after examination of the scores of the L1 Dutch group in this condition, it becomes clear that native Dutch speakers in this study do not unanimously judge the sentences with ER plus a numeral and an adjective as incorrect. Instead they behave quite different than what is expected based on the prescriptives of Dutch grammar: the L1 Dutch group scores at chance in this condition, meaning that they accept sentences in which ER co-occurs with a numeral and an adjective more often than expected, and/or reject the absence of ER in such a sentence more often than expected.

A possible explanation for this unexpected finding may be that Dutch is shifting towards a French structure. In Section 2.2 we cited Kranendonk (2010) for Dutch and Sleeman (1996) for French about the size of the syntactic gap after pronominalisation has taken place. Kranendonk stated that Dutch ER pronominalises a part of the DP internal structure that, when compared to Sleeman’s analysis about French EN, is larger, leaving no room for an adjective in the Dutch DP. However, if Dutch ER is starting to behave more like French EN in that it pronominalises a smaller part of the DP, this would leave room for an adjective within the Dutch DP. This may be already happening in some Dutch dialects in which ER in combination with a numeral and an adjective is possible (Kranendonk 2010).

In summary, for the two language groups (L1 French and L1 English) we formulated five transfer predictions, divided over three conditions (ER [+/*-present] with numeral; ER [post Vfin/*post quantifier] with numeral; ER [*+-/present] with numeral and adjective). The three predictions anticipating negative transfer were all borne out: L1 French negatively influences the L2 acquisition of Dutch quantitative constructions in the ‘ER [post Vfin/*post quantifier] with numeral’ and ‘ER [*+-/present] with numeral and adjective’ conditions and L1 English negatively influences the L2 acquisition of Dutch quantitative constructions in the ‘ER [+/*-present] with numeral’ condition.

Two predictions, both anticipating positive transfer, were not borne out: L1 French does not provide positive influence in the ‘ER [+/*-present] with numeral’

---

5 Although in this chapter a null-result is not considered to be evidence for positive transfer, in the remainder of this dissertation it is.
condition and L1 English does not convincingly provide positive influence in the ‘ER [+/--present] with numeral and adjective’ condition. In the ‘ER [+/--present] with numeral’ condition, the L1 French speakers scored significantly lower than the L1 Dutch group, despite the fact that both French and Dutch require the presence of an overt quantitative pronoun. Possible explanations include the different licensing conditions of EN and ER, the different syntactic positions of both pronouns, and the influence of semantic and pragmatic factors that are not taken into account in this chapter, but that (partly) are in Chapter IV. As for the L1 English group in the ‘adjective’ condition, the null result could not confirm the prediction that L1 English would positively influence L2 Dutch, but did not reject the prediction either. Furthermore, we need to keep in mind that the L1 Dutch group did not perform at ceiling either, something that needs further investigation.

7. Conclusion
In this study we looked at transfer of L1 French and L1 English on judgements on morpho-syntactic constructions in adult speakers of Dutch as a second language. Based on our Transfer Hypothesis we made five predictions, of which all three negative ones were borne out, but two positive ones were not: one definitely not (French) and one probably not (English).

Overall, we may conclude that negative transfer can be confirmed: hence, a morpho-syntactic difference between L1 and L2 will create difficulties in learning the target language. Nonetheless, our data do not give proof of positive transfer, hence, when similar linguistic elements are present in both the native and the target language, this does not necessarily lead to enhanced scores on grammaticality judgements.

In the following chapter, other factors belonging to the semantic domain are scrutinised, as there may be interplay between semantics and syntax.
Chapter IV

Adult L2 acquisition of ER: semantic constraints*

1. Introduction

For many years, the role of the first language and its relationship to a second one has been an important issue in the field of second language acquisition. As a result, it is well documented that the home language plays a central role in learning a second language in multiple linguistic subdomains (Hattori & Iverson 2009; Isurin 2005; Odlin 2003). The present study, however, focuses on L2 learners’ ability to acquire semantic properties of a Dutch construction that has hardly been investigated before: the Dutch quantitative pronoun construction.

A quantitative pronoun construction in Dutch occurs when the NP is elided in the quantificational discourse. In object position, merely omitting the noun results in an ungrammatical sentence, see (1a). Therefore, insertion of the quantitative pronoun (ER) is required, see (1b).

(1)  
      Mary bakes biscuits she eats three
      ‘Mary bakes biscuits.’ ‘She eats three.’
   b. Marie bakt koekjes. → Zij eet er drie.  
      Mary bakes biscuits she eats ER three
      ‘Mary bakes biscuits.’ ‘She eats three.’

The presence of the Dutch quantitative pronoun ER is subject to semantic constraints on the quantifier. The semantic constraint included in this chapter is [presuppositionality], tested with the [+/-definite] and [+/-strong] distinctions of the quantifier. Both properties presuppose either existence or non-existence: the property [+definite] of the quantifier determines the existence of a specific referent in the preceding discourse, whereas the property [-definite] of the quantifier determines the non-existence of a specific referent in the preceding discourse (Barwise & Cooper 1981; Strawson 1950); the property [-strong] determines the non-existence of other potential referents besides the one that is referred to, whereas

* This chapter was adapted slightly from Berends, Sanne, Petra Sleeman, Aafke Hulk & Jeannette Schaeffer. Submitted. The L2 acquisition of the referential semantics of Dutch quantitative pronoun ER constructions. An exploratory study of a complex process.
the property [+strong] determines the existence of other potential referents besides the one that is referred to, meaning a larger set (De Hoop 1992; De Jong 1983). Thus, [presuppositionality] can be considered the overarching characteristic that is converted into two properties: the [+/-definite] and the [+/-strong] distinction of the quantifier.

Now, the Dutch quantitative pronoun ER encodes the referential properties [-definite] and [-strong] and can only appear in sentences in which the quantifier encodes the same properties. Thus, when the referential properties of ER and those of the quantifier match, the elicitation of ER results in grammatical sentences, as in (2a) and (2b), whereas when the properties of ER and those of the quantifier clash, the elicitation of ER results in ungrammatical sentences, as in (3a) and (3b), (Haeseryn et al. 1997).

(2)  
a. [-definite]  
\textit{Zij bakt er een heleboel.}  
she bakes ER a lot

b. [-strong]  
\textit{Zij bakt er enkele.}  
she bakes ER some

\textit{‘She bakes a lot.’}  
\textit{‘She bakes some.’}

(3)  
a. [+definite]  
\textit{*Zij bakt er de helft.}  
she bakes ER the half

b. [+strong]  
\textit{*Zij bakt er sommige.}  
she bakes ER some

\textit{‘She bakes half of them.’}  
\textit{‘She bakes some of them.’}

To examine L2 learners’ ability to acquire these Dutch semantic constraints, we included two L1 languages in our study: French, which features a quantitative pronoun (EN) whose use shows (partial) overlap with Dutch ER, and English, which does not feature a quantitative pronoun.\(^1\) The similarities and differences in the discourse situations with quantitative pronouns between these L1 languages and Dutch make this construction an ideal test ground for second language acquisition research.

Our starting point is the Transfer Hypothesis that claims that overlap between the L1 and the L2 facilitates the acquisition of the L2. An initial step to test this Transfer Hypothesis was taken in Chapter III with respect to the L2 acquisition of the syntactic properties of quantitative ER. In contrast, the semantic properties constitute a relatively new territory, but see a preliminary study by Sleeman & Ihsane (2017), on the L2 acquisition of French EN. In this chapter we pose the

\(^1\) Although formally Dutch ER is a pronoun and French EN is a clitic, this syntactic difference has no consequence for its semantic properties and therefore falls outside the scope of this chapter. For an elaboration on syntactic differences between Dutch ER and French EN we refer the reader to Chapters II and III.
following general question: Is successful acquisition of the semantics of L2 Dutch quantitative pronoun ER constructions influenced by properties of the corresponding quantitative constructions in L1 French versus L1 English?

This chapter is organised as follows. Section 2 outlines the linguistic background of this study: the similarities and differences among the three languages, and the existing literature on the acquisition of Dutch quantitative ER. We also present the research question, together with the hypothesis and corresponding general predictions. Section 3 presents the methodology of the study, including specific predictions. Section 4 presents the results and Section 5 discusses the results. Section 6 concludes this chapter.

2. Background

In the introduction we briefly mentioned that the occurrence of ER is constrained by the semantic properties [-definite] and [-strong]. We show this in more detail in Section 2.1. Then, to come to predictions about L2 learners’ abilities, we explain in Sections 2.2 and 2.3 how French and English quantitative discourses relate to Dutch. In Section 2.4 we will discuss relevant previous studies that have focused on the L1 and L2 acquisition of quantitative pronouns.

2.1 Dutch quantitative and partitive interpretations

We have seen that because ER encodes [-definite] or [-strong] properties, it cannot be combined with a quantifier that encodes [+definite] or [+strong] properties. This clash becomes more obvious by clarifying the differences between the crucial properties: when the quantifier encodes the [-definite] property, as in (2a), or the [-strong] property, as in (2b), both the quantifiers and ER are compatible with a quantitative interpretation. In contrast, when the quantifier encodes the [+definite] property, as in (3a), or the [+strong] property, as in (3b), the quantifiers no longer have a quantitative interpretation (while ER still does), but they now yield a partitive interpretation. That is, the [-definite] property of the quantifier een heleboel ‘a lot’ and the [-strong] property of the quantifier enkele ‘some’ are purely quantitative and do not presuppose the existence of (another/specific) set, while the [+definite] property of the quantifier de helft ‘the half’ and the [+strong] property of the quantifier sommige ‘some of them’, imply the existence of another half and some more of them. Hence, these [+definite] and [+strong] properties presuppose the existence of a larger set than the subset that is referred to, which makes the sentences carry a partitive interpretation.

The important difference between [-/-] quantifiers, which carry quantitative readings, and [+/+] quantifiers, which carry partitive readings, clarifies the grammaticality of the sentences in (2) and the ungrammaticality of those in (3). Nonetheless, Dutch also has a pronoun that is partitive: ERvan. If the quantitative
pronoun ER in (3a/b) is replaced by the partitive pronoun ERvan, the sentences become grammatical, see (4):

(4)  a.  *Zij bakt ER de helft/sommige

    b.  Zij bakt ER de helft/sommige [PP van \_\_] \rightarrow \text{partitive}

In (4a) the sentence is ungrammatical because the [+definite] quantifier de helft ‘the half’ and the [+strong] quantifier sommige ‘some of them’ carry partitive properties, while the quantitative pronoun ER carries a quantitative property. In (4b), however, the partitive pronoun ERvan agrees with the properties of the quantifiers, thereby resulting in a grammatical sentence.

Henceforth, in the quantitative interpretation of (4a), ER refers to a non-specific set that expresses the \textit{kind-denoting noun} (e.g., biscuits), whereas in the partitive interpretation of (4b), the elided noun phrase refers to a subset of a presupposed \textit{specific set} (e.g., those biscuits, the ten biscuits, the small biscuits) (De Hoop, Vanden Wyngaerd & Zwart 1990; Oosterhof 2005). In both readings there is reference to an antecedent in the discourse. This distinction between a quantitative and a partitive interpretation becomes more visible when introductory sentences are added, see (5).

(5)  a.  quantitative, [-definite/-strong]

    \textit{Zij houdt van koekjes. Zij bakt er een heleboel/enkele.}
    \textit{she likes of biscuits she bakes ER a lot /some}
    ‘She likes biscuits. She bakes a lot/some.’

    b.  partitive, [+definite/+strong]

    \textit{Zij koopt tien koekjes. Zij eet de helft/sommige [ERvan \_\_]}\textit{ERof}
    \textit{she buys ten biscuits she eats the half/some}
    ‘She buys ten biscuits. She eats half of them / some of them.’

In (5a) no specific presupposed set is given; rather, only the kind-denoting noun – biscuits – is mentioned. This leads to a [-definite/-strong] interpretation with the quantitative pronoun ER. In (5b) a specific presupposed set is given – ten biscuits – which leads to a [+definite/+strong] interpretation with the partitive pronoun ERvan.

\textit{2.2 French quantitative and partitive interpretations}

French possesses a quantitative pronoun too. This means that in French, as well, quantificational discourses in which the NP is elided require the insertion of a quantitative pronoun too (EN). A very important difference with Dutch is that at
first glance French EN seems to be able to appear with [-definite] and [-strong] quantifiers, see (6a), and with [+definite] and [+strong] quantifiers, see (6b). The antecedent is still ‘biscuits’.

(6)  
a. [-definite/-strong]  
*Elle en a fait un grand nombre/quelques-uns.*  
she EN has made a large number/some  
‘She baked a lot/some.’

b. [+definite/+strong]  
*Elle en a fait la moitié/certains.*  
she EN has made the half/some  
‘She baked half/some.’

Both (6a) and (6b) are grammatical sentences. This raises the question as to whether French EN possesses different semantic properties as compared to Dutch ER. This is not the case: French quantitative EN also encodes the [-definite/-strong] properties. However, the French partitive pronoun – the equivalent of Dutch ER van – is also expressed with EN. This makes EN homophones between the quantitative [-definite/-strong] interpretation and the partitive [+definite/+strong] interpretation (Hulk 1982; Milner 1978). As a result of this polyfunctionality, the French surface structures in (6) do not immediately force a quantitative or partitive interpretation. To illustrate the interpretative distinction that is undeniably present below the surface of these sentences, we add right-dislocated phrases after an intonational pause, illustrated in (7).

(7)  
a. quantitative, [-definite/-strong]  
*Elle en a fait un grand nombre/quelques-uns, de biscuits.*  
she EN has made a large number/some of biscuits  
‘She baked a lot/some (biscuits).’

b. partitive, [+definite/+strong]  
*Elle en a fait la moitié/certains, de ces dix biscuits.*  
she EN has made the half/some of these ten biscuits  
‘She baked half/some, of these ten biscuits.’
In (7a) we added a **kind-denoting noun** (*de biscuits*, ‘biscuits’), which renders a quantitative interpretation, whereas in (7b) we added a **specific set** (*ces dix biscuits*, ‘these ten biscuits’), which results in a partitive interpretation.²

To summarise, we conclude that Dutch ER evokes a quantitative interpretation and ERvan evokes a partitive interpretation, while in French, EN can evoke either a quantitative or a partitive interpretation, depending on the context. We summarise this in Table 1.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dutch</td>
<td>ER</td>
<td>ERvan</td>
<td>ER</td>
<td>ERvan</td>
</tr>
<tr>
<td>French</td>
<td>EN</td>
<td>EN</td>
<td>EN</td>
<td>EN</td>
</tr>
</tbody>
</table>

2.3 **English quantitative and partitive interpretations**

Unlike Dutch and French, English does not have a linguistic marker that expresses quantity pronominally. To distinguish between a quantitative interpretation and a partitive interpretation in English, the PP of *them* can be used, see (8).

(8) a. <biscuits> She bakes a lot/a few in the oven.

b. <biscuits> She bakes half [PP of them]/some [PP of them] in the oven.

The PP in (8b) implies the existence of another half and some more of them. Hence, these [+definite] and [+strong] properties presuppose the existence of a bigger set than the subset that is referred to. This part–whole relation always results in a partitive interpretation (Radden & Dirven 2007). Despite the clear partitive interpretation of sentence (8b), sentence (8a) does not necessarily result in a quantitative interpretation. It depends on the context whether the quantifier refers to

² The quantitative or partitive interpretation of EN sometimes follows from lexical properties of the verb in the preceding discourse. In the sentences *Hier ils ont tué beaucoup de lions. Aujourd’hui ils EN ont tué quelques-uns* ‘Yesterday they have killed many lions. Today they have killed some’, the verb *tuer* ‘to kill’ in the second sentence, automatically receives a quantitative interpretation because the consequence of this verb in the first sentence is irreversible: it is impossible to kill the same living thing a second time. In contrast, in the sentence *Hier ils ont attrapé six lions. Aujourd’hui ils EN ont tué la moitié/certains* ‘Yesterday they have captured six lions. Today they have killed half/some of them’, the verb *tuer* ‘to kill’, yields a partitive interpretation because killing is most naturally interpreted as an action performed on the lions that had been *attrapés* ‘captured’ (Milner 1978).
a specific presupposed set [+strong] or to a kind-denoting noun [-strong]. To show this, we add left-dislocated phrases; see (9a and b).

(9)  

a.  

<quantitative> As for biscuits (as opposed to muffins), I have put a few in the oven.

b.  

<partitive> As for those biscuits (you decorated), I have put a few in the oven.

In summary, according to the literature, the Dutch pronoun ER is used with [-definite] and [-strong] quantifiers to yield a quantitative interpretation, whereas the pronoun ER van is used with [+definite] and [+strong] quantifiers to yield a partitive interpretation. In French, the pronoun EN can be interpreted in either a quantitative or partitive manner with [+/-definite] or [+/-strong] quantifiers. In English, an overt pronoun is absent in all four conditions, but the discourse containing the elided noun can refer to either a kind (non-specific/non-presupposed \(\rightarrow\) quantitative interpretation) or to a specific/presupposed subset (partitive interpretation). Thus, the quantitative and partitive interpretations are expressed differently in all three languages, with English having no relevant pronouns, French having one relevant pronoun (EN), and Dutch having two relevant pronouns (ER and ER van).

2.4 Previous studies on L1/L2 acquisition of quantitative pronouns

A limited number of studies have focused on the L1 and L2 acquisition of quantitative pronouns. We will discuss these in order to describe our current understanding and how this study attempts to add to our knowledge regarding the (L2) acquisition of the Dutch quantitative pronoun ER.

Almost none of the previous acquisition studies that addressed the Dutch quantitative pronoun ER focused on the acquisition of semantic properties, but instead they focused on the acquisition of its syntactic properties or on the L1 emergence of the pronoun. The only study that did look at the acquisition of semantic properties did not focus on Dutch ER but on L2 French EN.

Production of the quantitative pronoun in early child language has been found to come relatively late. This holds not only intra-linguistically when compared to the emergence of either regular nominal ellipsis (Sleeman & Hulk 2013) or other homophonous types of ER (Chapter II; Van Dijk & Coopmans 2013), but also cross-linguistically when compared to the emergence of its French counterpart EN (Chapter II; Gavarró et al. 2011; Van Hout et al. 2011).

Chapter III has been specifically devoted to the L2 acquisition of quantitative pronoun ER syntax. We will shortly recapitulate its main findings here: the transfer effect of (semantically similar but) syntactically different L1 sentence constructions
on L2 acquisition had been examined. This was done on the basis of the Contrastive Analysis Hypothesis, which states that the influence of L1 on L2 is enhanced when similar linguistic elements are present in both the native and the target language (also known as positive transfer), but that a difference between L1 and L2 will create difficulties in learning the target language (also known as negative transfer). As a testing method, a Grammaticality Judgement Task was used in three different conditions (ER [+/*-present] with numeral; ER [post Vtrue/*post quantifier] with numeral; ER [+/*-present] with numeral and adjective) on three different groups: adult L1 French speakers (N=25), adult L1 English speakers (N=25), and adult L1 Dutch speakers (N=25) as a control group. The results show that the three predictions anticipating negative transfer were borne out, but that the two predictions anticipating positive transfer were probably not. One of these two predictions anticipated positive transfer from French to Dutch in the ‘ER [+/*-present] with numeral’ condition, but instead negative transfer was found. The other prediction anticipated positive transfer from English to Dutch in the ‘ER [+/*-present] with numeral and adjective’ condition, but instead a null result was found between Dutch and English. The null-result could have been interpreted as positive transfer when the comparison between English and French turned out to be significantly different, due to contrasting predictions, but it did not.

A study by Sleeman & Ihsane (2017) focuses among other things on the L2 acquisition of semantic properties of the French quantitative pronoun EN by L1 speakers of Dutch. The investigators employ the Transfer Hypothesis that claims that positive transfer is expected in constructions that are similar in L1 and L2, and negative transfer is expected in constructions that are different in L1 and L2. One of the findings of this study strengthens the conclusion from the syntactically oriented Chapter III, namely an L1 with different properties may hinder L2 acquisition. However, Sleeman & Ihsane (2017) also found evidence that strengthens the idea that shared properties between L1 and L2 facilitates L2 acquisition, unlike Chapter III.

2.5 Research question, hypothesis and general predictions
The research question of this chapter is: Is successful acquisition of L2 Dutch quantitative pronoun ER constructions influenced by the semantic expression of properties of L1 quantitative constructions? Following the Transfer Hypothesis (see also Chapter III), we predict that similar properties facilitate L2 acquisition (positive transfer), while different properties hinder L2 acquisition (negative transfer).

3. Method
In this section we explain the specifics of the study. In Section 3.1 we will describe in detail the characteristics of the participants who took part in our experiment. Then
in Section 3.2 we will describe what tasks they underwent. Subsequently we will tell more about the procedure and the analyses in Section 3.3, and in Section 3.4 we will formulate specific predictions.

3.1 Participants
The experiment described in this chapter was conducted with the same two experimental groups that also took part in the syntactic study described in Chapter III: adult native speakers of French and adult native speakers of English. Both groups had reached an advanced level of Dutch as an L2. Advanced being B2 or higher, according to the Common European Framework of Reference (CEFR). We purposely wanted to include advanced speakers of L2 Dutch since the acquisition of ER has proven to be rather complex and late in previous (L1) studies and we did not want participants to have insufficient (subconscious) knowledge regarding this pronoun. Also the same L1 Dutch speaking group as in Chapter III was added as a control group. The final sample included seventy-five adults. These were equally divided over the three language groups: L1 French (N=25), L1 English (N=25), and L1 Dutch (N=25).

3.2 Tasks
In addition to the questionnaire and the Test of Dutch Vocabulary (for a description see Section 4 of Chapter III), we conducted a computer-based Grammaticality Judgement Task specifically designed for this study. We measured the participants’ judgement skills regarding the semantic characteristic [presuppositionality] of Dutch quantitative ER constructions, as characterised by the properties [+/-definite] and [+/-strong] distinction of the quantifier. All of the pre-recorded audio sentence pairs were constructed with the quantitative pronoun ER; no sentences without ER were included in this study. The semantic conditions include: (i) ER with [*/-definite] quantifier and (ii) ER with [*/-strong] quantifier. Both of the two conditions contain two subconditions, namely, grammatical and ungrammatical. Each subcondition includes five test sentences. This amounts to a total of 2 x 2 x 5 = 20 test sentences that are based on successful items from a pilot study. All of the twenty sentence pairs started with an appropriate preamble sentence that carried the antecedent and a certain quantity. It was followed by the target sentence, such as the ones in (10).

(10)  a. ER [-definite] / [-strong] quantifier

\( Vrijdag heb \ jij \ er \ een \ heleboel / \ enkele \ geplukt. \)

Friday have you ER a lot / some picked
‘Friday you picked a lot.’
b. ER [*+definite] / [*+strong] quantifier

*Vrijdag heb jij er de helft / sommige geplukt.
Friday have you ER the half / some picked
‘Friday you picked half of them.’

In addition to the twenty experimental sentences, twenty-three pre-recorded sentence pairs that were structurally similar to the experimental items were added as distractor items. These were either grammatical, or ungrammatical with respect to the conjugation of the verb or verb-second word order. All forty-three trials were divided into two experimental versions and presented in randomised orders.

3.3 Procedure and statistical analysis

The participants were tested individually in a quiet room. They sat in front of a 15.6” computer screen and made use of a keyboard to indicate their judgements. This was done with a 5-point Likert scale with ‘1’ indicating sentences that the participants thought native speakers of Dutch would never say and ‘5’ indicating sentences that the participants thought native speakers of Dutch would produce. The subsequent sentence pair was initiated automatically after a judgement was given. Before participants began evaluating actual test sentences, two unrelated practice trials with feedback were presented, one being grammatical and one being ungrammatical. The experimenter initiated these practice trials by pressing the space bar. Only if participants answered both practice trials incorrectly did we not proceed with the experimental items. All of our participants gave a satisfying response to at least one of the practice trials. The test was programmed and run via E-Prime in order to automatically record response accuracy. Visual stimuli were not provided, only audio recordings.

All the data gathered in this study were coded and entered into the software programme R (R Core Team 2016) to run statistical analyses on. The two semantic properties, [+/-definite] and [+/-strong] quantifiers, were taken together and encapsulated in the denominator [presuppositionality]. The variables from the questionnaire entered into the model against which the Grammaticality Judgement Task scores were compared are: L1, L2, gender, age, years of exposure to L2 Dutch, percentage of L1 exposure, percentage of L2 exposure on a weekly basis, highest degree obtained, acquisition method (formal or informal learning), and Test of Dutch Vocabulary scores. The Test of Dutch Vocabulary resulted in an individual score, theoretically lying between 0 and 60. For each correct answer one point was given, and the test contained a total of sixty items. The answers to the Grammaticality Judgement Task varied on a 1 to 5-point scale. To end up with one individual average score per subcategory, we assigned scores to the digits on the
scale with ‘1’ receiving 0 points and ‘5’ receiving 4 points. We then averaged the total of five scores per subcategory.

3.4 Predictions
The Transfer Hypothesis that states that similar properties facilitate L2 acquisition, while different properties hinder L2 acquisition, led to a number of predictions. We will specify these predictions below, starting with the general group predictions for all three language groups included, followed by the within-group and between-group predictions.

3.4.1 General group predictions
L1 Dutch speakers are expected to accept sentences with ER and a [−presupposition] quantifier and reject sentences with ER and a [∗+presupposition] quantifier (cf. De Jong 1983). French learners of L2 Dutch are expected to accept both these types of sentences because French has a single pronoun (EN) for both the quantitative and the partitive interpretation. And lastly, English learners of L2 Dutch are expected to guess (score at chance level) because there is no quantitative pronoun in English. This leads to predictions 1 and 2:

<table>
<thead>
<tr>
<th>prediction</th>
<th>L1 Dutch</th>
<th>L1 French</th>
<th>L1 English</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ER with [−presupposition] quantifier</td>
<td>accept</td>
<td>accept</td>
<td>guess</td>
</tr>
<tr>
<td>2. ER with [∗+presupposition] quantifier</td>
<td>reject</td>
<td>accept</td>
<td>guess</td>
</tr>
</tbody>
</table>

An accepted cut-off point for acceptance is a score above 80% (e.g., Muftah & Rafik-Galea 2013; Muftah & Wong 2011; Spinner & Jung 2017). From this number we set the cut-off point for rejection at a score below 20%, and the chance level between 40% and 60%.

Since we have two predictions per language group, for grammatical and ungrammatical sentences, we also are able to construct within-group predictions.

3.4.2 Within-group predictions
In the general group predictions we have made a distinction between grammatical and ungrammatical sentences, allowing us to predict that L1 Dutch speakers will be sensitive to the semantic properties of quantitative ER constructions, whereas L1 French and L1 English speakers of Dutch will not. Thus, we predict that L1 Dutch speakers will make a clear distinction between the grammatical [−presupposition] condition and the ungrammatical [∗+presupposition] condition, unlike L1 French learners of Dutch and L1 English learners of Dutch who, according to our Transfer Hypothesis, will not make this distinction, as laid out in predictions 3–5:
3. The L1 Dutch group will be sensitive to semantic differences.
4. The L1 French group will be not sensitive to semantic differences.
5. The L1 English group will be not sensitive to semantic differences.

Besides within-group predictions, we also formulate between-group predictions that shed light on how the different experimental groups should interact with each other.

3.4.3 Between-group predictions
We predict to find significant differences between the L1 French and the L1 Dutch group in the ungrammatical [*+presupposition] condition because, contrary to Dutch ER, French EN is allowed in sentences with [+presupposition] quantifiers. We also predict that we will not find a significant difference between the L1 French group and the L1 Dutch group in the grammatical [-presupposition] condition because the two languages act similarly. Moreover, we predict that we will find significant differences between the L1 English group and the L1 Dutch group in both grammatical [-presupposition] and ungrammatical [*+presupposition] conditions because we expect the L1 Dutch group to convincingly either accept or reject the sentences, and the L1 English group to guess due to the non-existence of a quantitative pronoun in the home language. Lastly, we predict that we will find significant differences in the comparisons between the L1 French and the L1 English group, as described in predictions 6–8:

6. The L1 French group and the L1 Dutch group will accept the grammatical [-presupposition] condition equally often, while the L1 French group will accept the ungrammatical [*+presupposition] condition significantly more often than the L1 Dutch group.
7. The L1 English group will reject sentences in the grammatical [-presupposition] condition and accept sentences in the ungrammatical [*+presupposition] condition significantly more often than the L1 Dutch group.
8. Comparisons between L1 French and L1 English speakers will lead to significant differences in both conditions.

4. Results
In the following two sections, the linear regression models reveal the general group results, the between-group results and the within-group results. Significance is indicated by *** (p < 0.001), ** (p < 0.01), * (p < 0.05). As we wrote in Chapter III about the questionnaire and the TDV: none of the factors included in the questionnaire had a significant influence on the results, and the non-significant comparison of Test of Dutch Vocabulary scores (p > 0.05) means that both groups are
equally proficient in Dutch. Nevertheless, we have controlled for proficiency in all of the given p-values in the results below by including the Test of Dutch Vocabulary scores in our model.

In Section 4.1 we present a graph that visually represents the average acceptance rates per language group on quantitative ER sentences modified with respect to [-presuppositionality] and [*+presuppositionality]. This graph will allow us to either confirm or reject the general group predictions and the between-group predictions.

In Section 4.2 we present Table 2 that also represents the average acceptance rates per language group on quantitative ER sentences that are modified by [-presuppositionality] and by [*+presuppositionality], allowing us to answer the within-group predictions.

### 4.1 General group results and between-group results

Figure 1 presents the average response rate in the two conditions: ER with [-presupposition] quantifier and ER with [*+presupposition] quantifier, as illustrated in (10ab). The Y-axis represents acceptance rate.

![Figure 1: Judgement scores in percentages per language group in the grammatical [-presup.] condition and the ungrammatical [*+presup.] condition.](image)

**ER [-presupposition]**

Figure 1 shows that both the native Dutch controls and the two groups of L2 Dutch learners accepted sentences with ER [-presupposition] quantifier, with an acceptability rate of higher than 80%: $M = 91\%$ for native Dutch; $M = 85\%$ and $M =
81%, respectively, for the L1 French group and the L1 English group. As a result, after controlling for language proficiency, none of the three separate linear regression models reveal a significant outcome: L1 Dutch – L1 French, (t(146) = -0.779, p = 0.44); L1 Dutch – L1 English, (t(146) = 1.099, p = 0.27); L1 French – L1 English, (t(146) = 0.418, p = 0.68).

ER [*+presupposition]
For sentences with ER [*+presupposition] quantifier, none of the three experimental groups convincingly accepted or rejected them, with $M = 60\%$ for native Dutch, $M = 72\%$ for L1 French, and $M = 62\%$ for L1 English. The three separate linear regression models reveal one significant outcome: L1 Dutch – L1 French, $(t(146) = 2.34, p = 0.021\ast)$. The other groups do not differ significantly from each other, L1 Dutch – L1 English, $(t(146) = 0.739, p = 0.461)$; L1 French – L1 English, $(t(146) = 1.516, p = 0.132)$. This means that the only difference we find in the ungrammatical sentences is between the native Dutch group and the L1 French group, with the former rejecting ungrammatical sentences significantly more often than the latter.

4.2 Within-group results
Table 2 provides the average acceptance rates per language group on the sentences that include ER with [*+/-presupposition] quantifiers.

Table 2: Within-group comparisons of acceptance rates per language group in the grammatical and ungrammatical conditions.

<table>
<thead>
<tr>
<th></th>
<th>Grammatical [-presupposition]</th>
<th>Ungrammatical [*+presupposition]</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>DU</td>
<td>3.62 (SD 0.52)</td>
<td>2.39 (SD 1.20)</td>
<td>0.0002 ***</td>
</tr>
<tr>
<td>FR</td>
<td>3.40 (SD 0.74)</td>
<td>2.88 (SD 1.02)</td>
<td>3.90e-05 ***</td>
</tr>
<tr>
<td>EN</td>
<td>3.23 (SD 0.98)</td>
<td>2.49 (SD 1.10)</td>
<td>0.0051 **</td>
</tr>
</tbody>
</table>

All language groups have significantly higher rates of acceptance on sentences in which quantitative ER combines with a [-presupposition] quantifier than on sentences in which quantitative ER combines with a [*+presupposition] quantifier.

5. Discussion
The Transfer Hypothesis that claims that similar relevant properties facilitate L2 acquisition, while different relevant properties hinder L2 acquisition, led to a number of predictions. In this section we will discuss these predictions, starting with the general predictions, followed by the within-group and between-group predictions.
The first general prediction was about the grammatical sentences in which ER appears with a [-presupposition] quantifier. We predicted that the L1 Dutch speakers would accept these sentences (cf. De Jong 1983), just like the L1 French learners, who have EN in their home language and who do not distinguish between the quantitative and partitive interpretations. The English learners are expected to guess (score at chance level); because there is no quantitative pronoun in English, they presumably have no idea about any semantic constraints quantitative ER is bound to. The results in Figure 1 indicated that all groups accepted the sentences at a level above 80%, an accepted cut-off point for native/near-native-like level of acquisition (e.g., Muftah & Rafik-Galea 2013; Muftah & Wong 2011; Spinner & Jung 2017), confirming our expectations regarding the L1 Dutch (91%) and L1 French (85%) groups. However, the L1 English learners of Dutch also accept this type of sentence (81%), whereas we predicted them to score at chance level, set between 40% and 60%. To summarise, we may say that for the grammatical sentences, positive transfer has been found for the L1 French group, but negative transfer has not been found for the L1 English group. Prediction 1 is thus borne out for the L1 Dutch and L1 the French group, but not for the L1 English group.

The second general prediction was about the ungrammatical sentences in which ER appears with a [+presupposition] quantifier. We predicted that the L1 Dutch speakers would reject sentences with ER and a [+presupposition] quantifier (cf. De Jong 1983), and that the L1 French group would accept these sentences as a result of the presence of EN in their home language and the possibility of interpreting EN in a quantitative and partitive manner, and that the L1 English group would score at chance level due to the non-existence of a quantitative pronoun in that language. Figure 1 shows that the L1 Dutch speakers do not convincingly reject this type of sentences but instead have an average acceptance rate of 60%, which is considerably above the 20% cut-off point. This off-target response rating had not been anticipated and disproves our prediction for the L1 Dutch group. Nonetheless, the uncertainty that the native speakers of Dutch seem to be having about the presence of quantitative ER does not appear out of thin air: it relates to a finding in Chapter III, in which the L1 Dutch control group behaved quite different from what could be expected on the basis of prescriptives of Dutch grammar: the L1 Dutch group scored at chance in the condition in which ER was either present or absent in sentences formed with a numeral and an adjective. Thus, the Dutch control group accepted sentences in which ER co-occurs with a numeral and an adjective more often than expected, *Ik heb er vijf rode geplukt, ‘I have picked five red ones’, and/or rejected the absence of ER in such a sentence more often than expected, Ik heb vijf rode geplukt, ‘I have picked five red ones’.

For French learners of L1 Dutch we predicted that they would accept sentences with ER and a [+presupposition] quantifier as a result of the presence of EN in
their home language and the possibility of interpreting EN either quantitatively and partitively. Although they did not convincingly (72%) accept this ungrammatical sentence with a [*+presupposition] quantifier – we take 80% to be the cut off point, meaning that the prediction is not borne out – the difference with the L1 Dutch group is significant, meaning that the French learners of L2 Dutch accept these sentences significantly more frequently than the native speakers of Dutch, which may suggest a slight transfer effect. We will come back to between-group comparisons in predictions 6–8. We predicted that the L1 English learners of Dutch would guess at this type of sentence. This was not confirmed, given the average acceptance rate of 62%, while the chance level is set between 40% and 60%. Nonetheless, a strong tendency can be detected towards chance level. Prediction 2 is not borne out for the L1 Dutch group, almost borne out for the L1 French group, and slightly, if not completely, borne out for the L1 English group.

The previous two general predictions were about group performance, and we have seen that those that predicted ‘acceptance’ were more easily met than those that predicted ‘rejection’ or ‘guessing’. In the following three predictions we made assumptions concerning whether the various language groups would be sensitive to the semantic differences between sentences with ER and a [-presupposition] quantifier and sentences with ER and a [*+presupposition] quantifier.

(3) The third prediction anticipated that the L1 Dutch group would be sensitive to the semantic differences between grammatical sentences with ER and ungrammatical sentences with ER. As shown in Table 2, the semantically correct sentences were accepted significantly more often in comparison with the semantically incorrect sentences. With 4 being the maximum level of acceptance, the L1 Dutch group reached 3.62 for the grammatical sentences and 2.39 for the ungrammatical sentences. This difference is highly significant, with $p < .001$. Thus, we found evidence that the native speakers of Dutch were sensitive to the semantic properties of quantifiers and how quantitative ER relates to those properties. Prediction 3 is borne out.

(4) In the fourth prediction we predicted that the L1 French group would not be sensitive to the semantic value of the quantifier. Thus, L1 French learners of Dutch are not expected to make a clear distinction in their responses between the grammatical [-presupposition] condition and the ungrammatical [*+presupposition] condition. The average rates of acceptance for the L1 French group lie at 3.40 for grammatical sentences and at 2.88 for ungrammatical sentences, as can be seen in Table 2. This difference is highly significant, with $p < .001$, perhaps because an acceptance rate of 72% is lower than expected for the ungrammatical [*+presupposition] condition. Because the L1 French group does significantly discriminate between the two conditions, prediction 4 is not borne out.
CHAPTER IV. ADULT L2 ACQUISITION OF ER: SEMANTIC CONSTRAINTS

(5) The fifth prediction anticipated that the L1 English group would not be sensitive to the semantic differences between sentences with ER and a [-presupposition] quantifier and sentences with ER and a [+]presupposition quantifier because they have no ER. Instead we expected them to accept the grammatical and ungrammatical sentences equally as bad or as good, at chance level. Nevertheless, with an average acceptance rate of 3.23 for the grammatical sentences and 2.49 for the ungrammatical sentences they do significantly discriminate between the two conditions, \( p < .01 \), perhaps because an acceptance rate of 81% is higher than expected for the grammatical [-presupposition] condition. This significant difference means that prediction 5 is not borne out.

The third to fifth predictions were within-group predictions that concerned the sensitivity of the various language groups to the semantic differences between sentences with ER and a [-presupposition] quantifier and sentences with ER and a [+]presupposition quantifier. Although we only expected the L1 Dutch group to be sensitive to this difference, it turned out that in fact all three language groups were. In the following three predictions we take a look at the between-group results. The outcomes will tell us how the different language groups relate to each other and hopefully give an answer to our two predictions that positive transfer is expected in constructions that are similar in L1 and L2 and negative transfer is expected in constructions that are different in L1 and L2.

(6) The sixth prediction anticipated not finding a significant difference between L1 Dutch and L1 French with regard to the grammatical [-presupposition] condition – as a consequence of the two languages behaving similarly on a semantic level – but anticipated finding a significant difference in the ungrammatical [+]presupposition condition, because contrary to Dutch ER, French EN is allowed in sentences with [+]presupposition quantifiers. Figure 1 and Table 2 show that the Dutch native speakers accepted the grammatical [-presupposition] sentences in 91% of all cases, or equivalently, gave an average score of 3.62 on a 5-point Likert scale, while the French learners of Dutch accepted the sentences in 85% of all cases, or equivalently, gave an average score of 3.40. These results are similar and do not differ from each other, exactly as we predicted. Regarding the ungrammatical [+]presupposition sentences, the Dutch native speakers accepted the sentences in 60% of all cases, or equivalently, gave an average score of 2.39, while the French learners of Dutch accepted the sentences in 72% of all cases, or equivalently, gave an average score of 2.88. This difference is significant \( p < .05 \), meaning that the L1 French group accepted the ungrammatical sentences significantly more than the L1 Dutch group. This makes prediction 6 borne out for both conditions. These findings of positive transfer in the [-presupposition] condition and negative transfer in the [+]presupposition condition can be considered proof of positive and negative transfer and this is in line with Sleeman & Ihsane (2017).
(7) In the seventh prediction we predicted that the L1 English group would reject sentences belonging to the grammatical [-presupposition] condition significantly more often than the L1 Dutch group and that they would accept sentences belonging to the ungrammatical [*+presupposition] condition significantly more often than the L1 Dutch group. Figure 1 and Table 2 show that the Dutch native speakers accepted the grammatical [-presupposition] sentences in 91% of all cases, giving them an average score of 3.62 on a 5-point Likert scale, while the English learners of Dutch accepted the sentences in 81% of all cases, giving them an average score of 3.23. Despite the L1 Dutch group accepting these grammatical sentences at ceiling level, the L1 English group also accepted these sentences. Thus, the L1 Dutch group performed as we expected, but the L1 English group approved of sentences that we assumed they would reject more often (at chance level). As a result, the two language groups do not differ significantly from each other: \( p > .05 \) in the grammatical sentences. In the ungrammatical [*+presupposition] sentences, the Dutch native speakers accepted 60% of all cases (thus rejected 40%), resulting in an average score of 2.39 on a 5-point Likert scale, while the English learners of Dutch accepted the sentences in 62% of all cases (thus rejected 38%), with an average score of 2.49. Thus, the L1 Dutch group did not reject these sentences as often as we expected them to, while the L1 English group scored nearly at chance level like we did expect. Therefore, these numbers are too close together to reveal a real difference between them: \( p > .05 \). This means that prediction 7 is not borne out for any condition.

(8) In the eighth prediction we predicted that the comparisons between L1 French and L1 English speakers would lead to significant differences in both conditions. The two languages have different semantic properties regarding quantitative constructions, so we predicted that the L1 French group would accept the Dutch sentences in both conditions and that the L1 English group would score at chance level in both conditions. Nonetheless, neither in the grammatical [-presupposition] condition, \( p > .05 \), nor in the ungrammatical [*+presupposition] condition, \( p > .05 \), did we find a significant difference between the two languages. In Chapter III, in which not the semantic but the syntactic constraints were tested, only one of the three conditions revealed a significant difference between the L1 French and L1 English group, despite contradictory predictions per language group for all three conditions.

This last, unforeseen outcome that the two language groups do not differ significantly from each other could mean that both the L1 French and the L1 English groups have acquired the L1 property [*+/-presuppositionality] rather well and that they map this property to L2 Dutch quantitative ER correspondingly. Possibly they subconsciously know how to differentiate between the quantitative and the partitive
interpretation in Dutch, because of the distinctions they make in their L1: the L1 French group features EN that is homophous between the quantitative and the partitive interpretation – with the interpretative distinction being undeniably present below the surface –, while the L1 English group makes a direct comparison with the ‘some’ versus ‘some of them’ distinction from their home language. This idea expresses itself by the fact that both groups make a significant distinction between the Dutch grammatical and ungrammatical sentences with quantitative pronoun constructions, so clearly they do have a grasp on the semantic properties of ER and how these relate to those of the quantifier.

More influence of the L1 is observed when looking at the relative high acceptance rates of the L1 French group on both grammatical and ungrammatical quantitative constructions, which may be due to respectively positive influence of the L1 or target-level performance and negative influence of the L1. Also for the L1 English group the almost at chance judgements of the ungrammatical condition may be due to L1 influence. Furthermore, the unexpected finding that the L1 Dutch speakers also accepted the ungrammatical sentences at chance level, needs more investigation and has, in this study, led to a non-significant English-Dutch between-group comparison, and probably to a less strong significant French-Dutch between group comparison.

6. Conclusion

The focus of this chapter was on the L2 acquisition of Dutch quantitative pronoun ER constructions in various semantic referential contexts and how this acquisition is influenced by the properties of quantitative constructions in L1 French (EN) and L1 English (Ø).

Primarily, although De Hoop (1992) and De Jong (1983) claim that quantitative ER encodes the referential characteristic [-presupposition] and that the pronoun can only appear in sentences in which the quantifier encodes the same property, the native speakers of Dutch do not convincingly demonstrate this. They are unanimous in their judgements regarding grammatical sentences, but do not convincingly reject the ungrammatical sentences in which quantitative ER appears with quantifiers that encode [+presupposition] properties. In future research we investigate this more thoroughly by including similar sentences without quantitative ER as well, so that a more complete picture will emerge.

For the L1 French group, positive transfer or target-level performance and a slight negative transfer effect were found for respectively grammatical and ungrammatical constructions with quantitative ER, pro Sleeman & Ihsane (2017). For the L1 English group neither positive nor negative transfer effects were found for grammatical and ungrammatical constructions with quantitative ER. Evidence of L1 transfer is, however, furthermore shown in the within-group analyses: both the L1 French group and the L1 English group discriminate significantly between
grammatical and ungrammatical Dutch quantitative constructions. This may be the result of ‘subconsciously knowing’ the difference between the referential characteristics of the quantifier from the L1.

In conclusion we could say that signs of semantic influence of L1 are visible in both L1 groups, emanating from the significant within-group comparisons in both L1 groups. Moreover, it was shown that for the L1 French group a semantic presuppositionality difference in quantitative constructions between the home and target language will create difficulties in learning the target language (in line with Chapter III), while a semantic presuppositionality similarity between the home and target language will lead to enhanced scores on grammaticality judgements.
Chapter V

Adult L2 acquisition of ER: testing implicit knowledge

1. Introduction

Chapters III and IV of this dissertation explored the L1 transfer effects in the acquisition of adult L2 Dutch nominal ellipsis constructions with a quantitative pronoun (ER) by twenty-five L1 francophones and twenty-five L1 anglophones. More specifically, Chapter III reports the results of a syntactically conditioned untimed Grammaticality Judgement Task, investigating the acceptance of sentences in which quantitative ER was grammatically and ungrammatically present or absent. In Chapter IV the same was done, but with the difference that the Grammaticality Judgement Task included sentences with contexts in which the presence or absence of quantitative ER was semantically conditioned. Although both studies found significant differences between the L2 learner groups and the native Dutch group, just one significant difference between the English and French learner groups was detected: in the condition in which the position of ER was tested. The reason that no more differences were detected could be due to the type of task that was used to test the learners’ knowledge of quantitative ER. That is, untimed Grammaticality Judgement Tasks have been argued to test explicit knowledge (Ellis 2005, 2009). It may be the case that a task testing implicit knowledge is more sensitive to the predicted differences between French and English L2 learners of Dutch quantitative ER. As Ellis (2005, 2009) argues, an example of a task testing implicit knowledge is an Elicited Imitation Task. The current study therefore investigates the same syntactic and semantic contexts of Dutch quantitative ER in the same two adult L2 learner groups, using an Elicited Imitation Task. To anticipate the results, we show that, in contrast to the Grammaticality Judgement Task data, our Elicited Imitation Task indeed reveals significant differences between the French and the English learner groups regarding performance on Dutch quantitative ER constructions. This emphasises the importance of methodological choice.

The present experimental study is innovative in that it employs an implicit knowledge test regarding a construction about which still very little is known. The use of this new method leads to the following research question: Do Elicited Imitation Task data reveal a difference between L1 French and L1 English transfer in the adult acquisition of L2 Dutch quantitative ER constructions? Following the Transfer Hypothesis – entertained in Chapters III and IV – and the newly designed Implicit Knowledge Hypothesis (explained in Section 2.4), we hypothesise to find differences between the results of the two L2 Dutch learner groups (as a result of
opposite transfer predictions), and we hypothesise the Elicited Imitation Task, testing implicit knowledge, to be more sensitive to these differences than the Grammaticality Judgement Task, testing explicit knowledge.

This chapter is organised in the following way: Section 2 shortly recapitulates the syntactic and semantic facts for Dutch, French, and English with regard to quantitative pronoun constructions, and summarises the main findings of Chapters III and IV of this dissertation, explains the difference between explicit and implicit knowledge, and contains the research question, hypothesis and predictions. Section 3 describes the methodology. Section 4 presents and discusses the results, showing differences between the English and French learner groups. Section 5 provides a conclusion.

2. Syntactic and semantic features of sentences with a quantitative pronoun
Chapters III and IV provide descriptions and examples of the syntactic and semantic use of Dutch quantitative ER constructions, as well as their English and French equivalents. Therefore, we do not give an extensive overview again. However, to facilitate this chapter’s reading, we repeat the main syntactic and semantic properties of quantitative constructions.

2.1 Syntactic properties of quantitative pronoun constructions
Dutch quantitative ER is an anaphoric pronoun that requires a preceding discourse with an antecedent expressing a set that licenses the pronoun’s occurrence. According to traditional grammars the pronoun further obligatorily combines with a complex elliptical noun phrase, modified by a cardinal numeral or a weak quantifier in object position.\(^1\) At a syntactic level, leaving out ER in these constructions results in ungrammaticality, see (1). Furthermore, ER cannot be used in combination with an elliptical NP containing a cardinal/indefinite quantifier and an adjective, see (2).

(1) ER [+/-present] with numeral

\[
\begin{align*}
\text{Gerard houdt van boeken.} & \quad \text{Hij leest er twee per dag.} \\
\text{*Hij leest twee per dag.} & \\
\text{Gerard likes of books he reads (ER) two per day} & \\
\text{‘Gerard likes books. He reads two every day.’}
\end{align*}
\]

\(^1\) There is a difference between cardinal numerals and weak quantifiers that appear in object position and those that appear in subject position. The first type can occur with existential ER and quantitative ER, as in \textit{Er hebben er twee een rode kaft} ‘Two of them have red covers’, while in the second type the two types of ER coincide, as in \textit{Twee hebben er een rode kaft} ‘Two of them have red covers’ (Bennis 1986). Numerals and quantifiers that appear in subject position are beyond the scope of this study.
The French quantitative pronoun EN exhibits some syntactic distributive properties that are similar to Dutch quantitative ER and some that are different. A similar syntactic property is that French also requires overt EN in an indefinite elliptical noun phrase that is modified by a cardinal numeral or a weak quantifier in object position, while absence of the quantitative pronoun is not allowed, see (3). Differently from standard Dutch, French EN can be used in combination with an elliptical NP containing a cardinal/indefinite quantifier and an adjective, see (4).

(3) EN [+/-present] with numeral

Gerard aime les livres. Il en lit deux par jour.

*Il en lit deux par jour.

Gerard likes the books he EN reads two per day

‘Gerard likes books. He reads two every day.’

(4) EN [+/-present] with numeral and adjective

Marie veut avoir de nouvelles robes.*Elle en achète trois noires.

Elle en achète trois noires.

Marie wants have of new dresses she EN buys three blacks

‘Marie wants to have new dresses. She buys three black ones.’

Finally, as is clear from the translations in (1)-(4), English does not possess a quantitative pronoun comparable to Dutch ER or French EN.

In summary, the similarity between the syntactic properties of Dutch quantitative ER and French quantitative EN is as follows. Dutch ER and French EN are both obligatory present in indefinite elliptical noun phrases that are modified by a cardinal numeral or a weak quantifier in object position. If, however, an adjective is present too, besides the cardinal numeral or weak quantifier, French EN is obligatorily present while Dutch ER is obligatorily absent.

2.2 Semantic properties of quantitative pronoun constructions

Here we summarise the semantic properties of weak quantifiers in quantitative and in partitive constructions and how these properties influence the licensing possibilities of the pronouns ER and EN. The overarching semantic property is presuppositionality, characterised by the [+/-definite] and [+/-strong] distinctions of
the quantifier. We use the following quantifiers in our research: *de helft* ‘half’ [+definite], *een heleboel* ‘a lot’ [-definite], *sommige* ‘some of them’ [+strong], *enkele* ‘some’ [-strong].

The pronoun ER in Dutch quantitative constructions can only appear in combination with an indefinite quantifier, see (5), and with a weak quantifier, see (6), as continuations of the preamble sentence given in (1).

(5) ER with [\*+-definite] quantifier

\[Hij \text{ leest } *er \text{ de helft / er een heleboel.}\]

he reads ER the half / ER a lot

‘He reads half / a lot.’

(6) ER with [\*+-strong] quantifier

\[Hij \text{ leest } *er \text{ sommige / er enkele.}\]

he reads ER some / ER some

‘He reads some of them / some.’

According to De Jong (1983), the weak quantifier *enkele* ‘some’ is used without expressing a presupposition, whereas the strong quantifier *sommige* ‘some of them’ gives rise to a presupposition: *sommige wel* ‘some do’ implies *andere niet* ‘others do not’, implying the existence of a larger set. Something similar applies to definiteness: the definite quantifier *de helft* ‘half’ implies a presupposition, whereas the indefinite quantifier *een heleboel* ‘a lot’ does not. Thus, quantifiers that are [+definite] or [+strong] imply a presupposition and cannot co-occur with ER, whereas [-definite] or [-strong] quantifiers do not, and must co-occur with ER when appearing in quantitative constructions.

Dutch quantitative ER constructions should not be confused with Dutch partitive ER\text{van} constructions, in which ER appears together with the preposition \text{van} ‘of’, and that allows for the occurrence of the pronoun ER with definite quantifiers and strong quantifiers, see (7).

(7) Partitive ER\text{van} with [+definite] and [+strong] quantifier

\[Hij \text{ leest er de helft \text{van} / Hij \text{ leest er sommige \text{van}}.}\]

he reads ER the half of / he reads ER some of

‘He reads half / some of them.’

The difference between quantitative ER and partitive ER\text{van} is that in the quantitative interpretation the elliptical noun phrase refers to a non-specific subset that expresses the kind of nouns (e.g., \textit{books}), whereas in the partitive interpretation the elliptical noun phrase refers to a subset of a presupposed specific set in the discourse (e.g., \textit{those books, ten books, the blue books}).
Turning to French EN constructions, the quantitative interpretation versus the partitive interpretation distinction can be made as well. However, unlike Dutch, that possesses two forms to express the quantitative and partitive interpretations (ER and ERvan), French EN fulfils both interpretations: it is homophonous between the quantitative and the partitive interpretations. This is illustrated in (8) and (9), in which EN has a quantitative interpretation in case an indefinite or weak quantifier is used, and a partitive interpretation in case a definite or strong quantifier is used.

(8) EN with [+/-definite] quantifier
    *Il en lit un grand nombre / la moitié.*
    he EN reads a large number / the half
    ‘He reads a lot / half.’

(9) EN with [+/-strong] quantifier
    *Il en lit quelques-uns / certains.*
    he EN reads some / some
    ‘He reads some / some of them.’

As demonstrated in Chapter IV, adding right dislocation phrases after an intonation pause can quite easily retrieve these underlying interpretations.

As mentioned in Section 2.1, English does not have an overt pronoun such as Dutch ER/ERvan or French EN. Nevertheless, the quantitative interpretation of, for example, the quantifier *some* can be distinguished from the partitive interpretation of *some* by adding the PP of *them*, see (10). The addition of the PP of *them* renders a partitive interpretation, implying the existence of ‘some more of them’.

(10) Quantitative He reads some.
    Partitive He reads some of them.

In summary, the main differences between the semantic properties of Dutch quantitative ER and French quantitative EN are as follows. Dutch ER can only (and must) co-occur with [-definite] and [-strong] quantifiers and is not to be confused with partitive ERvan. In contrast, French EN must co-occur with both [+definite] and [-definite] quantifiers, and with both [+strong] and [-strong] quantifiers. It is also homophonous in a quantitative and a partitive interpretation. Finally, English does not feature an overt quantitative pronoun, but the addition of a PP distinguishes between a quantitative and a partitive interpretation of a phrase with a quantifier.

---

2 Dutch ERvan consists of the preposition and its complement; both needed to retrieve a partitive interpretation. In French EN, however, the preposition is already included in the pronoun, resulting in EN having both the quantitative and the partitive interpretation.
2.3 Previous studies on L2 acquisition of syntactic and semantic constraints on ER

Studies that focus on and describe the L2 acquisition process of the Dutch quantitative pronoun ER are scarce. Nonetheless, Chapters III and IV of this dissertation reveal some interesting insights that we summarise in this section.

Chapter III, more precisely analysed by Berends, Sleeman, Hulk & Schaeffer (2018), examined L1 transfer effects in advanced adult L2 acquisition of the Dutch quantitative pronoun in various syntactic contexts. Berends et al. (Chapter III; 2018) employed the Transfer Hypothesis – partly based on the Contrastive Analysis Hypothesis by Lado (1957) and on the Full Transfer Full Access Hypothesis by Schwartz & Sprouse (1996) – that states that linguistic patterns in L2 are influenced by L1 characteristics, with transfer to L2 either being positive or negative. Fifty adult L2 learners of Dutch, equally divided over two language groups, L1 French (N=25) and L1 English (N=25), and a control group of native Dutch speakers (N=25) took part in an untimed Grammaticality Judgement Task. They were presented with twenty experimental items that were evenly divided over two conditions: ER [+/*-present] in sentences with a numeral, and ER [*/+-present] in sentences with a numeral and an adjective, that were then subdivided into two subconditions: grammatical and ungrammatical, as exemplified in (1) and (2) in Section 2.1. This rendered eight specific transfer predictions (2 conditions x 2 subconditions x 2 languages) between the L1 Dutch control group and two different

1 In Chapter III, the original dataset was simplified by carefully combining scores on grammatical and ungrammatical test sentences, leading to a single score per participant and per subcondition. In the analysis of Berends et al. (2018), a distinction was made between grammatical and ungrammatical test sentences, and these are presented here in Tables i and ii. Please note that the condition ‘position of ER’ is no longer included, as we could not make a proper prediction due to the fact that we could not test ER in the position where French EN appears because of the violation of the verb second word order rule in Dutch; a phenomenon we expected all participants to master.

### Table i: Means of acceptance per L1 group and per condition.

<table>
<thead>
<tr>
<th></th>
<th>L1 Dutch</th>
<th>L1 French</th>
<th>L1 English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of ER</td>
<td>(max.5)</td>
<td>5.00</td>
<td>4.64</td>
</tr>
<tr>
<td>Omission of ER</td>
<td>(max.5)</td>
<td>0.96</td>
<td>2.20</td>
</tr>
<tr>
<td>Numeral and adjective without ER</td>
<td>(max.5)</td>
<td>3.60</td>
<td>2.60</td>
</tr>
<tr>
<td>*Numeral and adjective with ER</td>
<td>(max.5)</td>
<td>3.04</td>
<td>4.40</td>
</tr>
</tbody>
</table>

### Table ii: Statistical analysis between the L1 groups per condition.

<table>
<thead>
<tr>
<th></th>
<th>Presence of ER</th>
<th>Omission of ER</th>
<th>Numeral and adjective without ER</th>
<th>Numeral and adjective with ER</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANOVA</td>
<td>0.0697</td>
<td>0.0003***</td>
<td>0.0664</td>
<td>0.006</td>
</tr>
<tr>
<td>t-test DU-FR</td>
<td>0.065</td>
<td>0.055</td>
<td>0.045 *</td>
<td>0.003 **</td>
</tr>
<tr>
<td>t-test DU-EN</td>
<td>0.519</td>
<td>0.003 **</td>
<td>0.933</td>
<td>0.035 *</td>
</tr>
<tr>
<td>t-test EN-FR</td>
<td>0.251</td>
<td>0.151</td>
<td>0.057 .</td>
<td>0.441</td>
</tr>
</tbody>
</table>
L2 Dutch experimental groups, of which six have been borne out (printed in bold) in Table ii in fn.3. This provides evidence for the Transfer Hypothesis in the syntactic domain. Berends et al. (2018) also analysed the comparisons between the two experimental groups (L1 French and L1 English), since they expected them to differ significantly from each other, due to opposite predictions (as French does have a quantitative pronoun (EN), but English does not). However, none of the differences between the L1 French and the L1 English group turned out to be significant, see fn.3.

Chapter IV, more precisely analysed by Berends et al. (2018)\(^4\), also conducted an untimed Grammaticality Judgement Task on the same group of participants and testing the same Transfer Hypothesis, but in the semantic domain. Again, the participants were presented with twenty experimental items, equally divided over two conditions: ER with \([*/-\text{definite}]\) quantifier, and ER with \([*/-\text{strong}]\) quantifier, that were then subdivided into two subconditions: grammatical and ungrammatical, as exemplified in (5) and (6) in Section 2.2. The majority of the predictions formulated in this study was borne out, too: five out of eight (printed in bold in Table iv in fn.4). Thus, the results of the semantic study also provide some support for the Transfer Hypothesis. Once more, the query was raised whether significant differences could be found between the two L2 Dutch learner groups. However, as in the syntactic domain, this was not the case, see fn.4.

The studies by Berends et al. (Chapter III; Chapter IV; 2018) reveal that there is influence from the L1 on the majority of the syntactic and semantic contexts involving a quantitative construction in Dutch, providing evidence for the Transfer Hypothesis. Surprisingly, however, only one of the conditions (position) in Chapter

\(^4\) Chapter IV combined the properties \([*/-\text{definite}]\) and \([*/-\text{strong}]\) of the quantifier in the overarching semantic constraint \([\text{presuppositionality}]\). Berends et al. (2018) analysed these properties separately, see Tables iii and iv.

<table>
<thead>
<tr>
<th>Table iii: Means of acceptance per L1 group and per condition.</th>
<th>L1 Dutch</th>
<th>L1 French</th>
<th>L1 English</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER and ([-\text{definite}]) quantifier (max.4)</td>
<td>3.84</td>
<td>3.50</td>
<td>3.36</td>
</tr>
<tr>
<td>*ER and ([\text{+definite}]) quantifier (max.4)</td>
<td>2.90</td>
<td>3.10</td>
<td>2.66</td>
</tr>
<tr>
<td>ER and ([-\text{strong}]) quantifier (max.4)</td>
<td>3.39</td>
<td>3.30</td>
<td>3.10</td>
</tr>
<tr>
<td>*ER and ([\text{+strong}]) quantifier (max.4)</td>
<td>1.88</td>
<td>2.67</td>
<td>2.31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table iv: Statistical analysis between the groups per condition.</th>
<th>ER and ([-\text{definite}]) quantifier</th>
<th>ER and ([\text{+definite}]) quantifier</th>
<th>ER and ([-\text{strong}]) quantifier</th>
<th>ER and ([\text{+strong}]) quantifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANOVA 0.0023 *</td>
<td>0.3562</td>
<td>0.4593</td>
<td>0.0403 *</td>
<td></td>
</tr>
<tr>
<td>t-test DU-FR 0.263</td>
<td>0.360</td>
<td>0.874</td>
<td>0.015 *</td>
<td></td>
</tr>
<tr>
<td>t-test DU-EN 0.320</td>
<td>0.893</td>
<td>0.517</td>
<td>0.232</td>
<td></td>
</tr>
<tr>
<td>t-test EN-FR 0.974</td>
<td>0.292</td>
<td>0.585</td>
<td>0.248</td>
<td></td>
</tr>
</tbody>
</table>
III and none of the conditions in Chapter IV show significant differences between the L1 English and L1 French learners of Dutch, even though this was expected based on the contrast between the presence of a quantitative pronoun (EN) in French, and the absence of such a pronoun in English. The current study addresses this predicted difference again, but this time with a different task, namely, an Elicited Imitation Task. The only condition that rendered a significant difference between the two L2 groups is not included in the current study because we did not consider this to be very valuable due to the fact that we could not test ER in the position where French EN appears. The difference between a Grammaticality Judgement Task and an Elicited Imitation Task is elaborated on in the next section.

2.4 Explicit versus implicit knowledge
In this section we describe how the study of this chapter differs methodologically from the studies in Chapters III and IV. The Grammaticality Judgement Tasks used in Chapters III and IV revealed one significant difference between the English and the French learners of Dutch: in Chapter III the condition of ‘position’ is significantly different between the two L2 groups. The question is what type of knowledge the Grammaticality Judgement Task taps into. Ellis (2005, 2009) argues that an untimed Grammaticality Judgement Task tests explicit knowledge, as it gives participants as much time as they need in order to come up with a judgement about the sentence. This allows participants to be aware of what they know and to consciously apply it. In contrast, implicit knowledge is knowledge that one is not aware of: knowledge is subconsciously applied (Godfroid, Loewen, Jung, Park, Gass & Ellis 2015). Cognitive neuroscientists have even identified different areas of the brain possibly associated with implicit and explicit knowledge (Squire & Knowlton 2000; Ullman 2005). As the (application of) implicit knowledge is part of language processing as well, we decided to administer a task that tests implicit knowledge, namely an Elicited Imitation Task.

An Elicited Imitation Task requires the participant to repeat or imitate sentences (one-by-one) produced by the experimenter. In such a task, participants cannot wait too long before starting to imitate the sentence because of memorization constraints, thereby tapping into implicit knowledge (Ellis 2005, 2009; Erlam 2006). Sentence length is crucial in this respect as sentences must be long enough in order to prevent verbatim repetition. According to Jensen & Vinther (2003), the minimum length for L2 adults is sixteen syllables. The rationale behind this minimum number of syllables is that when a sentence is long enough, repetition cannot simply rely on phonological memory, but requires grammatical computation (Bley-Vroman & Chaudron 1994). In other words, long enough sentences exceed participants' storage capacity so that grammatical computation needs to take place. This provides the possibility for the participant to subconsciously change the sentence in such a way
that it fits his/her current grammar. Whether exact imitations in an Elicited Imitation Task always reflect grammatical computation is still a matter of debate, as it could in principle still be the case that strings of syllables are simply memorised, and repeated verbatim. In contrast, subconscious changes to the sentence are generally agreed to reflect the current (implicit) grammatical knowledge of the learner (Erlam 2006; Munnich, Flynn & Martohardjono 1994). Because implicit knowledge seems to be more ‘automatic’ than explicit knowledge (see also Hulstijn & De Graaff 1994), we argue that it may approximate every-day, natural language situations more closely, and therefore better represent the current underlying grammatical knowledge (competence) of a certain linguistic construction in an L2 learner. We refer to this idea as the Implicit Knowledge Hypothesis.

2.5 Research question, hypothesis and general predictions
As mentioned in the introduction, the research question of this study is: Do Elicited Imitation Task data reveal a difference between L1 French and L1 English transfer in the adult acquisition of L2 Dutch quantitative ER constructions? Based on the Transfer Hypothesis we expect to find differences between the results of the L1 French and the L1 English learners of L2 Dutch. Based on the Implicit Knowledge Hypothesis we expect that the Elicited Imitation Task, testing implicit knowledge, is more sensitive to these differences than the Grammaticality Judgement Task, testing explicit knowledge. As English does not have a quantitative pronoun, while French does, our general predictions are that: a) the L1 French group omits the Dutch quantitative pronoun ER less often than the L1 English group in sentences in which ER is correctly present (positive transfer from French); b) the L1 French group omits the Dutch quantitative pronoun ER less often than the L1 English group in sentences in which ER is incorrectly present (negative transfer from French); c) the L1 French group inserts the Dutch quantitative pronoun ER more often than the L1 English group in sentences in which ER is correctly absent (negative transfer from French); and d) the L1 French group inserts the Dutch quantitative pronoun ER more often than the L1 English group in sentences in which ER is incorrectly absent (positive transfer from French). Specific predictions are formulated in Section 3.2, in connection to the experimental conditions.

3. Methodology
3.1 Participants and base-line measures
The same fifty advanced L2 learners of Dutch, twenty-five L1 French speakers (mean age 47;0, SD 12) and twenty-five L1 English speakers (mean age 48;11, SD 12) who participated in the Grammaticality Judgement Tasks of Berends et al. (Chapter III; Chapter IV; 2018), took part in this study’s Elicited Imitation Task. Besides the Elicited Imitation Task, a Test of Dutch Vocabulary was conducted to
ensure that the L1 French and L1 English groups had acquired the minimum level of proficiency in Dutch that we requested (B2 according to CEFR). See the methodological section of Chapters III (Section 4) for a more detailed description of the Test of Dutch Vocabulary.

3.2 Materials and procedure Elicited Imitation Task and specific predictions
The design of the Elicited Imitation Task is similar to that of the Grammaticality Judgement Tasks, implementing the same syntactic and semantic conditions (except for the syntactic ‘position’ condition), but with the obvious difference that participants do not need to give a judgement about the sentence, but instead are asked to repeat the last sentence they heard. The syntactic conditions include: a) ER [+/*-present] with numeral, and b) ER [+/+-present] with numeral and adjective. The semantic conditions include: c) ER with [*+/+-definite] quantifier, and d) ER with [*+/+-strong] quantifier. Each of the four conditions contains two subconditions, grammatical and ungrammatical. Each subcondition includes two test sentences. This amounts to a total of 4 x 2 x 2 = 16 test sentences that are based on successful items from a pilot study. All sentences are preceded by an appropriate preamble, carrying the antecedent and a certain quantity, followed by a sentence containing a contrasting quantity. The grammaticality of each test sentence (TS) depends on the presence or absence of ER. Examples of the eight subconditions and their specific predictions are listed in Table 1. As exact imitations may or may not reflect implicit grammatical knowledge, because of the memory component involved, we formulate our specific predictions in terms of change. Such change could be either the improvement of an ungrammatical TS, or the deterioration of a grammatical TS.

Table 1: The eight subconditions and their specific predictions.

| ER [+/present] with numeral |  |
|----------------------------|  |
| **Preamble** | Maandag hebben jullie één cd beluisterd.  |
|  | ‘On Monday you listened to one cd.’  |
| **TS a** | Zondag hebben wij twee beluisterd tijdens het luxe paasontbijt.  |
| **TS b** | Zondag hebben wij ER twee beluisterd tijdens het luxe paasontbijt.  |
|  | … nous **EN** avons écouté deux ...  |
|  | ‘On Sunday we listened to two during the luxurious Easter breakfast.’  |
| **Pred. a)** | Fr. participants ‘correctly’ insert ER more often than En. participants  |
| **Pred. b)** | Fr. participants ‘incorrectly’ omit ER less often than En. participants  |

| ER [+/present] with numeral and adjective |  |
|----------------------------|  |
| **Preamble** | Vorig jaar hebben wij negen kleine cadeaus gekregen.  |
|  | ‘Last year we received nine small presents.’  |
| *TS c | Dit jaar hebben jullie ER negen grote gekregen van Sinterklaas. |
| TS d | Dit jaar hebben jullie negen grote gekregen van Sinterklaas. |
| Pred. c | Fr: participants ‘correctly’ omit ER less often than En. participants |

**ER with [+/definite] quantifier**

| Preamble | Vannorgven hebben jullie tien gebakjes versierd. |
| Pred. e | Fr: participants ‘correctly’ omit ER less often than En. participants |

**ER with [+/strong] quantifier**

| Preamble | Gisteren heb ik tien fietsen gerepareerd. |
| Pred. g | Fr: participants ‘correctly’ omit ER less often than En. participants |

All test sentences in the Elicited Imitation Task contain between seventeen and nineteen syllables, and as such comply with the requirement to have at least sixteen syllables (Jensen & Vinther 2003). Moreover, we ensured that ER was phonologically non-salient and occurred in a non-salient position in order to prevent the participants from giving special attention to this critical part of the sentence.

In addition to the sixteen experimental items, we included eight pre-recorded distractor items as a diversion tactic and as measure of validity of imitations regarding the experimental trials: if a participant struggled with repeating more than half of the distractor items, we would not include the data in our analyses. No participants needed to be excluded on the basis of this criterion. An example of a distractor item is presented in Table 2.
Table 2: An example of a distractor item.

<table>
<thead>
<tr>
<th>Distractor item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preamble</td>
</tr>
<tr>
<td>De tandarts heeft mijn tanden gebleekt.</td>
</tr>
<tr>
<td>‘The dentist bleached my teeth.’</td>
</tr>
<tr>
<td>TS</td>
</tr>
<tr>
<td>Als ik nu lach stralen ze als een zonnetje.</td>
</tr>
<tr>
<td>‘When I smile now they shine like the sun.’</td>
</tr>
</tbody>
</table>

All twenty-four trials were divided into two experimental versions and presented in randomised orders to avoid a potential self-priming effect. Before the start of the actual experiment we presented two (additional) distractor items that we used as practice items. If the participants could not correctly repeat at least one of the trials, we would not proceed with the experimental items. However, all our participants perfectly imitated at least one of the trials.

Visual stimuli were not provided; only pre-recorded audio recordings – voiced by a native speaker of Dutch – were played. The task was administered digitally in E-prime, with a separate audio-recorder that recorded the participants’ speech in order to analyse it at a later stage. Participants were instructed to repeat as much as they could remember of the last sentence they heard, as soon as they had listened to the whole sentence. The experimenter initiated the practice trials, but in the remainder of the task the participant initiated the experimental trials by pressing any key on the keyboard. If the ‘r’ key was pressed, the previous sentence was repeated. This was allowed only if the participant was unable to listen to it the first time due to a disturbance, not if the participant just wanted to listen to it again.

3.3 Analysis
All responses (sixteen experimental items x twenty five participants = four hundred experimental trials per language group) were coded for accuracy or error-type according to the following categories: exact imitation; improvement regarding ER in ungrammatical target sentences; deterioration regarding ER in grammatical target sentences; and other (empty or nonsense responses, and responses that could not be scored because of omission or modification of a crucial and obligatory part of the sentence, such as quantifiers in the semantic domain). Improvement means that a) incorrectly supplied ER in the test sentence is correctly omitted in the imitation response, or b) incorrectly omitted ER in the test sentence is correctly supplied in the imitation response. Deterioration means: a) correctly supplied ER in the test sentence is incorrectly omitted in the imitation response, or b) correctly omitted ER in the test sentence is incorrectly supplied in the imitation response.

In order to determine whether the French and English participants differ significantly from each other, we separated the grammatical sentences from the ungrammatical sentences in our analysis, because each give rise to different
predictions (as described in Section 3.2). We calculated the percentage of exact imitations, improvements/deteriorations, and responses belonging to the ‘other’ category per group. Our statistical analysis, performed in R (R Core Team 2016) makes use of $\alpha = .05$ as a criterion for significance.

4. Results and Discussion

Let us first reflect on the outcome of the Test of Dutch Vocabulary before presenting the Elicited Imitation Task results. The analysis of the results of the Test of Dutch Vocabulary showed that the French and the English learners did not significantly differ from each other on this measure of Dutch proficiency ($t = 1.7027$, p-value = 0.0951). This means that significant Elicited Imitation Task differences between French and English learners cannot be attributed to proficiency.

The Elicited Imitation Task results are presented in Table 3. Each percentage reflects a coding category, a subcondition and a language group. The percentages of the three coding categories (exact imitations, improvements/deteriorations, other) add up to 100%. The percentages given for improvement or deterioration represent the following. For ungrammatical test sentences (indicated by *) the percentages reflect the number of improvements with regard to ER out of the total number of responses per subcondition. For grammatical sentences the percentages reflect the number of deteriorations with regard to ER out of the total number of responses per subcondition. For exact imitations, the percentages reflect the number of times a test sentence was repeated without making any alteration to it with regard to ER out of the total number of responses per subcondition. The p-values that are given per subcondition, demonstrate whether the two language groups differ significantly from each other with regard to the category of improvements/deteriorations and exact imitations. Recall from Section 2.4 that we expect the category of improvements/deteriorations (change) to be most telling with respect to the learners’ implicit grammatical knowledge. However, for the sake of completeness, we also include the comparisons of the exact imitations. Significance is indicated by *** (p < 0.001), ** (p < 0.01), * (p < 0.05). The specific predictions are repeated in italics.

**Table 3: Results of the Elicited Imitation Task in percentages, per subcondition and per language group.**

<table>
<thead>
<tr>
<th></th>
<th>L1 French</th>
<th>L1 English</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>[*-ER] present with numeral</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Fr. participants insert ER (improvement) more often than En. participants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improvements</td>
<td>38% (19/50)</td>
<td>14% (7/50)</td>
<td>0.006**</td>
</tr>
<tr>
<td>Exact imitations</td>
<td>60% (30/50)</td>
<td>84% (42/50)</td>
<td>0.007**</td>
</tr>
<tr>
<td>Other</td>
<td>2% (1/50)</td>
<td>2% (1/50)</td>
<td></td>
</tr>
</tbody>
</table>
### [+]ER present with numeral

<table>
<thead>
<tr>
<th></th>
<th>Deteriorations</th>
<th>Exact Imitations</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fr. participants</td>
<td>14% (7/50)</td>
<td>80% (40/50)</td>
<td>6% (3/50)</td>
</tr>
<tr>
<td>En. participants</td>
<td>26% (13/50)</td>
<td>72% (36/50)</td>
<td>2% (1/50)</td>
</tr>
</tbody>
</table>

### [*+ER] present with numeral and adjective

<table>
<thead>
<tr>
<th></th>
<th>Improvements</th>
<th>Exact Imitations</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fr. participants</td>
<td>28% (14/50)</td>
<td>58% (29/50)</td>
<td>14% (7/50)</td>
</tr>
<tr>
<td>En. participants</td>
<td>48% (24/50)</td>
<td>52% (26/50)</td>
<td>0% (0/50)</td>
</tr>
</tbody>
</table>

### [-ER] present with numeral and adjective

<table>
<thead>
<tr>
<th></th>
<th>Deteriorations</th>
<th>Exact Imitations</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fr. participants</td>
<td>12% (6/50)</td>
<td>52% (26/50)</td>
<td>36% (18/50)</td>
</tr>
<tr>
<td>En. participants</td>
<td>0% (0/50)</td>
<td>98% (49/50)</td>
<td>2% (1/50)</td>
</tr>
</tbody>
</table>

### *ER with [+definite] quantifier

<table>
<thead>
<tr>
<th></th>
<th>Improvements</th>
<th>Exact Imitations</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fr. participants</td>
<td>16% (8/50)</td>
<td>50% (25/50)</td>
<td>34% (17/50)</td>
</tr>
<tr>
<td>En. participants</td>
<td>36% (18/50)</td>
<td>54% (27/50)</td>
<td>10% (5/50)</td>
</tr>
</tbody>
</table>

### ER with [-definite] quantifier

<table>
<thead>
<tr>
<th></th>
<th>Deteriorations</th>
<th>Exact Imitations</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fr. participants</td>
<td>34% (17/50)</td>
<td>56% (28/50)</td>
<td>10% (5/50)</td>
</tr>
<tr>
<td>En. participants</td>
<td>56% (28/50)</td>
<td>32% (16/50)</td>
<td>12% (6/50)</td>
</tr>
</tbody>
</table>

### *ER with [+strong] quantifier

<table>
<thead>
<tr>
<th></th>
<th>Improvements</th>
<th>Exact Imitations</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fr. participants</td>
<td>8% (4/50)</td>
<td>16% (8/50)</td>
<td>76% (38/50)</td>
</tr>
<tr>
<td>En. participants</td>
<td>28% (14/50)</td>
<td>30% (15/50)</td>
<td>42% (21/50)</td>
</tr>
</tbody>
</table>

### ER with [-strong] quantifier

<table>
<thead>
<tr>
<th></th>
<th>Deteriorations</th>
<th>Exact Imitations</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fr. participants</td>
<td>34% (17/50)</td>
<td>56% (28/50)</td>
<td>10% (5/50)</td>
</tr>
<tr>
<td>En. participants</td>
<td>56% (28/50)</td>
<td>32% (16/50)</td>
<td>12% (6/50)</td>
</tr>
</tbody>
</table>
Table 3 shows the results of the Elicited Imitation Task that tested the suppliance or omission of Dutch quantitative ER in eight subconditions by L1 French and L1 English speakers. The general predictions were that the French participants would omit the Dutch quantitative pronoun ER less often than the English participants in sentences in which ER is correctly present (positive transfer) and incorrectly present (negative transfer) and that the French participants would insert the Dutch quantitative pronoun ER more often than the English participants in sentences in which ER is correctly absent (negative transfer) and incorrectly absent (positive transfer). These general predictions rendered the specific predictions of Section 3.2, repeated in Table 3, which, in turn, were tested by comparing the number of improvements in ungrammatical sentences per language group, and the number of deteriorations in grammatical sentences per language group.

The percentages shown in Table 3 all suggest that, as expected, the French participants omitted ER less often than the English participants in all conditions in which ER is present, and inserted ER more often than the English participants in all conditions in which ER is absent. These differences between the French and the English learners reach statistical significance in the vast majority of subconditions: seven out of eight. This provides evidence for the Transfer Hypothesis, showing that having an overt quantitative pronoun in the L1 (as in French) triggers the use of quantitative ER in Dutch, and having no quantitative pronoun in the L1 (as in English) enhances omission of Dutch quantitative ER.

Let us examine more closely the one subcondition in which the data points in the right direction, but in which no statistically significant difference is found between the French and the English learners’ responses, namely, prediction b.

**Pred. b) French participants incorrectly omit ER less often than English participants**

This syntactic subcondition contains (correct) ER with a numeral (ER twee ‘two’). We predicted the French participants to incorrectly omit ER less often than English participants because of the obligatory presence of EN in similar contexts in French. Although it is true that the French participants omit ER less often than the English participants (14% versus 26%), this difference is not significant. Despite the fact that the improvement/deterioration responses (responses that contained a change regarding ER) are most telling with respect to the implicit grammatical knowledge of the learners, the exact imitations may also be revealing to some extent. Based on
(positive) transfer from French, we expect the French participants to not make alterations to the grammatical sentence. This seems to be the case because the French group reaches a high percentage of exact imitations (80%). Turning now to the English group, based on (negative) transfer from English, we expect the English learners to exactly repeat the (grammatical) test sentence with ER relatively rarely, as English does not have an overt quantitative pronoun. Surprisingly, the English group behaves much better than we expected (72% exact imitations) and are not significantly different from the French group. We see this performance reflected in the deteriorations: a low percentage of omissions of ER in the French group (14%), as predicted, but also a relatively low percentage of omissions of ER in the English group (26%), which was not predicted. This means that the unexpectedly good performance of the English group prevents the difference between the French and English group from being significant in this subcondition. In other words, there is proof of positive transfer from French to Dutch, but no proof of negative transfer from English to Dutch here. This result is comparable to that of the Grammaticality Judgement Task of Berends et al. (2018), see also fn.3, in which the French participants approved the grammatical Dutch sentences with ER and a numeral (positive transfer), while the English participants did, too (no negative transfer), resulting in the negative transfer prediction for the English group not being borne out.

Besides prediction (b), prediction (g) is worth discussing, too, because of the high percentages of ‘other’ cases: 76% in the L1 French group and 42% in the L1 English group. This semantic condition contains constructions with a strong quantifier (*sommige* ‘some’), in which ER is incorrectly present. The French learners improved the sentence significantly less often (8%) than the English learners (28%) by leaving out ER (as predicted). However, the percentage of exact repetitions of the sentences in this condition by the French learners was also extremely low (16%), again due to the high percentage of ‘other’ responses. In these ‘other’ responses the French learners often changed *sommige* ‘some’ into a numeral (*twee* ‘two’) or into a weak quantifier (*een paar* ‘a couple’). Replacing the quantifier with another element happened more often in this condition (with *sommige* ‘some’) than in the other semantic conditions, with quantifiers such as *een heleboel* ‘a lot’, *de helft* ‘half’, and *enkele* ‘some’. This suggests that the Dutch word *sommige* was difficult to pronounce or to retain for (part of) the French learners.

All in all, we conclude that our results provide evidence in favour of the Transfer Hypothesis: the predictions regarding improvement or deterioration following from the Transfer Hypothesis in the French group versus the English group were borne out in seven of our eight subconditions. Although the results for subcondition (b) do not provide strong evidence in favour of the Transfer Hypothesis, it does not provide evidence against the Transfer Hypothesis either. Moreover, the percentages in this subcondition for which the predicted difference is
not found do point into the predicted direction. The lack of significance is attributed to unexpectedly high target-like performance of the L1 English group. Future research with larger groups of participants should clarify whether this remains a valid explanation.

Besides finding differences between the results of the French and the English L2 Dutch learner groups, we also hypothesised the Elicited Imitation Task, testing implicit knowledge, to be more sensitive to these differences than the Grammaticality Judgement Task, testing explicit knowledge. Berends et al. (Chapter IV; 2018) show that in their Grammaticality Judgement Task, the French and the English learners do not significantly differ from each other in any of the eight subconditions. The current Elicited Imitation Task study, however, reveals significant differences in seven of the identical eight subconditions. We consider this evidence in favour of our Implicit Knowledge Hypothesis, predicting that an experiment testing implicit knowledge (Elicited Imitation Task) is more sensitive to a learner’s current underlying grammar (competence) than an experiment testing explicit knowledge (Grammaticality Judgement Task) (Ellis 2005, 2009). Thus, different tasks, testing different types of knowledge, can yield different results. A Grammaticality Judgement Task allows learners to reflect on their response, preventing them from responding ‘automatically’. We believe that this is the reason that both the French and the English learners score more target-like and that therefore differences between them are less easily found. In contrast, the Elicited Imitation Task renders much more spontaneous responses, tapping into the underlying grammatical competence, possibly enhancing transfer from the L1.

5. Concluding remarks
This study tested predicted differences between French and English learners of L2 Dutch regarding the Dutch quantitative pronoun ER with an Elicited Imitation Task, argued to test implicit knowledge. Based on the Transfer Hypothesis we made opposite predictions for the French and English learners in each subcondition.

In contrast to Berends et al.’s (Chapter IV; 2018) results on a Grammaticality Judgement Task, testing explicit knowledge (Ellis 2005, 2009), we found significant differences between the French and the English learners in seven out of eight subconditions. In the remaining subcondition (b), the differences were not statistically significant, but went into the right (predicted) direction. Not only do these results provide evidence in favour of the Transfer Hypothesis, they also support the Implicit Knowledge Hypothesis, stating that implicit knowledge is more ‘automatic’ than explicit knowledge as it approximates spontaneous, every-day, natural language situations more closely than explicit knowledge. As such, implicit knowledge better represents the current underlying grammatical knowledge (competence) of a certain linguistic construction in an L2 learner. We conclude that the different results of the Grammaticality Judgement Task and the Elicited
Imitation Task are due to the different natures of the tests, and that L1 transfer is more visible in tests tapping into implicit knowledge (such as the Elicited Imitation Task) than in tests measuring explicit knowledge (such as the Grammaticality Judgement Task).

Having confirmed predictions following from the Transfer Hypothesis for adults, the question arises as to whether transfer or influence from one language to another also occurs in children who grow up with more than one language. Chapter VI shifts the focus from adult L2 learners of Dutch to bilingual children acquiring Dutch and English. Starting from Hulk & Müller’s (2000) Cross-linguistic Influence Hypothesis, we investigate whether cross-linguistic influence also takes place in five-to-eight year old children when two languages (Dutch and English) are acquired simultaneously in early childhood.
Chapter VI

Acquisition of ER by bilingual children

1. Introduction

Undeniably, a very important factor for language acquisition is language input. Hearing language allows new-borns to absorb vocabulary and helps them acquiring language: starting with canonical babbling and ending with a language that is equipped with complex syntactic structures. This process is not limited to the acquisition of a single language, because when the child consistently receives input from multiple languages, two (or even more) languages will be acquired.

Many researchers have argued that bilingual children are able to differentiate two language systems from a very early age (Deuchar & Quay 2000; Döpke 2000; Meisel 1990; Müller 1998; Paradis & Genesee 1996), but this does not exclude the possibility of cross-linguistic influence between the languages. Previous studies in the area of bilingual language acquisition have found such cross-linguistic influence (e.g., Bernardini & Van der Weijer 2017; Granfeldt 2012; Hamann & Belletti 2006; Hulk & Müller 2000; Müller & Hulk 2001; Nicoladis 2002). This suggests that the acquisition of two languages does not happen completely independently of each other, but instead the two language systems can influence each other.

Our aim is to investigate whether we can find evidence for the existence of cross-linguistic influence from English to Dutch in English-Dutch bilingually raised children. The construction that we examine is the Dutch quantitative pronoun construction. Whereas Dutch has a quantitative pronoun, namely ER, English does not have one. This leads to the following research question: Is there cross-linguistic influence from English in the acquisition of the Dutch quantitative pronoun ER in English-Dutch bilingual children?


1 Unsworth, Argyri, Cornips, Hulk, Sorace & Tsimpli (2014) propose different types of child bilingualism, based on Age of Onset: 2L1 > children who are exposed to two languages from birth; early successive bilingualism > children who started to be exposed to the L2 between age 1 and 4; child L2 > children who started to be exposed to the L2 between age 4 and 10. In this chapter, we include mostly 2L1 children, as well as some who would fall into the early successive bilingualism category. Together we refer to them as the bilingual group.
This chapter is organised as follows. Section 2 details the quantitative pronoun construction in Dutch and English, and reviews the most relevant literature with respect to cross-linguistic influence in child bilingualism. Based on this, we present the hypothesis and predictions. After the description of the methodology (Section 3) we build upon the findings of previously conducted studies and fill a gap in the literature by reporting the data of our innovative and exploratory experimental study (Section 4). The discussion is a broader exploration of the influence that acquiring multiple languages may have on Dutch quantitative pronoun use (Section 5). We end this article with some concluding remarks (Section 6).

2. Background
This section provides an overview of the relevant literature on cross-linguistic influence in bilingualism, as well as descriptions of quantitative constructions in Dutch and English, and a summary of previous research on the acquisition of quantitative pronoun constructions. Then, our research question and corresponding hypothesis and predictions are presented.

2.1 Cross-linguistic influence
Children who grow up bilingually receive linguistic input in two languages. Traditionally, it was hypothesised that children who are raised bilingually acquire both languages by developing a unitary linguistic system (Volterra & Taeschner 1978), but in the literature of the late ‘80s the general consensus was that bilingual children acquire both languages as largely independent systems because bilingual children who are exposed to two languages from birth or soon after know how to differentiate both languages from a very early age (e.g., Genesee 2003; Genesee, Nicoladis & Paradis 1995; De Houwer 1990; Köppe & Meisel 1995; Meisel 1990; Paradis & Genesee 1996). Although some researchers kept sticking to this theory (i.e., Meisel 1994), in more recent years the general assumption about child bilingualism has shifted towards the hypothesis that bilingual children have multiple language systems that influence one another (Fernández Fuertes & Liceras 2018; Hulk & Müller 2000; Müller & Hulk 2001; see Serratrice 2013 for an overview). This influence has been labelled cross-linguistic influence. One of the possible scenarios for bilingual language acquisition is therefore influence from one language to the other.

No explicit hypothesis predicting when to expect cross-linguistic influence had been proposed until Hulk & Müller’s (2000) Cross-linguistic Influence Hypothesis. In this hypothesis they suggested that cross-linguistic influence is restricted and to be expected only under certain conditions: the linguistic phenomenon belongs to the interface between syntax and pragmatics, and the languages concerned present (partial) overlap on the surface. The necessity of the first condition has been
challenged as some studies found cross-linguistic influence in syntactic constructions where there is no interface issue with pragmatics (e.g., Yip & Matthews 2000), or in other linguistic domains such as phonology (Fabiano-Smith & Goldstein 2010; Keshavarz & Ingram 2002; Paradis 2001), or semantics (Anderssen & Bentzen 2013; Brouwer et al. 2017). In contrast, the second condition, that the languages concerned show (partial) overlap regarding the relevant linguistic construction, still seems to hold.

The present study focuses on English-Dutch bilingual children’s ability to acquire a construction that has hardly been investigated before: the Dutch quantitative pronoun construction. In the next section we describe this phenomenon and discuss how English and Dutch present (partial) overlap on the surface with respect to quantitative pronoun constructions.

2.2 Quantitative pronoun constructions in Dutch and English

English and Dutch have quantitative constructions displaying a surface S(ubject) – V(erb) – D(irect)O(bject) order. The indefinite DO involves a noun selected by a cardinal numeral or weak quantifier; see (1a) for English and (1b) for Dutch.

(1)  a. English Maurice buys ten stamps.
     b. Dutch Maurice koopt tien postzegels.

So far, the quantitative constructions are similar to each other, but the difference between the two languages becomes apparent when the noun is omitted. Example (2a) shows that noun omission in an English quantitative discourse does not lead to an ungrammatical sentence, whereas example (2b) shows that in Dutch it does.

(2)  a. English Maurice needs stamps. He buys ten.

Simply eliding the noun because the antecedent (stamps) has been mentioned in the discourse, is allowed in English, but results in ungrammaticality for Dutch. To make the Dutch quantitative construction with noun ellipsis grammatical, the quantitative pronoun ER is required. This pronoun does not appear in the original object position
following the remnant numeral (3a) but instead, in a position immediately following the finite verb, as in (3b).

(3)  
a.  *Maurice koopt tien er.  
    Maurice buys ten ER  
    ‘Maurice buys ten.’  

b.  Maurice koopt er tien.  
    Maurice buys ER ten  
    ‘Maurice buys ten.’  

Thus, besides the fact that the Dutch quantitative pronoun ER combines with an indefinite complex noun phrase modified by a cardinal numeral (or weak quantifier) in object position, the pronoun also undergoes several syntactic movements to end up in its final position following the finite verb. For a more detailed description of this complex process we refer to Chapter II.

2.3 Previous research on the acquisition of quantitative pronoun constructions
A couple of studies have investigated the monolingual acquisition of the Dutch quantitative construction. Sleeman & Hulk (2013) analysed a small number of Dutch spontaneous speech transcripts (N=5) from the CHILDES database (MacWhinney 2000), in which they looked at the age of emergence of nominal ellipsis constructions with a numeral remnant. They report that some Dutch children start using the quantitative ER pronoun at two years and four months. They also found that although the use of the quantitative pronoun seems to be optional at an early age, it is pragmatically and syntactically correct when it is used.

In order to further establish age-of-emergence of quantitative ER in monolingual Dutch-acquiring children, Chapter II investigated a slightly larger number of Dutch spontaneous speech CHILDES transcripts (N=7). On the basis of the Derivational Complexity Hypothesis (Jakubowicz 2005), which informally defines syntactic complexity to be equivalent to the number of merge operations that constituents undergo, the revised prediction was made that ER as a prepositional complement (two merges needed) emerges earlier than ER as a quantitative complement (three merges needed).2 The results confirm this: on average, Dutch nominal ellipsis constructions with a numeral remnant ER appear at the age of two years and nine months, while the homophonous prepositional pronoun ER emerges around two years and two months (cf. Van Dijk & Coopmans 2013).

2 Dutch has multiple types of ER; see Chapter II for an overview.
Taking a different approach, but also examining L1 acquisition, Van Hout, Veenstra & Berends (2011) experimentally examined the production of Dutch quantitative pronoun constructions in twenty-five-year-old monolingual Dutch-acquiring children with an Elicited Speech Production Test and an Elicited Imitation Task. The Elicited Speech Production Test was designed as a guessing game about the number of entities on a picture (adapted from Gavarró et al. 2011) and is described as follows. The child has a pile of cards with pictures and picks them up one-by-one. The experimenter, who is sitting opposite the child, cannot see the picture. Nevertheless, the back of each card has a clue, enabling the experimenter to know what character and what object is on the card and to make a ‘guess’ that the child has to evaluate. The experimenter presents her guess as a yes/no-question about the number of objects in the picture, and always guesses wrong. The child is expected to provide the target answer using a quantitative pronoun construction, as exemplified in Figure 1.

Exp: *Neemt ze drie koffers mee?*  
   *Takes she three suitcases with*  
   ‘Does she bring three suitcases?’

Target: *Nee, ze neemt er twee mee.*  
   *No she takes ER two with*  
   ‘No, she brings two.’

*Figure 1: Sample experimental item of van Hout et al.’s (2011) Elicited Speech Production Test.*

After having discarded incomplete, verbless responses (*Nee, twee! – ‘No, two!’*), that were 59% of the total number of responses, Van Hout et al. (2011) report that the monolingual Dutch-acquiring children produced no more than 36% of quantitative pronoun ER target answers. However, if the pronoun was used, its use was syntactically correct, i.e., it appeared in the correct position. The remaining, non-target answers were categorised as follows: 49% of the responses concerned syntactically correct but pragmatically undesirable full NP answers in which the noun was over-informatively repeated (*Nee, ze neemt twee koffers mee – ‘No, she’s bringing two suitcases’*); 10% of the responses were characterised by the omission of the noun without a quantitative pronoun replacement (*Nee, ze neemt twee mee – ‘No, she brings two’*); and 5% of the responses were doubling answers in which both the full NP and the quantitative pronoun were mentioned (*Nee, ze neemt er twee koffers mee – ‘No, she brings ER two suitcases’*). The authors reflect on the
high number of full NP responses as follows: (i) full NPs are equally good to use in the context of the guessing game, and (ii) children possibly tried to circumvent the quantitative pronoun target construction. The results of this Elicited Speech Production Test may render the conclusion that the Dutch quantitative construction has not been fully acquired by age 5. However, Berends, Veenstra & Van Hout (2010) conducted an Elicited Imitation Task, in which the children yielded a much higher percentage of target-like responses, namely 81%. The errors were almost all due to erroneous omission of the quantitative pronoun, 18%. The big difference in target-like responses between the two tasks raises questions, as the authors mention themselves. A disadvantage of the Elicited Speech Production Test is that it is not restrictive enough in that it allows for too much freedom to produce accurate, but non-target, full NP answers, while a disadvantage of the Elicited Imitation Task may be the reliance on phonetic memory by the children.

The acquisition of Dutch quantitative ER has also been studied in L2 Dutch. On the basis of the Transfer Hypothesis (based loosely on a combination of the Contrastive Analysis Hypothesis (Lado 1957) and the Full Transfer Full Access Hypothesis (Schwartz & Sprouse 1996)) that states that linguistic patterns in L2 are largely predicted by L1 characteristics, Chapter III predicts that adult L1 English learners of Dutch show negative cross-linguistic influence with regard to the obligatory presence of Dutch quantitative ER. Reason for this is that English does not have a quantitative pronoun (as exemplified in (2a) in Section 2.2). The results of a Grammaticality Judgement Task with twenty-five native speakers of Dutch and twenty-five native speakers of English who started learning Dutch during adulthood confirm this prediction partly: the L1 English participants did not reject grammatical sentences with ER significantly more than the L1 Dutch speakers, but they do accept ungrammatical sentences without ER significantly more than the L1 Dutch speakers. This outcome suggests that the absence of a quantitative pronoun in (L1) English indeed negatively influences the knowledge of obligatory presence of such a pronoun in (L2) Dutch.

In summary, a few studies have investigated the emergence and acquisition of L1 and L2 Dutch quantitative pronoun constructions, but there is no such study yet on (child) bilingualism. Is there negative cross-linguistic influence from English to Dutch regarding the Dutch quantitative pronoun ER in children as well? The current study aims to answer this question. Moreover, the study contributes to the debate if, where and how cross-linguistic influence takes place in bilingual acquisition.

2.4 Research question, hypothesis and predictions
As described in Section 2.3, previous research indicates that monolingual Dutch-acquiring children start using the quantitative pronoun ER around age two years and nine months, but that at age five its acquisition is not completely finished yet.
Furthermore, adult L2 acquisition of Dutch quantitative ER suggests that it is influenced by L1 characteristics. These studies raise the question as to whether bilingual English-Dutch acquiring children behave the same as monolingual Dutch-acquiring children, or whether their acquisition of Dutch is influenced or delayed by their English: Is there cross-linguistic influence from English in the acquisition of the Dutch quantitative pronoun ER in English-Dutch bilingual children? Based on the second condition of the original Hulk & Müller (2000) Cross-linguistic Influence Hypothesis, we hypothesise that English influences Dutch in the acquisition of the Dutch quantitative pronoun ER. Cross-linguistic influence is expected due to the partial overlap between Dutch and English quantitative constructions: the overlap being that both languages have quantitative constructions, however, when the noun is elided, a quantitative pronoun is needed in Dutch, but not in English. The specific predictions that follow from this are that bilingual English-Dutch children produce the quantitative ER pronoun less often than their monolingual Dutch peers, and that the non-target sentences uttered by the bilingual children are characterised by omission of the quantitative pronoun.

3. Method
In order to test our predictions, we conducted the following study. After our proposal received ethical approval by the Research Ethics Committee of our faculty, English-Dutch bilingual children and Dutch monolingual children between the ages of five and eight years old were recruited through advertisements posted in several educational institutes, social media websites and through networks of relatives and friends.

3.1 Participants
In total, eighty-four typically developing children participated in the study, and were divided over two language groups: forty-six Dutch monolingual children (age range: 4;6-8;4, mean age: 6;6, SD 1;0), and thirty-eight English-Dutch bilingual children (age range: 4;8-8;7, mean age: 6;7, SD 1;2). The majority of the bilingual children (N=32) were exposed to English and Dutch from birth, and as such, fall into Unsworth et al.’s (2014) ‘2L1’ category. Their families all use the one-person-one-language method. This method was first introduced by Grammont (1902), who speculated that parents who each speak a different language to the child will prevent their bilingual children from confusion and code-mixing. A few children (N=6) were exposed to Dutch at a slightly later age. These six children started acquiring Dutch between age one and four (Unsworth et al.’s (2014) ‘early successive bilingual’ children), and were not raised with the one-person-one-language method but instead they were exposed to English at home (with both parents speaking English) and to Dutch at (pre)school and in social situations where non-English speaking children
were present. The results of this early successive bilingual minority were first analysed separately and compared to those of the simultaneous bilingual majority, but no differences were found (Mann-Whitney: p > .05). Therefore, all children were subsequently analysed as one group and referred to as the bilingual group. All children had normal hearing and normal or corrected-to-normal vision.

3.2 Materials

A questionnaire was given to the children’s parents, and two tasks, disguised as language games, were administered to the children. The questionnaire included questions about the language background of the child and the parents, as well as some questions about developmental issues, such as length of exposure, onset of exposure, amount of input, language used to communicate with siblings, language used by parents to communicate, percentage of time that the child speaks English/Dutch on an average per day, language of preference, best developed language according to the parents, type of school the child goes to, and existence of learning disabilities. No children were excluded on the basis of the results from the questionnaire. The tasks were the Peabody Picture Vocabulary Test–III-NL (Schlichting 2005), and a Sentence Completion Task.

The Peabody Picture Vocabulary Test is a standardised, norm-referenced vocabulary test widely used as a measure of proficiency. We administered the Peabody Picture Vocabulary Test for Dutch to control for Dutch proficiency. The Peabody Picture Vocabulary Test measures the current vocabulary of a child, relative to his/her age, based on the ability to match a spoken word to one out of four pictures. Words are categorised in item-sets and these sets become increasingly more complex over the course of the task. Three bilingual children were excluded from analysis because their scores fell outside the scope of two standard deviations from the mean.

The Sentence Completion Task was designed to elicit Dutch quantitative constructions. Its design is based on the Elicited Speech Production Task by Van Hout et al. (2011) discussed in Section 2.3, but improvements were made in order to prevent the wide variety of alternative non-target answers as much as possible. The improvements included the transformation from a guessing game to a Sentence Completion Task, and the doubling of the number of experimental items. The goal of the former change was to prevent the participant from simply saying ‘no’ or ‘two’. In our newly developed task, the twenty-two experimental items were all constructed in a similar fashion: the prompt includes the mentioning of an incorrect quantity. The antithetical conjunction ‘but’ introduces a correction of this previously mentioned quantity. The personal pronoun ‘he’ or ‘she’ marks the beginning of the unexpressed disjunctive sentence that always targets the production of the quantitative pronoun ER. This is illustrated in Figure 2.
CHAPTER VI. ACQUISITION OF ER BY BILINGUAL CHILDREN

101

Exp: *De zeehond heeft niet drie lolly’s, maar hij...* 
The seal has not three lollipops, but he
‘The seal does not have three lollipops, but he...’

Target: *...heeft er twee.* 
has ER two
‘...has two.’

**Figure 2:** A sample experimental item of the Sentence Completion Task.

As illustrated in Figure 2, the participants looked at a visual stimulus on a computer screen and simultaneously heard an incomplete sentence that required completion. The participants were asked to complete the sentence. We made sure that the participants understood the cue words in the prompt, such as the numbers, by making ‘four’ the largest quantity (Meyer, Barbiers & Weerman, 2016).

Additionally, twelve distractor items were created and randomly inserted. They were constructed similarly to the experimental items, but instead of representing a contrast of quantity, they contrasted verbs, see Figure 3.

Exp: *De krokodil is niet aan het TV kijken, maar hij...* 
The crocodile is not on it TV watch but he
‘The crocodile is not watching TV, but he...’

Target: *...is aan het klok kijken.* 
is on it clock watch
‘...is watching the time.’

**Figure 3:** Sample distractor item of the Sentence Completion Task.

Before the actual Sentence Completion Task started, eight practice items were presented. During the first set of four items, the only thing the child had to do was to look at a picture on the computer screen and listen to the sentences. Both the prompt and the target sentence were uttered by a voice in the computer: two of these items resembled the experimental items and two resembled the distractor items. In the following set of four practice items, constructed in a way similar to the previous practice items, only the prompt was given, while the part that is needed to make the sentence complete had to be produced by the child this time. In case a valid response
was given, either a target response or a non-target response, no response-contingent feedback was given by the experimenter. Feedback such as “listen to this sentence again and finish it” was only given in case the child had not paid attention to either the sentence or the visual stimulus, or when the child started to elaborate on the item with a non-task related response, such as: “yesterday I saw a seal/crocodile in the zoo too, it was beautiful”.

In case the child did not comprehend the practice items, he/she was asked to listen to the first set of four practice items again, as well as to complete the second set of four practice items again. Then, if the child still did not comprehend the task, he/she was excluded from analysis. This happened to five children in total: four bilingual children and one monolingual child. Of the four bilingual children, three were true simultaneous bilinguals (2L1) who were raised with the one-person-one-language method.

3.3 Testing procedure
After formal written parental consent had been received, an appointment was made to test the child. This could be at the child’s home, at our university, or at the child’s school premises. The bilingual children’s sessions always started with filling out the questionnaire together with the parents. This took approximately ten minutes. Then the two language games were played, the Peabody Picture Vocabulary Test and Sentence Completion Task. Both tasks were administered digitally, on a laptop in a quiet corner of the house, university or school. No time limit was imposed on either task and together these lasted approximately twenty minutes on average per child. The Sentence Completion Task was audio-recorded in order to be able to analyse the data at a later moment. At the end of the session the child was given a certificate and a present as a thank-you.

3.4 Scoring and statistical analyses
Participants’ raw scores on the Peabody Picture Vocabulary Test were calculated by taking the item number of the last item of the ceiling set (the last set administered) and then subtract the total number of errors made by the participant up until the ceiling set. Raw scores were then transformed to standardised WBQ scores (Dutch acronym for word understanding quotient), using the conversion table provided with the Peabody Picture Vocabulary Test III-NL. These WBQ scores are norm-referenced and take into account the participants’ ages in years and months. If a child has a WBQ score of 100, this means that he/she has exactly the vocabulary a child is expected to have at his/her age. The statistical analysis was done in R (R Core Team 2016).

For the Sentence Completion Task all responses were transcribed and scored. Again, we used R (R Core Team 2016) with the lme4 (Bates, Maechler, Bolker &
Walker 2015) and *psych* (Revelle 2018) packages to fit a generalised linear mixed-effects logistic regression model. We ran multiple analyses for the Sentence Completion Task: the target analysis, in which we compared target responses with all other non-target responses; and the non-target analysis, in which we specified and compared the non-target responses. In our model we centered continuous factors in order to avoid multicollinearity issues and coded categorical factors with explicit contrasts before analysis.

4. Results
In this section, we present the descriptive statistics and statistical analyses of the seventy-six remaining participants in order to verify whether the child’s linguistic background – monolingual (N=45) or bilingual (N=31) – is a predictor for target ER responses in our Sentence Completion Task. We start by giving the results of the Peabody Picture Vocabulary Test in Section 4.1, and subsequently present the Sentence Completion Task analyses in Sections 4.2 and 4.3.

4.1 Peabody Picture Vocabulary Test
The mean WBQ-scores of the Peabody Picture Vocabulary Test per language group are presented in Table 1.

<table>
<thead>
<tr>
<th>WBQ mean score</th>
<th>English-Dutch bilinguals</th>
<th>Dutch monolinguals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>106.2</td>
<td>107.8</td>
</tr>
</tbody>
</table>

As the Peabody Picture Vocabulary Test is a standardised task, we know that the average WBQ-score of children at primary school level is 101.2 (= percentile rank 53). Table 1 reveals that both the monolingual and the bilingual group score above average, with a mean WBQ score of 107.8 (= percentile rank 70) for the Dutch monolingual children and 106.2 (= percentile rank 66) for the English-Dutch bilingual children. When comparing these scores, the result of the regression model indicates that the WBQ-score on the Peabody Picture Vocabulary Test does not depend significantly on being monolingual or bilingual, $R^2 = 0.00419$, $F(1,74) = 0.3111$, $p = 0.579$).

4.2. Sentence Completion Task – target versus non-target responses
The mean scores and percentages of the target answers and non-target answers per language group for the Sentence Completion Task are presented in Table 2.
Table 2: Overview of the average target and non-target scores and percentages per language group in the Sentence Completion Task.

<table>
<thead>
<tr>
<th></th>
<th>English-Dutch bilinguals</th>
<th>Dutch monolinguals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average target ER responses</td>
<td>6.63/22 30%</td>
<td>10.71/22 49%</td>
</tr>
<tr>
<td>Average non-target responses</td>
<td>15.37/22 70%</td>
<td>11.29/22 51%</td>
</tr>
</tbody>
</table>

Table 2 shows that the Dutch monolingual children complete on average 10.71 sentences out of the total number of twenty-two sentences with a target ER construction. This equals almost half (49%) of the sentences. The English-Dutch bilingual children complete on average 6.63 sentences with a target ER construction. This amounts to nearly a third (30%) of the sentences. To check the statistical significance of this comparison we present Table 3. Significance is indicated by *** (p < 0.001), ** (p < 0.01), * (p < 0.05).

Table 3: Result summary for target responses in the Sentence Completion Task.

<table>
<thead>
<tr>
<th>Coefficient estimates, standard errors, associated Wald’s z-score and significance level (p) for the two predictors in the analysis.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimate</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Target ER</td>
</tr>
<tr>
<td>Intercept</td>
</tr>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Type*Age</td>
</tr>
</tbody>
</table>

Table 3 reveals significant main effects of Type and Age, which means that both the child’s linguistic background and the child’s age are predictors of target ER responses. This leads to the following two observations: monolingual children produce more target ER constructions than bilingual children, and older children produce more target ER constructions than younger children. In contrast, no significant interaction effect between Type and Age can be reported, which tells us that the two variables Type and Age do not depend on each other. In other words, the effect on the scores resulting from being monolingual or bilingual does not depend on age.

4.3. Sentence Completion Task – further analysis of non-target responses

Whereas in the analysis of target responses in Section 4.2 the total number of experimental items (N=22) represents 100%, in the analysis of the non-target responses we take the total number of non-target answers to represent 100%. This means that in this analysis the target answers are subtracted from the total number of
experimental items. Note that this leads to different average absolute numbers per language group: the monolingual children’s average number of non-target responses is 11.29 (representing 100%), while the bilingual children’s average number of non-target responses is 15.37 (representing 100%).

In Table 4 we specify the four types of non-target sentence completions we encountered. Examples, means and percentages of these non-target categories are presented per language group.

Table 4: Overview of the average non-target scores and percentages per language group in the Sentence Completion Task.

<table>
<thead>
<tr>
<th>De zeehond heeft niet drie lolly’s,</th>
<th>English-Dutch bilinguals</th>
<th>Dutch monolinguals</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘The seal does not have three lollypops, maar hij...’</td>
<td>7.57/15.37 49%</td>
<td>8.93/11.29 79%</td>
</tr>
<tr>
<td>*Full NP</td>
<td>6.10/15.37 40%</td>
<td>0.51/11.29 4%</td>
</tr>
<tr>
<td>*Omission</td>
<td>0.07/15.37 0.5%</td>
<td>0.53/11.29 5%</td>
</tr>
<tr>
<td>*Doubling</td>
<td>1.63/15.37 10.5%</td>
<td>1.31/11.29 12%</td>
</tr>
<tr>
<td>‘…heeft twee lolly’s.’</td>
<td>‘…heeft twee.’</td>
<td>‘…has two.’</td>
</tr>
<tr>
<td>‘…heeft twee.’</td>
<td>‘…heeft twee lolly’s.’</td>
<td>‘…has ER two lollipops.’</td>
</tr>
<tr>
<td>‘…twee.’</td>
<td>‘…twee.’</td>
<td>‘…two.’</td>
</tr>
</tbody>
</table>

The three asterisks in Table 4 indicate that three out of four of the non-target categories generate syntactically incorrect sentences. This is the case for completions belonging to the omission, doubling, and irrelevant categories. Although pragmatically infelicitous, completions with a full NP are syntactically correct and used most frequently in both groups: 79% and 49% for the monolinguals and the bilinguals respectively. Focusing on the syntactically incorrect sentences, the monolingual group produces 12% irrelevant completions, 5% doubling answers and 4% omission answers. The bilingual group produces 40% omission answers, 10.5% irrelevant answers and 0.5% doubling answers.

Table 5 presents the comparisons between the language groups per non-target category.
Table 5: Result summary for non-target responses in the Sentence Completion Task: coefficient estimates, standard errors, associated Wald’s z-score and significance level (p) for the two predictors and their interaction in the analysis.

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>Std. error</th>
<th>z value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Full NP</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>0.39</td>
<td>0.34</td>
<td>1.13</td>
<td>0.254</td>
</tr>
</tbody>
</table>
| Type          | 25.94    | 0.67       | 3.83    | 0.0001  ***
| Age           | 0.66     | 0.25       | 2.60    | 0.009 **
| Type*Age      | -0.22    | 0.50       | -0.43   | 0.661   |
| **Omission**  |          |            |         |         |
| Intercept     | -3.58    | 0.66       | -5.36   | 7.97e-08 ***
| Type          | -4.78    | 1.20       | -3.98   | 6.86e-05 ***
| Age           | -0.39    | 0.42       | -0.92   | 0.355   |
| Type*Age      | 0.04     | 0.85       | 0.04    | 0.962   |
| **Doubling**  |          |            |         |         |
| Intercept     | -14.4    | 5.70       | -2.52   | 0.012 *
| Type          | 12.49    | 10.24      | 1.21    | 0.222   |
| Age           | 1.49     | 3.28       | 0.45    | 0.649   |
| Type*Age      | -3.24    | 6.58       | -0.49   | 0.622   |
| **Irrelevant**|          |            |         |         |
| Intercept     | -2.83    | 0.36       | -7.83   | 4.59e-15 ***
| Type          | -0.06    | 0.62       | -0.09   | 0.922   |
| Age           | -0.67    | 0.21       | -3.08   | 0.002 **
| Type*Age      | 0.27     | 0.43       | 0.62    | 0.534   |

Table 5 reveals that the production of full NP responses is predicted by Type (with the English-Dutch bilingual children giving fewer full NP answers than the Dutch monolingual children), and by Age (with the children providing more full NPs responses when they get older). The production of omission responses is only predicted by Type (with the English-Dutch bilingual children giving more omission answers than the Dutch monolingual children), and not by Age. The production of doubling responses is not predicted by Type, nor by Age. The production of irrelevant responses is not predicted by Type, but is by Age (with the children providing fewer irrelevant responses when they get older). In none of the categories, an interaction effect was found between Type and Age.

5. Discussion

The present study’s research question is whether there is cross-linguistic influence from English (a language without a quantitative pronoun) to Dutch (a language with

---

3 None of the other variables that are included in the questionnaire reveal statistical significance. Within the bilingual group, there is a tendency to produce fewer target ER responses when English is the only language spoken in the house (as opposed to both Dutch and English). This correlation coefficient is -0.351, which almost reaches significance with p-value = 0.057.
a quantitative pronoun) in English-Dutch bilingual children. Our hypothesis, partly based on Hulk & Müller (2000), is that there is cross-linguistic influence due to the partial overlap between Dutch and English quantitative constructions: on the one hand both languages have quantitative constructions, on the other hand, when the noun is elided, a quantitative pronoun is needed in Dutch but not in English. It was therefore predicted that: (1) bilingual English-Dutch children produce the quantitative ER pronoun less often than their monolingual Dutch peers, and (2) the non-target sentences uttered by the bilingual children will be characterised by omission of the quantitative pronoun. Eighty-four children were included in our experimental design, but after eliminations we continued the analysis with seventy-six of them.

The Peabody Picture Vocabulary Test results show that the bilingual (N=31) and the monolingual children (N=45) have comparable levels of proficiency: the WBQ-scores of the English-Dutch bilingual children and of the monolingual children are at the 66th and the 70th percentile, respectively, with the 53rd percentile being the mean for children at primary school level. Although both groups score above average, the proficiency levels of the two groups do not differ significantly from each other. This implies that any potential significant difference between the bilingual and monolingual children’s Sentence Completion Task scores cannot be attributed to a difference in Dutch proficiency.

Recall that in the analysis of the Sentence Completion Task data, we divided the answers in target and non-target answers. Let us first discuss the target answer results, which are completions constructed with a verb, the quantitative pronoun ER, and a numeral. The bilingual English-Dutch children produce significantly fewer target answers (6.63/22 = 30%) than the monolingual Dutch children (10.71/22 = 49%). This confirms our first cross-linguistic influence prediction that bilingual English-Dutch children produce the quantitative ER pronoun less often than their monolingual Dutch peers. This result is corroborated by the results of a recent study of Soto-Corominas (2018) who investigated the acquisition of the Catalan quantitative clitic EN (the equivalent of Dutch quantitative ER) in 105 Catalan-dominant children, 88 Spanish-dominant children and 103 Catalan-Spanish balanced bilingual children with an oral production task. As in our study, one of the languages (Catalan) has a quantitative (clitic) pronoun (EN), whereas the other language (Spanish) does not. The results show that, similar to our English-Dutch bilingual children, Catalan-Spanish balanced bilinguals (and Spanish dominant children) produce significantly fewer EN clitics than Catalan-dominant children do.

---

4 These percentages are based on the total number of experimental items (N=22). Van Hout et al. (2011) left out the irrelevant responses and only analysed the remaining responses. The monolingual children in their experiment produced ER in 35.5% of the cases. If we analyse our data similarly, the bilingual children produce ER in 33% of the cases and the monolingual children produce ER in 52% of the cases.
Although the bilingual children and monolingual children in our study demonstrate different amounts of target ER sentences, we have to be careful attributing this finding to cross-linguistic influence alone. That is, besides being bilingual or monolingual, the age of the participants at the time of testing is also a crucial factor in the accurate production of Dutch quantitative pronoun constructions. Several previous studies have indicated that bilingual children may experience a general delay of acquisition, suggesting the possibility that the burden of acquiring two languages slows down the acquisition process, causing the bilingual children to be behind in their overall progress in grammatical development as opposed to monolingual children (Austin 2009). It is therefore not unthinkable that – if the bilingual children are indeed generally delayed – they improve their knowledge regarding ER at a later moment in life than the monolingual children included in this study. If this is true, it is not surprising that the bilingual children do not yet know how to use quantitative ER correctly, because according to Van Hout et al. (2011), even the monolingual children have not robustly acquired the quantitative ER construction by the age of five (and also in this study with slightly older children the success rate of using ER does not exceed 49%). If a general delay of bilingual acquisition is indeed present, the good news is that the bilingual children will eventually learn to produce the Dutch quantitative pronoun. An indication that they are on the right track is that when the quantitative pronoun ER is used by the bilinguals (and also by the monolinguals), its use is syntactically correct, i.e., it appeared in the correct position, just as the (monolingual) children in Chapter II, and in the studies of Van Hout et al. (2011) and Sleeman & Hulk (2013).

Turning now to the non-target response results, these are distinguished into four categories: ‘omissions’, ‘full NP responses, ‘doublings’, and ‘irrelevant responses’. As we mentioned in Section 4.3, despite the fact that the non-target full NP answers are pragmatically infelicitous (because given information is usually referred to with pronouns, and not with full NPs), they are not syntactically incorrect. Full NP answers, in which the NP is repeated, instead of replacing it with a quantitative pronoun, are produced frequently in the bilingual and the monolingual group. This resulted in sentences such as: *de brandweerman heeft niet drie honden, maar hij: heeft twee honden*, ‘the fireman does not have three dogs, but he: has two dogs’. In the non-target analysis, full NP responses comprised 49% (7.57/15.37) of the bilingual children’s answers, and 79% (8.93/11.29) of the monolingual children’s answers. Crucial predictors for producing full NP answers are being monolingual or bilingual, and Age: the monolingual children produced significantly more full NP answers than the bilingual children; and the older children get (irrespective of whether they are monolingual or bilingual) the more full NP answers they provide. There may be several reasons for children to use a full NP in contexts in which the ER pronoun is pragmatically more felicitous: full NP answers may be used as an avoidance strategy to bypass the syntactically more complex quantitative
pronoun construction. Alternatively, full NPs can be used in order to be over-explicit or over-informative in an experimental setting. The effect of Age on the production of ER pronouns (the older, the more full NPs), suggests for obvious reasons a tendency to be overexplicit in an experimental setting, rather than to a decreasing of syntactic knowledge of the quantitative pronoun ER. However, the effect of being bilingual or monolingual on the production of ER pronouns (monolingual children produce more full NP answers than bilingual children) is not so straightforward. To find out the rationale behind this, we looked at the bilingual and monolingual children separately, and are able to confirm that this affect of Age holds for both the monolingual children, p < .001, and the bilingual children, p < .001. It is therefore likely that this increase in use of full NPs over time indicates a tendency to be overexplicit in an experimental setting, rather than to a decreasing of syntactic knowledge of the quantitative pronoun ER.

A true non-target, syntactically ungrammatical response concerns the category ‘omissions’: responses in which the verb and the numeral are present, but the obligatory quantitative pronoun ER is left out. An example of an omission answer is: *de moeder heeft niet twee kippen, maar zij: heeft Ø één*, ‘the mom does not have two chickens, but she: has one’. The English-Dutch bilingual children produced significantly more omission answers than the Dutch monolingual children: 40% (6.10/15.37) versus 4% (0.51/11.29), respectively. This difference between both language groups is not predicted by the age of the participants, meaning that the children do not produce significantly more or fewer sentences without the obligatory quantitative pronoun when they get older, but it is predicted by the bilingual/monolingual distinction, meaning that bilingual English-Dutch children produce significantly more sentences in which the quantitative pronoun is incorrectly left out than their monolingual Dutch peers. Moreover, if we exclude the (pragmatically infelicitous but syntactically grammatical) full NP responses from our counts, 78% of the non-target answers of the English-Dutch bilingual children are characterised by omission, as opposed to 21.5% in the monolingual group. This confirms our prediction that the non-target sentences uttered by the bilingual children are characterised by omission of the quantitative pronoun.

As for the third category of non-target responses, doubling answers refer to answers in which both the noun and the pronoun ER are produced, which is syntactically ungrammatical. One of the cases we encountered was: *de aap heeft niet twee munten, maar hij: heeft er drie munten*, ‘the monkey does not have two coins, but he: has ER three coins’. Such answers could be an indication that the child knows that ER exists, but that he/she does not yet completely master its exact syntactic constraints. However, the English-Dutch bilinguals produced only 0.5% (0.07/15.37) doubling answers and the Dutch monolinguals 5% (0.53/11.29). These scores do not differ significantly from each other, meaning that doubling answers do not depend on being bilingual or monolingual, nor do they depend on Age.
Moreover, the extremely low occurrence of (non-target) doubling responses makes them negligible.

The last category of non-target responses consists of rarely given, irrelevant responses (empty, nonsense, and no-verb answers). An illustration of a no-verb answer is the following: *de giraffe heeft niet twee tassen, maar hij: één*, ‘the giraffe does not have two bags, but he: one’. By adapting and transforming Van Hout et al.’s (2011) original guessing game, we successfully minimised answers belonging to this category of irrelevant responses. Whereas in Van Hout et al.’s study 59% of the total dataset – involving both target answers and non-target answers – consisted of irrelevant responses, Table 4 indicates that we brought the proportions back to 10.5% (1.63/15.37) for the bilingual group, and 12% (1.31/11.29) for the monolingual group. However, the proportions of irrelevant answers in our study become even smaller if we (as was done in Van Hout et al.) calculate their occurrence out of the entire dataset, including the target answers: 0.07% (1.63/22) in the English-Dutch bilingual group and 0.05% (1.31/22) in the Dutch monolingual group. This large decrease of irrelevant responses may not be completely reducible to the adaptation of the task, because we also have to keep in mind that the children in this study were slightly older (five to eight years old) than those in Van Hout et al. (five to six years old). In actual fact, our own data show that, even though there are no significant differences between the bilingual and the monolingual group in terms of the irrelevant answer scores, their occurrence does decrease as a function of age. Nevertheless, the difference between the proportions of irrelevant answers in Van Hout et al. and the present study is so large that we do believe that the changed task plays an important role here.

In summary, we have shown that our two predictions are borne out: bilingual English-Dutch children produce the quantitative ER pronoun less often than their monolingual Dutch peers; and the non-target sentences uttered by the bilingual children are characterised by omission of the quantitative pronoun (even more convincingly so when the pragmatically infelicitous but syntactically grammatical category of full NPs is excluded). This outcome that cross-linguistic evidence in child bilingualism exists when there is partial overlap between two languages provides evidence in favour of the Cross-linguistic Influence Hypothesis. Both English and Dutch have quantitative constructions, but only Dutch has an overt quantitative pronoun (ER). This causes more ER omissions in bilingual Dutch-English children than in monolingual Dutch children. This finding provides evidence against the Separate Systems Hypothesis that the grammars of bilingual children are acquired autonomously and independently from each other (e.g., De Houwer 1990; Meisel 1990; Paradis & Genesee 1996). It also speaks against Grammont’s (1902) idea that the one-person-one-language method prevents bilingual children from mixing two languages. Our cross-linguistic influence results are in line with the findings in Chapters III and V that English negatively influences
the acquisition of Dutch quantitative constructions in adult L2 acquisition. Moreover, our findings confirm that cross-linguistic influence is not restricted to linguistic phenomena belonging to the interface between syntax and pragmatics, as it can also occur in constructions where there is no interface issue (contra Hulk & Müller 2000, pro Yip & Matthews 2000). Nevertheless, the finding that the bilingual group in our study performs more poorly than the monolingual group may also be due to a general delay in grammatical acquisition of bilingual children, as suggested by Austin (2009). To rule this possibility out, future studies should show that bilingual children acquiring a language that does have a quantitative pronoun, such as French, do not provide significantly fewer target quantitative pronoun ER constructions in Dutch than the Dutch monolinguals.

A question that has not been answered yet, is at what age the quantitative pronoun ER is acquired. Based on the responses given by the five to eight year old children in our study, we cannot confirm successful acquisition yet: both groups are far from providing 100% target answers. Yet, whenever the quantitative pronoun is used, it is syntactically correctly used by both groups, i.e., placed in the right position, immediately following the finite verb. This suggests that the process towards successful acquisition has started in both groups, although the monolingual children clearly establish a lead: they produce more target quantitative ER constructions than the bilinguals. Altogether this means that Van Hout et al.’s (2011) conclusion - that quantitative ER constructions are not robustly acquired by the age of five - can be extended to at least age six, the average age of the participants in this study.

6. Conclusion

This study investigated the use of Dutch quantitative pronoun constructions and the existence of cross-linguistic influence from English to Dutch in English-Dutch bilingual children. Based on the partial overlap on the surface in Dutch and English quantitative constructions – both Dutch and English having quantitative constructions, but only Dutch having an obligatory quantitative pronoun – we predicted and found a lower rate of quantitative pronoun constructions in bilingual children as compared to monolingual children. Furthermore, a substantial number of the bilingual children’s non-target responses is characterised by omission of the quantitative pronoun.

These differences cannot be attributed to a difference in Dutch proficiency, but instead suggest the presence of cross-linguistic influence from English to Dutch in the acquisition of quantitative pronoun ER constructions in English-Dutch bilingual children. Additional evidence is needed from children who are raised bilingually in Dutch and other languages with and without quantitative pronouns to disentangle general delay-effects of bilingualism from cross-linguistic influence. Also, including
older Dutch monolingual children and older English-Dutch bilingual children may provide more precise insight into the age of acquisition of quantitative ER.
Chapter VII

General discussion and conclusion

This dissertation started with the observation that the quantitative pronoun ER is difficult to acquire for people who are learning Dutch, either as a native or as a foreign language. The aim of the current research was to investigate what factors play a role in the acquisition of the Dutch quantitative pronoun ER in different populations. The previous five chapters focused on factors that potentially contribute to the relatively laborious acquisition of ER. These factors and accompanying subquestions were introduced in Chapter I and are further discussed in Section 1 of the current chapter. Section 2 concludes this dissertation with suggestions for future research.

1. The four potential factors: Are they all influential?
Chapters II-VI identified several factors that seem to play a role in the acquisition of the Dutch quantitative pronoun ER: learner population, L1, implicit vs. explicit knowledge, and type of linguistic context quantitative ER occurs in (syntactically or semantically conditioned). In this concluding chapter and in this section specifically, we discuss these factors in relation to each other.

1.1 Learner populations
Starting with the factor ‘learner population’, we showed that all learner populations included in this dissertation experience difficulties in the acquisition of Dutch quantitative ER, but that the exact problems vary among the groups. That is, the monolingual Dutch children, whose spontaneous speech transcripts were analysed, revealed that the syntactic derivational complexity of quantitative ER delays its emergence: monolingual Dutch-speaking children start producing quantitative ER only a couple of months before turning three. Intra-linguistically, this is considerably later than the emergence of e.g., prepositional ER pronouns, which we accounted for by means of the Derivational Complexity Metric of Jakubowicz (2005). Cross-linguistically, this is later than the emergence of its French counterpart EN in monolingual French-speaking children. The finding of the relatively late emergence of quantitative ER in L1 Dutch acquisition is in line with previous studies (Van Dijk & Coopmans 2013; Gavarró et al. 2012; Sleeman & Hulk 2013). Moreover, Van Hout et al. (2011) demonstrate that a few years later, when the monolingual Dutch children are five years old (and even six year olds in
Chapter VI), problems are still encountered with this pronoun, whereas other morpho-syntactic phenomena such as, e.g., subject-verb agreement, word order, diminutives, and question formation have long been acquired by that age (Schaerlaekens 1977). However, despite this relatively late acquisition in L1, which is attributed to the derivational complexity of quantitative ER, children hardly make any errors regarding the position of the quantitative pronoun when they use it (Chapters II and VI; Van Hout et al. 2011).

Our bilingual child data corroborates this finding that quantitative ER is positioned correctly in the sentence: the Dutch-English bilingual children never place quantitative ER in the wrong position when they use it, i.e., in the syntactic position of the elided noun. Nevertheless, Dutch-English bilingual children do provide two types of non-target responses, namely, full NP responses (syntactically correct, but pragmatically infelicitous), and omission of ER (syntactically incorrect). The question we asked ourselves was whether both types of non-target responses can be attributed to cross-linguistic influence, in the sense of the second condition of Hulk & Müller’s (2000) Cross-linguistic Influence Hypothesis (partial structural overlap at the surface level between the two languages is required for cross-linguistic influence to occur). Focusing on full NP responses first, we argued that these can either be the result of an avoidance strategy in order to bypass the syntactically more complex quantitative pronoun construction, or of an attempt to be over-informative in an experimental setting. Because our control group of monolingual Dutch children produced even more full NPs than the English-Dutch bilingual children, and because Van Hout et al. (2011) also report a high percentage of pragmatically infelicitous full NPs in monolingual Dutch children, the bilingual children’s full NP responses could be attributed to the same reason, namely, the desire to be over-explicit in an experimental setting. Alternatively, the bilingual children may use full NPs as a strategy to avoid the more complex use of quantitative ER. The latter explanation of the use of full NP responses is in line with our finding that bilingual children omit quantitative ER significantly more often than their monolingual controls, suggesting a problem with the production of Dutch quantitative ER. As such, English-Dutch bilingual children seem to be delayed in their acquisition of quantitative ER as compared to monolingual children. We suggested that this could be due to cross-linguistic influence from the ‘other native language’, in this case English, which lacks a quantitative pronoun. Our finding that English-Dutch bilingual children omit quantitative ER more often than monolingual Dutch-speaking children is also in line with Müller, Cantone, Kupisch & Schmitz (2002), who further specified Hulk & Müller’s (2000) Cross-linguistic Influence Hypothesis by including complexity criteria as proposed by Jakubowicz (2002) in order to predict which of the bilingual child’s two languages influences the other. Müller at al. (2002) suggest that principles of economy are important in the direction of cross-linguistic influence, i.e., a bilingual child will overgeneralise the least
complex linguistic analysis to both languages. Assuming that having no quantitative pronoun (English) requires a less complex analysis than having a quantitative pronoun (Dutch), this would mean that English-Dutch bilingual children apply the simpler English analysis of quantitative constructions (no overt quantitative pronoun) to Dutch, at least temporarily, resulting in omission of quantitative ER. This is exactly what we found.

Overall, our findings in both monolingual and bilingual children acquiring Dutch quantitative ER point to derivational complexity as the culprit for its relatively late acquisition. Cross-linguistic influence from the less complex analysis of quantitative constructions in English delays the acquisition of Dutch quantitative ER in English-Dutch bilingual children even further.

The fact that cross-linguistic influence seems to take place from English to Dutch in English-Dutch bilingual children acquiring Dutch quantitative ER contradicts the Separate Systems Hypothesis. Recall that the Separate Systems Hypothesis states that children who are raised bilingually from early on develop two independent language systems (Genesee 1989; De Houwer 1990; Meisel 1989). Although we do not reject the hypothesis that a bilingual child develops a separate system for each language s/he acquires, our findings do suggest that the two language systems interact (Argyri & Sorace 2007; Austin 2007; Hacohen & Schaeffer 2007; Lee et al. 2010; O’Grady et al. 2011; Pérez-Leroux, Cuza & Thomas 2011; Serratrice, Sorace & Paoli 2004).

Turning now to adults learning Dutch quantitative ER, we included two groups: L1 French and L1 English adult learners of Dutch. We chose these two different L1s because of the different ways in which each language expresses quantitative constructions. Both groups of (advanced) L2 learners showed difficulties in both judgement and production of Dutch quantitative constructions. However, the English L1 and the French L1 group made different types of errors. This brings us to the factor ‘L1’, which we discuss in the following section.

1.2 L1s

Let us first consider the English L1 adult group. The English adult L2 learners of Dutch behave similarly to the English-Dutch bilingual children in the sense that they also make errors regarding the presence of ER: in production they incorrectly omit quantitative ER, in judgement they accept incorrect quantitative constructions without ER. However, the English L1 speakers also omit ER in quantitative constructions in which Dutch does not allow ER (*Hij heeft ER twee blauwe, ‘He has two blue ones’; *Hij verft ER sommige/de helft, ‘He paints some of them/half’), rendering a correct response. Regarding the position of ER, English L1 speakers do not make any errors if ER is used, similar to the monolingual and bilingual children. We interpreted our English adult L1 group’s findings as support for the Transfer
Hypothesis: the absence of a quantitative pronoun in English causes incorrect quantitative ER-omission in some constructions (negative transfer), but correct absence of ER in other constructions (positive transfer).

As for the L1 French adult learners of Dutch, they were not native-like in their production and judgement of Dutch quantitative ER constructions either. Regarding presence of ER, they made fewer omission errors than the English L1 group in Dutch quantitative constructions that require ER. This was attributed to positive transfer from French: French has an overt quantitative pronoun (EN). However, the L1 French speakers do make errors regarding the syntactic position of ER: in production it always appears in the correct position, but in judgments they either accept sentences with ER in an ungrammatical position (i.e., post-quantifier position), or reject sentences with ER in the grammatical position. This was explained by negative transfer from French: as EN is a clitic, and not a pronoun, as ER is in Dutch, it appears in pre-finite-verb position, rather than in post-finite-verb position, as ER does in Dutch. Furthermore, the French L1 speakers make judgement and production errors in Dutch quantitative constructions that disallow ER. These errors by the French speakers were also attributed to negative L1 transfer from French: the obligatory presence of EN in similar French quantitative constructions renders incorrect presence of ER in the French group’s Dutch responses. As such, our L2 results demonstrate that the nature of (the relevant linguistic construction in) the L1 is an important factor in the L2 acquisition of Dutch quantitative ER: the errors regarding Dutch quantitative ER made by L1 English learners of Dutch are different from those made by L1 French learners of Dutch, especially in the production data. This provides evidence in favour of the Transfer Hypothesis.

As noted above, the L1 English adults we tested show a resemblance with the bilingual children in their acquisition of Dutch quantitative ER: bilingual children as well as L1 English adults omit ER more often than their controls, while they make no errors regarding the position of the quantitative pronoun. We interpreted this as transfer/cross-linguistic influence from English L1, lacking an overt quantitative pronoun, to L2 Dutch. However, it should be noted that it is highly likely the bilingual children overcome these omission errors, and ultimately produce and comprehend Dutch quantitative ER in the same way as Dutch monolingual speakers do. In contrast, L2 adults may always keep having trouble with the comprehension and production of Dutch quantitative ER, however proficient they may otherwise be in Dutch (cf. the example of the L2 Dutch conductor that this dissertation started off

---

1 Previously, in Chapter VI, we suggested that it may in fact not be transfer but a general delay effect in bilingual children as suggested by Austin (2009). To rule this possibility out, future studies should show that bilingual children acquiring a language that does have a quantitative pronoun, such as French, do not provide significantly fewer target quantitative pronoun ER constructions in Dutch than the Dutch monolinguals.
with). How can this difference between children and adults be explained? Let us first explore Chomsky’s (1965) theory of Universal Grammar that states that all children are born with a universal language blueprint, regardless of where they are born. This language blueprint is ‘filled in’ by the specific features of the language(s) they grow up in and hear around them. The so-called language acquisition device, part of Universal Grammar, aids children to attend to the crucial parts of the input, relevant to their language acquisition. Imagine quantitative constructions are part of Universal Grammar, and thus of the child’s innate endowment for language. This would amount to stating that quantitative concepts can be expressed in any language, which seems plausible. Yet, languages can differ as to what linguistic means exactly they use to express quantitative concepts. Thus, French uses EN to express ‘I have three’ (and ‘I have three of them’), Dutch uses ER to express ‘I have three’, and English uses no quantitative pronoun. As such, Universal Grammar provides all children equally with a jumping board for acquiring quantitative constructions specific to the language they hear around them. This universal basis helps and accelerates their acquisition of the language-specific ways to express quantitative concepts. Once the universal template for quantitative constructions is filled in by language-specific elements, the language-specific quantitative construction is acquired. The question is whether adults still have access to the (non-filled-in) universal language blueprint for quantitative constructions when they are acquiring a second language. If they do, adult L2 learners’ development of Dutch quantitative ER should be similar to that of children, and both populations should become native-like in the production and comprehension of quantitative ER. If this is not the case, as our conductor example suggests, it may be that Universal Grammar (not filled in by language-specific features) is no longer active in adult L2 learners, as the Critical Period Hypothesis suggests (Lenneberg 1967; Penfield & Roberts 1959). Instead, only the quantitative construction template completed by the L1 features is available. As such, the L1-specific completion of the universal quantitative construction template may be in the way of the acquisition of the L2-specific expression of quantitative constructions. If this is true, this may explain the difference between the ultimate attainment of Dutch quantitative ER by English-Dutch bilingual children (native-like) and English adult L2 learners of Dutch (not always native-like). Future research should indicate this.

Note that in our discussion of the L2-results we referred to both judgement and production data, sometimes rendering different results. Moreover, while the judgement data did not reveal so many differences between the English and the French L1 speakers, the production data did. We therefore now turn to the different methodologies used in our research, and what role they seem to play in the investigation of the acquisition of Dutch quantitative ER.
1.3 Explicit versus implicit knowledge

Our studies show that it matters how performance on Dutch quantitative ER is measured. While the Grammaticality Judgement Task does reveal L1 transfer effects for both English and French separately, it does not detect significant differences between French and English learners, despite the fact that French does have an overt quantitative pronoun, and English lacks one. In contrast, when we measured Dutch quantitative ER by means of an Elicited Imitation Task in the same participants, we did find significant differences predicted by the Transfer Hypothesis between the French and the English adult learners of Dutch. These results suggest that measuring explicit knowledge (as untimed grammaticality judgement is supposed to do) may not be sensitive enough to the actual linguistic competence of a learner, i.e., implicit knowledge, which is best reflected in every-day, natural language situations (Ellis 2005, 2009; Erlam 2006; Hulstijn & De Graaff 1994). We coined this idea the Implicit Knowledge Hypothesis. This means that implicit and explicit knowledge also play a role in the acquisition of Dutch quantitative ER: while implicit knowledge probably best represents the learner’s linguistic competence and naturally allows for L1 transfer, explicit knowledge (mostly present in adult learners) may help the learner block potential negative effects of the L1 in the acquisition of Dutch quantitative ER.

So far, we have discussed the factors ‘learner population’, ‘L1’, and ‘explicit vs. implicit knowledge’ in relation to each other and as contributors to explanations of the difficulties all learner populations experience in the acquisition of Dutch quantitative ER. However, the different linguistic contexts of quantitative ER that we distinguished in our experiments have not received much attention yet. This is the subject of the next section.

1.4 Quantitative ER subject to syntactic constraints and subject to semantic constraints

One of the reasons that we manipulated the linguistic context of Dutch quantitative ER in our experiments was to investigate whether there were any differences between syntactically and semantically conditioned presence or absence of ER. Recall that Chapter III examined the presence/absence of quantitative ER in constructions subject to syntactic constraints. There were three syntactic conditions: ER [+/*-present] with numeral; ER [post V [post quantifier]] with numeral; and ER [+/*-present] with numeral and adjective. Chapter IV investigated quantitative ER constructions subject to semantic constraints and had the following two conditions: ER with [*+-definite] quantifier; ER with [*+-strong] quantifier. Both studies employed a Grammaticality Judgement Task. The study on syntactically conditioned quantitative ER constructions revealed that six out of the eight transfer predictions (four for French and two for English) were confirmed. The study on
semantically conditioned quantitative ER constructions showed that five out of the eight transfer predictions were confirmed (three for French and two for English).

The Elicited Imitation Task described in Chapter V examined the presence/absence of quantitative ER in constructions subject to syntactic constraints. In contrast to the Grammaticality Judgement Task there were two syntactic conditions: ER [+/-present] with numeral; ER [+/-present] with numeral and adjective, and like in the Grammaticality Judgement Task there were two semantic conditions: ER with [+/-definite] quantifier; ER with [+/-strong] quantifier. This study on syntactically and semantically conditioned quantitative ER constructions revealed that seven out of the eight transfer predictions between French and English were confirmed. These results do not provide a clear picture with respect to the question as to whether it is easier to acquire quantitative ER in syntactically conditioned constructions versus semantically conditioned constructions. We therefore conclude that linguistic context does not seem to influence the acquisition of Dutch quantitative ER.

Recall that both linguistic contexts had conditions in which ER is disallowed according to Dutch reference grammars. In the syntactically conditioned contexts this is the construction with quantitative ER and a numeral and an adjective (*Hij heeft ER twee blauwe, ‘He has two blue ones’); in the semantically conditioned contexts these are the constructions with a strong quantifier (*Hij verft ER sommige, ‘He paints some of them’) and with a definite determiner (*Hij verft ER de helft, ‘He paints half’), respectively. Interestingly, these conditions rendered unexpected results by the Dutch native control group. The Dutch native speakers did not unanimously reject such sentences in the Grammaticality Judgement Task, but accepted them in 61% (ER with a numeral and an adjective), 47% (ER with a strong quantifier), and 73% (ER with a definite quantifier) of the cases.

It is known that participants tend to be more accepting in experimental settings, which means that people tend to agree rather than disagree, which is known as response acquiescence (Erikson & Tedin 2015). However, this did not happen in the other conditions: in the presence, omission, post-verbal position, and pre-verbal position conditions grammatical sentences were correctly accepted and ungrammatical sentences were correctly rejected by the Dutch native speakers. As a result, it might be that the native Dutch speakers may have perceived ER as locative ER rather than quantitative ER. Locative ER is allowed in such constructions: Hij heeft ER (hier/daar) twee blauwe, ‘He has here/there two blue ones’ / Hij verft ER (hier/daar) de helft, ‘He paints here/there half’ / Hij verft ER (hier/daar) sommige, ‘He paints here/there some of them’. For the adjective construction, based on Kranendonk (2010), we also speculated about Dutch shifting towards a French structure. Dutch quantitative ER may be starting to behave like French quantitative EN in that it pronominalises a smaller part of the DP. This would leave a position for an adjective within the Dutch DP. As Kranendonk (2010) points out, some (southern) Dutch dialects do display quantitative ER constructions with a numeral.
and an adjective. However, neither our Dutch native speakers nor our L2 participants came from the south.

2. Summary and concluding remarks
In summary, we pinpointed several important factors that play a role in the (investigation of the) acquisition of the Dutch quantitative pronoun ER. First of all, it matters whether you are a child or an adult: children (monolinguals and probably bilinguals too) ultimately overcome quantitative ER errors, while adults often do not. Basing ourselves on the Universal Grammar Hypothesis and the Critical Period Hypothesis we attribute this to the hypothesis that adults’ L1-specific completion of the universal quantitative construction blueprint is in the way of their L2 acquisition of Dutch quantitative ER.

Secondly, the nature of the ‘other’ language plays an important role: L1 English and L1 French affect the acquisition of adult L2 Dutch quantitative ER in very different ways (when testing implicit knowledge). Although we see a similar effect in English-Dutch bilingual children in terms of the influence of English on Dutch, future research on French-Dutch bilingual children should point out whether the nature of the ‘other’ language is an important factor in bilingual child acquisition of Dutch quantitative ER as well. Until this has been shown, the alternative explanation that bilingualism in general causes a delay in language acquisition cannot be rejected.

Thirdly, we demonstrated the irrelevance of the linguistic (syntactically versus semantically conditioned) context for the L2 acquisition of Dutch quantitative ER.

Finally, it is important to be aware of whether implicit or explicit knowledge is tested when investigating the acquisition of Dutch quantitative ER. Testing explicit knowledge only may blur the insight into the learner’s underlying linguistic competence regarding Dutch quantitative ER. Nevertheless, applying explicit knowledge to the use of Dutch quantitative ER may help learners block natural negative L1 transfer.

This means that we can answer our research questions as follows:
Does successful acquisition depend on learner population? YES
Does successful acquisition depend on L1? YES
Does successful acquisition depend on syntactic and semantic constraints? NO
Does implicit knowledge differ from explicit knowledge? YES

Thus, given that our music conductor, who has been living in the Netherlands for forty years, wrote *Ik heb minstens vier vrouwen nodig voor een eenvoudige liturgie, maar ik heb nog maar twee.* ‘I need at least four women for a simple liturgy, but I only have two so far’ is an adult L2 speaker of Dutch influenced by his L1, the only hope for him may be to explicitly learn (and apply) the rule that Dutch quantitative constructions with a numeral require the presence of ER.
References


REFERENCES


References


Appendices

Appendix A
Grammaticality Judgement Task stimuli with a focus on syntactic constraints, used in Chapter III.

The adults completed this Grammaticality Judgement Task in which the focus lied on syntactic constraints before continuing with the other tasks in the test battery. The stimuli were presented in two randomised orders. Each participant started with the practice items first.

Appendix B
Grammaticality Judgement Task stimuli with a focus on semantic constraints, used in Chapter IV.

The adults who completed the Grammaticality Judgement Task in which the focus lied on syntactic constraints (Appendix A) continued with this Grammaticality Judgement Task in which the focus lied on semantic constraints. The stimuli were presented in two randomised orders. Each participant started with the practice items first.

Appendix C
Elicited Imitation Task stimuli with a focus on syntactic and semantic constraints, used in Chapter V.

The adults who completed the Grammaticality Judgement Tasks (Appendices A and B) continued with this Elicited Imitation Task in which the focus lied on syntactic and semantic constraints. The stimuli were presented in two randomised orders. Each participant started with the practice items first.

Appendix D
Sentence Completion Task stimuli, used in Chapter VI.

All children completed the Sentence Completion Task. The stimuli were presented in two randomised orders. Each participant started with the practice items first. The corresponding pictures are not provided.
Appendix A
Grammaticality Judgement Task stimuli – syntactic constraints (Chapter III)

<table>
<thead>
<tr>
<th>Introductory Sentences followed by Test Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Practice</strong></td>
</tr>
<tr>
<td>In het afgelopen jaar hebben ruim veertig duizend mensen asiel aangevraagd in Nederland</td>
</tr>
<tr>
<td>Zij hebben vaak een lange reis gemaakt om hier te komen</td>
</tr>
<tr>
<td><strong>Practice</strong></td>
</tr>
<tr>
<td>Op de boerderij zijn acht kuikens geboren</td>
</tr>
<tr>
<td>Zij een hok met een warmtelamp hebben gekregen</td>
</tr>
<tr>
<td><strong>Presence</strong></td>
</tr>
<tr>
<td>Vorig jaar heb ik drie dagboeken geschreven</td>
</tr>
<tr>
<td>Dit jaar heb jij twee geschreven</td>
</tr>
<tr>
<td><strong>Presence</strong></td>
</tr>
<tr>
<td>Gisteren hebben wij vier auto's gerepareerd</td>
</tr>
<tr>
<td>Vandaag hebben jullie vijf gerepareerd</td>
</tr>
<tr>
<td><strong>Presence</strong></td>
</tr>
<tr>
<td>Vannemorgen heb jij twee afspraken gemist</td>
</tr>
<tr>
<td>Vannmiddag heb ik één gemist</td>
</tr>
<tr>
<td><strong>Presence</strong></td>
</tr>
<tr>
<td>Vorige week hebben jullie drie films bekeken</td>
</tr>
<tr>
<td>Deze week hebben wij vier bekeken</td>
</tr>
<tr>
<td><strong>Presence</strong></td>
</tr>
<tr>
<td>Zondag heb ik twee appels gegeten</td>
</tr>
<tr>
<td>Dinsdag heb jij één gegeten</td>
</tr>
<tr>
<td><strong>Presence</strong></td>
</tr>
<tr>
<td>Vorig jaar heb ik drie dagboeken geschreven</td>
</tr>
<tr>
<td>Dit jaar heb jij er twee geschreven</td>
</tr>
<tr>
<td><strong>Presence</strong></td>
</tr>
<tr>
<td>Gisteren hebben wij vier auto's gerepareerd</td>
</tr>
<tr>
<td>Vandaag hebben jullie er vijf gerepareerd</td>
</tr>
<tr>
<td><strong>Presence</strong></td>
</tr>
<tr>
<td>Vanmorgem heb jij twee afspraken gemist</td>
</tr>
<tr>
<td>Vannmiddag heb ik er één gemist</td>
</tr>
<tr>
<td><strong>Presence</strong></td>
</tr>
<tr>
<td>Vorige week hebben jullie drie films bekeken</td>
</tr>
<tr>
<td>Deze week hebben wij er vier bekeken</td>
</tr>
<tr>
<td><strong>Presence</strong></td>
</tr>
<tr>
<td>Zondag heb ik twee appels gegeten</td>
</tr>
<tr>
<td>Dinsdag heb jij er één gegeten</td>
</tr>
<tr>
<td><strong>Position</strong></td>
</tr>
<tr>
<td>Vorig jaar heb ik twee bergen beklimmen</td>
</tr>
<tr>
<td>Dit jaar heb jij drie er beklimmen</td>
</tr>
<tr>
<td><strong>Position</strong></td>
</tr>
<tr>
<td>Gisteren hebben wij drie boeken gelezen</td>
</tr>
<tr>
<td>Vandaag hebben jullie twee er gelezen</td>
</tr>
<tr>
<td><strong>Position</strong></td>
</tr>
<tr>
<td>Vannemorgen heb jij tien bloemen geplukt</td>
</tr>
<tr>
<td>Vanmiddag heb ik zes er geplukt</td>
</tr>
<tr>
<td><strong>Position</strong></td>
</tr>
<tr>
<td>Vorige week hebben jullie twee foto's gemaakt</td>
</tr>
</tbody>
</table>
Deze week hebben wij drie er gemaakt
Position*  Woensdag heb ik één boete betaald
            Donderdag heb jij twee er betaald
Position    Vorig jaar heb ik twee bergen beklimmen
            Dit jaar heb jij er drie beklimmen
Position    Gisteren hebben wij drie boeken gelezen
            Vandaag hebben jullie er twee gelezen
Position    Vanmorgen heb jij tien bloemen geplukt
            Vanmiddag heb ik er zes geplukt
Position    Vorige week hebben jullie twee foto's gemaakt
            Deze week hebben wij er drie gemaakt
Position    Woensdag heb ik één boete betaald
            Donderdag heb jij er twee betaald
Adjective*  Vorig jaar heb ik vijf grote cadeaus gekregen
            Dit jaar heb jij er vijf kleine gekregen
Adjective*  Gisteren hebben wij twee mooie schilderijen verkocht
            Vandaag hebben jullie er twee lelijke verkocht
Adjective*  Vanmorgen heb jij drie blauwe jassen gekocht
            Vanmiddag heb ik er drie groene gekocht
Adjective*  Vorige week hebben jullie vier lange verhalen verteld
            Deze week hebben wij er vier korte verteld
Adjective*  Maandag heb ik twee enge dromen onthouden
            Vrijdag heb ik er twee vrolijke onthouden
Adjective  Vorig jaar heb ik vijf grote cadeaus gekregen
           Dit jaar heb jij vijf kleine gekregen
Adjective  Gisteren hebben wij twee mooie schilderijen verkocht
           Vandaag hebben jullie twee lelijke verkocht
Adjective  Vanmorgen heb jij drie blauwe jassen gekocht
           Vanmiddag heb ik er drie groene gekocht
Adjective  Vorige week hebben jullie vier lange verhalen verteld
            Deze week hebben wij vier korte verteld
Adjective  Maandag heb ik twee enge dromen onthouden
            Vrijdag heb ik twee vrolijke onthouden
Distractor* In het weiland heeft de mol vijftien hopen gegraven
           Hij daar een maand over gedaan heeft
Distractor* In de rivier heeft de vis zes kilometer afgelegd
Hij daarbij wel bochten afgesneden heeft

In de schoorsteen heeft de vogel twee takjes verzameld
Hij daarmee een groot nest heeft gebouwd

In het hok hebben twee konijnen flink ruzie gemaakt
Zij het vandaag weer goed hebben gemaakt

Aan de kust zijn vijf walvissen aangespoeld
Zij het niet overleefd hebben

In de schuur heeft het paard twee emmers omver geschopt
Hij daarmee het varken heeft bezeerd

Tijdens de schaatswedstrijd heeft het tien graden gevroren
Ik heb daarna twee bekers warme chocolademelk gedronken

Donderdagavond heb ik meegedaan aan een hardloopwedstrijd van tien kilometer
Ik heb dat in minder dan een half uur gedaan

In het kasteel heeft de prinses vijf kilometer gewandeld
Zij heeft geoefend voor een wandeltocht

Op het balkon van het paleis heeft de koning twee minuten gezwaaid
Hij heeft het publiek bedankt voor alle steun

Voor het diner heb ik vijftien kilo aardappels geschild
Ik heb ze daarna met een snufje zout gekookt

Na een uur vliegen heeft het vliegtuig een hoogte van tien kilometer bereikt
Ik heb dus hoog in de lucht een kopje koffie gedronken

Tijdens de maaltijd hebben de obers zesenzventig drankjes ingeschenkt
Zij hebben vooral veel bestellingen voor bier ontvangen
Appendix B
Grammaticality Judgement Task stimuli – semantic constraints (Chapter IV)

<table>
<thead>
<tr>
<th>Introductory Sentences followed by Test Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice*</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Practice</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[+ ]definite*</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[+ ]definite*</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[+ ]definite*</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[+ ]definite*</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[+ ]definite*</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[- ]definite</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[- ]definite</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[- ]definite</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[- ]definite</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[- ]definite</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[+ ]strong*</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[+ ]strong*</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[+ ]strong*</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>[+ ]strong*</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Donderdag heb ik vier spellen verloren
Zaterdag heb jij er ook sommige verloren

Vorig jaar heb ik acht kaarten ontvangen
Dit jaar heb jij er ook enkele ontvangen

Gisteren hebben wij vijf boeken gelezen
Vandaag hebben jullie er ook enkele gelezen

Vanmorgen hebben wij vijf boeken gelezen
Vandaag hebben jullie er ook enkele gelezen

Gisteren hebben wij vijf boeken gelezen
Vandaag hebben jullie er ook enkele gelezen

Vorig jaar heb ik acht kaarten ontvangen
Dit jaar heb jij er ook enkele ontvangen

Distractor* In het zuiden hebben twintigduizend vogels overwinterd
Zij van een warm klimaat hebben genoten

Distractor* In het verleden heeft de poes tien muizen per week gevangen
Zij die altijd in de woonkamer heeft neergelegd

Distractor* In de dierentuin heeft de olifant vijf kilo aan appels gegeten
Hij de rest voor morgen heeft bewaard

Distractor* Op de parkeerplaats heeft de rijinstructeur drie jongens gefeliciteerd
Zij heb hun afrij-examen in één keer gehaald

Distractor* Op school heeft de docent twintig leerlingen bestraft
Zij heb hun huiswerk voor de derde keer niet gemaakt

Distractor* Bij de bushalte hebben zestien mensen zich verzameld
Zij heb op de bus van elf uur gerekend

Distractor* In de trein heeft de conducteur twee honderd mensen gecontroleerd
Hij hebben dertien boetes uitgedeeld

Distractor* Op het strand heeft de ijsverkoper driehonderdeenentachtig ijsjes verkocht
Hij hebben daarmee zeshonderdnegentig euro verdiend

Distractor* Op het feest heeft de bruidegom achttien cocktails gedronken
Zij heb daarmee een record gevestigd

Distractor* Voor mijn verjaardag heb ik drie taarten gebakken
Ik heeft hiervoor honderd gram suiker gebruikt

Distractor* Op het schoolplein hebben tachtig kinderen een kasteel gebouwd
Zij heb hiervoor vier vrachtwagens vol zand gebruikt

Distractor* Afgelopen maandag heb ik vijftien kilometer per uur te hard gereden
Ik hebben daarvoor een bekeuring van honderdtwintig euro daarvoor
ontvangen

Distractor  Vanmorgen hebben gemeentewerkers honderdveertien fietsen uit de gracht omhoog getakeld
            Ik heb meer dan een half uur toegekeken

Distractor  Bij de race hebben dertig deelnemers de finish niet gehaald
            Zij hebben geen recht op een medaille

Distractor  Met de motor hebben we ruim vierhonderd kilometer per dag afgelegd
            We hebben daardoor heel Scandinavië gezien

Distractor  Op de radio heb ik tien liedjes beluisterd
            Ik heb ze allemaal luidkeels meegezongen

Distractor  Afgelopen dinsdag hebben drie gevangenen en vluchtpoging ondernomen
            Zij hebben het niet van tevoren aangekondigd

Distractor  In het bekende tv-programma hebben drie deskundigen over de kwestie verteld
            Zij hebben daar ruim de tijd voor genomen

Distractor  In de speeltuin hebben wij op zes verschillende wipwassen gezeten
            Ik heb daardoor behoorlijk pijn aan mijn bips

Distractor  In de zomer heeft de thermometer eenmalig vijfendertig graden aangegeven
            Wij hebben toen meteen het opblaasbare zwembad buiten gezet

Distractor  In de winter van 1996 heeft het twintig graden gevrogen
            We hebben toen deelgenomen aan een schaatstocht van honderd kilometer lang

Distractor  Vanwege een verbouwing heeft de lift drie maanden niet gewerkt
            Ik heb daarom een tijdlang de trap gebruikt

Distractor  Vanwege de drukte heeft het vliegtuig drie uur vertraging opgelopen
            Wij hebben daarom onze aansluiting gemist
### Appendix C

Elicited Imitation Task stimuli – syntactic and semantic constraints (Chapter V)

<table>
<thead>
<tr>
<th>Category</th>
<th>Introductory Sentences followed by Test Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distractor</td>
<td>In het weekend is Suzanne altijd vrolijk</td>
</tr>
<tr>
<td></td>
<td>Ze heeft namelijk op zaterdag paardrijles</td>
</tr>
<tr>
<td>Distractor</td>
<td>Tijdens het kerstdiner beet ik op mijn lip</td>
</tr>
<tr>
<td></td>
<td>Het heeft nog meer dan twee weken pijn gedaan</td>
</tr>
<tr>
<td>Presence*</td>
<td>Gisteravond heb ik 3 appels gegeten</td>
</tr>
<tr>
<td></td>
<td>Vandaag heb jij 2 gegeten toen we aan het schommelen waren</td>
</tr>
<tr>
<td>Presence*</td>
<td>Maandag hebben jullie 1 cd beluisterd</td>
</tr>
<tr>
<td></td>
<td>Zondag hebben wij 2 beluisterd tijdens het luxe paasontbijt</td>
</tr>
<tr>
<td>Presence</td>
<td>Gisteravond heb ik 3 appels gegeten</td>
</tr>
<tr>
<td></td>
<td>Vandaag heb jij er 2 gegeten toen we aan het schommelen waren</td>
</tr>
<tr>
<td>Presence</td>
<td>Maandag hebben jullie 1 cd beluisterd</td>
</tr>
<tr>
<td></td>
<td>Zondag hebben wij er 2 beluisterd tijdens het luxe paasontbijt</td>
</tr>
<tr>
<td>Adjective*</td>
<td>Vorig jaar hebben wij 7 mooie schilderijen verkocht</td>
</tr>
<tr>
<td></td>
<td>Dit jaar hebben jullie er 7 lelijke verkocht op de kerstmarkt</td>
</tr>
<tr>
<td>Adjective*</td>
<td>Vorig jaar hebben wij 9 kleine cadeaus gekregen</td>
</tr>
<tr>
<td></td>
<td>Dit jaar hebben jullie er 9 grote gekregen van Sinterklaas</td>
</tr>
<tr>
<td>Adjective</td>
<td>Vorig jaar hebben wij 7 mooie schilderijen verkocht</td>
</tr>
<tr>
<td></td>
<td>Dit jaar hebben jullie 7 lelijke verkocht op de kerstmarkt</td>
</tr>
<tr>
<td>Adjective</td>
<td>Vorig jaar hebben wij 9 kleine cadeaus gekregen</td>
</tr>
<tr>
<td></td>
<td>Dit jaar hebben jullie 9 grote gekregen van Sinterklaas</td>
</tr>
<tr>
<td>[+]</td>
<td>definite*</td>
</tr>
<tr>
<td></td>
<td>Vanmiddag hebben wij er de helft versierd met rode spikkeltjes</td>
</tr>
<tr>
<td>[+]</td>
<td>definite*</td>
</tr>
<tr>
<td></td>
<td>Vandaag hebben jullie er de helft gemaakt met de oude camera</td>
</tr>
<tr>
<td>[-]</td>
<td>definite</td>
</tr>
<tr>
<td></td>
<td>Vanmiddag hebben wij er een heleboel versierd met rode spikkeltjes</td>
</tr>
<tr>
<td>[-]</td>
<td>definite</td>
</tr>
<tr>
<td></td>
<td>Vandaag hebben jullie er een heleboel gemaakt met de oude camera</td>
</tr>
<tr>
<td>[+]</td>
<td>strong*</td>
</tr>
<tr>
<td></td>
<td>Vanmiddag hebben wij er ook sommige voorgedragen uit ons hoofd</td>
</tr>
<tr>
<td>[+]</td>
<td>strong*</td>
</tr>
<tr>
<td></td>
<td>Vandaag heb jij er ook sommige gerepareerd hoewel het vroor</td>
</tr>
<tr>
<td>[-]strong</td>
<td>Vanmorgen hebben jullie 8 gedichten voorgedragen</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Vanmiddag hebben wij er ook enkele voorgedragen uit ons hoofd</td>
</tr>
<tr>
<td>[-]strong</td>
<td>Gisteren heb ik 10 fietsen gerepareerd</td>
</tr>
<tr>
<td></td>
<td>Vandaag heb jij er ook enkele gerepareerd hoewel het vroor</td>
</tr>
<tr>
<td>Distractor</td>
<td>Eergisteren ging onze school bijna in vlammen op</td>
</tr>
<tr>
<td></td>
<td>De brandweer heeft de brand geblust met water uit de rivier</td>
</tr>
<tr>
<td>Distractor</td>
<td>Ik was vanmorgen te laat van huis vertrokken</td>
</tr>
<tr>
<td></td>
<td>Ik heb daarom erg hard gefietst om toch nog op tijd te zijn</td>
</tr>
<tr>
<td>Distractor</td>
<td>Vandaag ziet Klaas ziet er anders uit</td>
</tr>
<tr>
<td></td>
<td>Hij heeft een nieuwe bril en ook een ander kapsel</td>
</tr>
<tr>
<td>Distractor</td>
<td>Het heeft de hele week gesneeuwd</td>
</tr>
<tr>
<td></td>
<td>Vandaag hebben mijn collega's en ik een grote sneeuwpop gemaakt</td>
</tr>
<tr>
<td>Distractor</td>
<td>De grachten zijn deze week bevroren</td>
</tr>
<tr>
<td></td>
<td>De universiteit heeft een schaatswedstrijd georganiseerd</td>
</tr>
<tr>
<td>Distractor</td>
<td>Vanavond opent het nieuwe restaurant</td>
</tr>
<tr>
<td></td>
<td>Ik heb het logo ontworpen dat aan de gevel hangt</td>
</tr>
<tr>
<td>Distractor</td>
<td>Op de terugweg reed ik 40 kilometer per uur te hard</td>
</tr>
<tr>
<td></td>
<td>Ik heb de boete meteen de volgende dag betaald</td>
</tr>
<tr>
<td>Distractor</td>
<td>De tandarts heeft mijn tanden gebleekt</td>
</tr>
<tr>
<td></td>
<td>Als ik nu lach stralen ze als een zonnetje</td>
</tr>
</tbody>
</table>
Appendix D
Sentence Completion Task stimuli (Chapter VI)

<table>
<thead>
<tr>
<th>Incomplete Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice De jongen is niet aan het voetballen, maar hij…</td>
</tr>
<tr>
<td>Practice De jongen heeft niet 2 stenen, maar hij…</td>
</tr>
<tr>
<td>Practice De hond is niet aan het slapen, maar hij…</td>
</tr>
<tr>
<td>Practice Het meisje heeft niet 3 vlaggetjes, maar zij…</td>
</tr>
<tr>
<td>Practice De koning heeft niet 2 paarden, maar hij…</td>
</tr>
<tr>
<td>Practice De baby is niet aan het buiten spelen, maar zij…</td>
</tr>
<tr>
<td>Practice Het buurmeisje heeft niet 3 kopjes, maar zij…</td>
</tr>
<tr>
<td>Practice De moeder is niet aan het zwemmen, maar zij…</td>
</tr>
<tr>
<td>Experimental De dokter heeft niet 2 bankjes, maar hij…</td>
</tr>
<tr>
<td>Experimental De brandweerman heeft niet 3 honden, maar hij…</td>
</tr>
<tr>
<td>Experimental De man heeft niet 2 scheppen, maar hij…</td>
</tr>
<tr>
<td>Experimental De aap heeft niet 2 munten, maar hij…</td>
</tr>
<tr>
<td>Experimental De boer heeft niet 2 motoren, maar hij…</td>
</tr>
<tr>
<td>Experimental De kapitein heeft niet 3 fietsen, maar hij…</td>
</tr>
<tr>
<td>Experimental De soldaat heeft niet 3 zwaarden maar hij…</td>
</tr>
<tr>
<td>Experimental Het varken heeft niet 3 bomen, maar hij…</td>
</tr>
<tr>
<td>Experimental De agent heeft niet 4 motoren, maar zij…</td>
</tr>
<tr>
<td>Experimental De agent heeft niet 2 boten, maar zij…</td>
</tr>
<tr>
<td>Experimental De astronaut heeft niet 3 stoelen, maar hij…</td>
</tr>
<tr>
<td>Experimental De vuilnisman heeft niet 3 prullenbakken, maar hij…</td>
</tr>
<tr>
<td>Experimental De meneer heeft niet 4 bedden, maar hij…</td>
</tr>
<tr>
<td>Experimental De olifant heeft niet 3 parasols, maar hij…</td>
</tr>
<tr>
<td>Experimental De juffrouw heeft niet 2 kopjes, maar zij…</td>
</tr>
<tr>
<td>Experimental De jongen heeft niet 3 cadeautjes, maar hij…</td>
</tr>
<tr>
<td>Experimental De moeder heeft niet 2 kippen, maar zij…</td>
</tr>
<tr>
<td>Experimental Het buurmeisje heeft niet 2 bezems, maar zij…</td>
</tr>
<tr>
<td>Experimental De zeehond heeft niet 3 lolly’s, maar hij…</td>
</tr>
<tr>
<td>Experimental Het schaap heeft niet 3 voetballen, maar hij…</td>
</tr>
<tr>
<td>Experimental De oma heeft niet 4 truien, maar zij…</td>
</tr>
<tr>
<td>Experimental De giraffe heeft niet 2 tassen, maar hij…</td>
</tr>
<tr>
<td>Distractor Het kindje is niet aan het eten, maar hij…</td>
</tr>
<tr>
<td>Distractor Het buurmeisje is niet aan het tv kijken, maar zij…</td>
</tr>
<tr>
<td>Distractor</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>Distractor</td>
</tr>
<tr>
<td>Distractor</td>
</tr>
<tr>
<td>Distractor</td>
</tr>
<tr>
<td>Distractor</td>
</tr>
<tr>
<td>Distractor</td>
</tr>
<tr>
<td>Distractor</td>
</tr>
<tr>
<td>Distractor</td>
</tr>
<tr>
<td>Distractor</td>
</tr>
<tr>
<td>Distractor</td>
</tr>
</tbody>
</table>
Summary

Acquiring Dutch quantitative ER

Some languages, among them Dutch, possess a pronominal element that is obligatory used in certain quantitative constructions. In Dutch this pronominal element is realised as ER. This pronoun is presumably difficult to acquire for second language learners of Dutch, which is demonstrated with the following part of an email that was sent to me by a highly proficient adult second language (L2) learner of Dutch, who is also a conductor in search of female singers:

(1)  
Ik heb minstens vier vrouwen nodig voor een eenvoudige liturgie, maar
I have at least four women need for a simple liturgy but
ik heb nog maar twee.
I have only but two
‘I need at least four women for a simple liturgy, but I only have two so far’.

The sentence in (1) is ungrammatical and can be made grammatical by inserting the Dutch quantitative pronoun ER, as can be seen in (2).

(2)  
… ik heb er nog maar twee.
… I have ER only but two
‘… I only have two so far.’

The fact that the utterance in (1) can be attributed to an advanced adult second language learner of Dutch, may lead to the idea that the struggle with this particular pronoun is limited to people who learn Dutch as a foreign language at a later age. However, Van Hout, Veenstra & Berends (2011) demonstrated that Dutch monolingual children also encounter problems with the acquisition of this pronoun: at the age of five, children still make mistakes, whereas other morpho-syntactic phenomena such as subject-verb agreement, word order, diminutives, and question formation have long been acquired by that age (Schaerlaekens 1977).

What makes this interesting is that apparently the acquisition of the Dutch quantitative ER construction is troublesome in different populations. Nevertheless, the pronoun and its acquisition have received strikingly little attention in the literature so far. This dissertation is dedicated to fill this gap. We used the observation that the acquisition of quantitative ER causes difficulties in multiple populations as the basis for our main research question (What factors play a role in
the acquisition of the Dutch quantitative pronoun ER in different populations?), and as a springboard to discuss factors that may contribute to (un)succesful acquisition (different learner populations, different L1s, different natures of constraints, and different types of knowledge).

The introduction of this dissertation briefly touched on each of these factors, and we will summarise them briefly here. By including different learner populations, we wanted to ascertain whether difficulties with this pronoun were indeed typical for all kinds of learners of Dutch, and if yes, whether this is for the same reasons. More specifically, we wanted to know whether it matters if a learner is an L2 adult or a monolingual or bilingual child. The reason for this comparison stems from the idea that these populations are underlyingly different. This can be explained by the theory of Universal Grammar (UG) (Chomsky 1965), which states that every child possesses an innate language blueprint that contains the basic principles of human language. This blueprint needs to be completed for the particular language to be acquired with the aid of sufficient natural language input. It is a matter of debate how long in life this more or less effortless way of learning a language is available to a person. The Critical Period Hypothesis states that, as we age, our ability to attain language successfully gradually declines (Lenneberg 1967; Penfield & Roberts 1959). These assumptions regarding language acquisition, based on the Universal Grammar Hypothesis and the Critical Period Hypothesis, make the L1 population crucially different from other populations, such as bilingual children or L2 adults. Moreover, the initial state for L1 acquisition is UG alone, while for bilingual L1 acquisition this is UG, perhaps along with knowledge of another language, and for adult L2 acquisition this is L1 knowledge, perhaps along with UG.

To disentangle this potential influence of L1 knowledge, we included different L1s. The rationale behind this is that after the Unitary Linguistic System Hypothesis (Volterra & Taeschner 1978) and the Separate Systems Hypothesis (Genesee 1989; De Houwer 1990; Meisel 1989), the idea arose that two language systems within one person may interact with each other instead of being entirely independent. In bilingual children, this interaction is called cross-linguistic influence. This is a child-internal process with children taking the least complex analysis of a grammatical phenomenon from one of the languages and temporarily using it in both languages (Hauser-Grüdl, Arencibia Guerra, Witzmann, Leray & Müller 2010). This idea has been capsulised in the Cross-Linguistic Influence Hypothesis of Hulk & Müller (2000). In adult L2 acquisition, this interaction is called transfer, which refers to the interference of knowledge of one, or maybe even more, previously acquired languages with the acquisition process of the new language (Lightbown & Spada 2006; Nation 2003; Schmitt 2010). This idea was first formulated by Lado (1957) in the Contrastive Analysis Hypothesis and later adjusted by Schwartz & Sprouse (1994; 1996) in their Full Transfer Full Access Hypothesis. In this dissertation we combined these two hypotheses in our Transfer Hypothesis, which we tested with
two languages: French, which does have a quantitative pronoun (EN), and English, which does not have a quantitative pronoun.

To specify the influence of different L1s, we looked at the different natures of constraints, which can be identified as syntactic or semantic. We studied whether L1 influence is stronger on the acquisition of syntactic constraints on ER, compared to the acquisition of semantic constraints on ER. Although French has an equivalent of Dutch quantitative ER, the linguistic constraints on French quantitative EN are not completely identical. Differences between EN and ER arise both on a syntactic level (e.g., presence and position), and on a semantic level (e.g., presuppositionality of the quantifier).

The last factor we included is about different types of knowledge, namely explicit and implicit knowledge. The difference between these types of knowledge is best explained by the contrast between L1 and L2 acquisition: if we ask young children to explain certain features of the language they speak, they cannot do so because their metalinguistic knowledge has not yet developed (Vygotsky 1986). On the contrary, adults who speak a second language can often explain several structural properties of that language. This disparity results from children never having received formal instructions about the language they speak, which means that most of their knowledge is implicit: the result of a combination of innate knowledge and input, rather than explicit rules. In contrast, adults have often received formal instruction about their L2, allowing them to clarify and explain linguistic properties, which makes their knowledge explicit (Ellis 2005, 2009; Erlam 2006). In this dissertation data was collected from various sources: spontaneous speech (implicit knowledge), untimed grammaticality judgements (explicit knowledge), elicited imitation (implicit knowledge), and sentence completions (implicit knowledge). Because of the more ‘automatic’ character of implicit knowledge, we argued this type of knowledge to approximate natural language situations more closely than explicit knowledge. This is explained by the Implicit Knowledge Hypothesis.

In Chapters II – VII, five studies are described that each contain one or more of the four factors described above. In study 1 (Chapter II), we conducted a corpus-analytical study that investigated the ages of emergence of child L1 Dutch ER pronouns and child L1 French EN pronouns in 206 spontaneous speech files of Dutch L1 children and 213 spontaneous speech files of French L1 children from the CHILDES database (MacWhinney 2000). Moreover, it focused on the ages of emergence in relation to the syntactic complexity load of the different ER and EN pronominal constructions. This was done on the basis of the Derivational Complexity Metric by Jakubowicz (2005). The data from this study revealed that Dutch quantitative pronouns, such as Daar ligt er één ‘There lies one’ emerge after Dutch prepositional complements, such as Ga eraf ‘Go off’. This is completely in line with the syntactic complexity load of both constructions, as the data showed
that quantitative ER constructions involve three obligatory merges, whereas prepositional ER constructions involve only two. Thus, emergence patterns could be properly accounted for by applying the Derivational Complexity Metric to L1 Dutch spontaneous speech data. Also cross-linguistically, the Derivational Complexity Metric predicted the orders of emergence correctly: French prepositional complements emerge simultaneously with Dutch prepositional complements, and French quantitative pronouns emerge earlier than Dutch quantitative pronouns.

After the conclusion that monolingual Dutch children do indeed find quantitative pronoun constructions difficult, study 2 (Chapter III) focused on another learner population (adult L2 learners of Dutch), divided into two different L1s (French and English). We tested their explicit knowledge (untimed Grammaticality Judgement Task) regarding the syntactic constraints on Dutch quantitative ER. The study presents data from 75 adults (in three language groups: L1 French, L1 English and L1 Dutch), who judged Dutch quantitative ER sentences in three syntactic contexts: (i) ER [+/*-present] with numeral, (ii) ER [post \( V_{fin}/*post\) quantifier] with numeral, and (iii) ER [*/+-present] with numeral and adjective. Predictions were made on the basis of the Transfer Hypothesis. We focused on how acquisition is influenced by the properties of quantitative constructions in L1 French (EN) and L1 English (Ø). The main findings are that negative cross-linguistic influence is confirmed, but positive cross-linguistic influence could not be clearly confirmed. Of the two positive predictions there was one negative significant result (comparison Dutch-French in the ‘ER [+/*-present] with numeral’ condition), and one null-result (comparison Dutch-English in the ‘ER [*/+-present] with numeral and adjective’ condition). Although a non-significant difference between two language groups was interpreted as a null-result in study 1, it was interpreted as positive transfer in study 2. Summarising, morpho-syntactic differences between L1 and L2 create difficulties, but morpho-syntactic similarities between L1 and L2 do not necessarily create advantages. However, no significant differences between L1 French and L1 English were found, despite the opposed predictions for both groups. Furthermore, the data showed that mixed judgements were given by the L1 Dutch speakers in the ‘ER [*/+-present] with numeral and adjective’ condition, which means that the control group did not unanimously reject or accept the sentences belonging to this condition.

Study 3 (Chapter IV) was a repetition of study 2 (same participants and same predictions). The only difference was that the participants did not judge sentences by syntactic constraints on the Dutch quantitative ER, but instead by semantic constraints. This meant that Dutch quantitative ER sentences were judged in two semantic contexts: (i) ER with [*/+-definite] quantifier, and (ii) ER with [*/+-strong] quantifier. These two semantic properties were taken together and encapsulated in the denominator [presuppositionality]. Two key results from the previous chapter were confirmed: First, no significant differences between L1
French and L1 English were found, despite the opposed predictions for both groups. Second, again the L1 Dutch speakers gave mixed judgements in certain conditions. De Hoop (1992) and De Jong (1983) claim that quantitative ER encodes the referential characteristic [-presupposition] and that the pronoun can only appear in sentences in which the quantifier encodes the same property, however, the Dutch native speakers in our study did not convincingly demonstrate this pattern. They are unanimous in their judgements regarding grammatical sentences, but do not always reject the ungrammatical sentences in which quantitative ER occurs with quantifiers that encode [+presupposition] properties. With regard to transfer, we found signs of semantic influence of L1 in both L1 groups. Moreover, it was shown that for the L1 French group a semantic presuppositionality difference in quantitative constructions between the home and target language created difficulties in learning the target language (in line with study 2), while a semantic presuppositionality similarity between the home and target language led to better performance on grammaticality judgements (not completely in line with study 2, due to a different interpretation of a non-significant difference).

**Study 4** (Chapter V) added implicit knowledge data to the explicit knowledge data collected in studies 2 and 3 by administering an Elicited Imitation Task to the same adult participants. The acquisition of syntactic constraints and semantic constraints on L2 Dutch quantitative pronoun ER constructions was tested. Predictions were formulated on the basis of both the Transfer Hypothesis and the Implicit Knowledge Hypothesis. When comparing the implicit knowledge data from the Elicited Imitation Task to the explicit knowledge data from the Grammaticality Judgement Tasks, we noticed that the Elicited Imitation Task is more sensitive to language transfer than the Grammaticality Judgement Tasks. That is, the Grammaticality Judgement Task did not detect significant differences between French and English learners, despite the fact that French does have an overt quantitative pronoun, and English lacks one. In contrast, when we measured Dutch quantitative ER by means of an Elicited Imitation Task in the same participants, we did find significant differences predicted by the Transfer Hypothesis between the French and the English adult learners of Dutch (seven out of eight predictions were confirmed). These results suggest that explicit knowledge (as untimed grammaticality judgement are supposed to measure) may not be sensitive enough to the actual linguistic competence of a learner, i.e., implicit knowledge, which is best reflected in everyday, natural language situations (Ellis 2005, 2009; Erlam 2006; Hulstijn & De Graaff 1994).

**In study 5** (Chapter VI) we examined a different population, namely, English-Dutch bilingual children, employing a Sentence Completion Task. This study investigated whether English influences the acquisition of Dutch quantitative ER in children who grow up simultaneously acquiring Dutch and English. The study’s predictions were based on Hulk & Müller’s (2000) Cross-Linguistic Influence.
Hypothesis. We found clear signs of cross-linguistic influence in English-Dutch bilingual children: they produced fewer target ER constructions than monolingually raised Dutch children, and their non-target answers were characterized by omission of ER.

In conclusion, we found several important factors that play a role in the (investigation of the) acquisition of the Dutch quantitative pronoun ER. First of all, it matters whether you are a child or an adult: children (monolinguals and probably bilinguals too) ultimately overcome quantitative ER errors, while adults often do not. Following the Universal Grammar Hypothesis and the Critical Period Hypothesis, we attribute this to the hypothesis that adults’ L1-specific completion of the universal quantitative construction blueprint is in the way of their L2 acquisition of Dutch quantitative ER. Secondly, the nature of the ‘other’ language plays an important role: L1 English and L1 French affect the acquisition of adult L2 Dutch quantitative ER in very different ways (when testing implicit knowledge). Thirdly, we demonstrated how linguistic context (syntactically versus semantically conditioned) does not affect the L2 acquisition of Dutch quantitative ER. Finally, it is obviously important to be aware of whether implicit or explicit knowledge is tested when investigating the acquisition of Dutch quantitative ER. Testing explicit knowledge only may blur the insight into the learner’s underlying linguistic competence regarding Dutch quantitative ER, while applying implicit knowledge to the use of Dutch quantitative ER may unintentionally provoke natural negative L1 transfer.
Het vermoeven van Nederlands kwantitatief ER

Niet alle talen bezitten een kwantitatief voornaamwoord. Het Nederlands heeft ER echter wel één. De verplichte aan- of afwezigheid van kwantitatief ER wordt door volwassen moedertaalsprekers (T1) van het Nederlands meestal feilloos aangevoeld, maar dit geldt niet voor hen die het Nederlands als tweede taal (T2) leren. Het volgende voorbeeld onderschrijft dit. Het is een zin die mij per email werd toegezonden door de dirigent van mijn koor, een gevorderde T2-leerder van het Nederlands, zie (1).

(1) Ik heb minstens vier vrouwen nodig voor een eenvoudige liturgie, maar ik heb nog maar twee.

Een Nederlandse moedertaalspreker zal beamen dat zin (1) ongrammaticaal is, maar eenvoudig grammaticaal gemaakt kan worden door het Nederlandse kwantitatieve voornaamwoord ER toe te voegen, zie (2)

(2) … maar ik heb er nog maar twee.

Doordat de foutieve zin in (1) geschreven is door een gevorderde T2-spreker van het Nederlands, is wellicht de gedachte ontstaan dat alleen mensen die het Nederlands als tweede taal leren moeite hebben met de productie van de kwantitatieve ER. Dit is echter niet het geval. Zo hebben Van Hout, Veenstra & Berends (2011) in hun onderzoek laten zien dat ook kinderen die het Nederlands als moedertaal verwerven, soms moeite hebben met de productie ervan. Op de leeftijd van 5 jaar maken zij nog relatief veel fouten met betrekking tot kwantitatief ER, bijvoorbeeld door het weg te laten, terwijl andere morfosyntactische constructies, zoals congruentie tussen onderwerp en persoonsvorm, woordvolgorde, verkleinwoorden en vraagstelling, wel al door hen beheerst worden op die leeftijd (Schaerlaekens 1977).

De observatie dat moeilijkheden omtrent de verwerving van het juiste gebruik van het Nederlandse kwantitatieve ER niet gelimiteerd zijn tot een specifieke populatie, dient als uitgangspunt voor de onderzoeksvraag van deze dissertatie: Welke factoren spelen een rol in de verwerving van het Nederlandse kwantitatieve
voornaamwoord ER bij verschillende populaties? Verschillende factoren die mogelijk van invloed zijn op de verwerving van kwantitatief ER worden onderzocht. Tot die factoren rekenen we a) de leerder-populatie waartoe iemand behoort (één talige kinderen (T1), tweetalige kinderen (2T1), en volwassen tweedetaalleerders van het Nederlands (T2)), b) de invloed van de moedertaal (T1) (Frans/Engels), c) de context waarin het kwantitatieve voornaamwoord ER voorkomt (syntactisch / semantisch), en d) het soort kennis dat getest wordt van ER (impliciet / expliciet). Door het verwervingsproces van deze in de literatuur onderbelichte constructie te onderzoeken aan de hand van bovenstaande factoren, hopen wij een aanvulling te kunnen leveren op hetgeen reeds bekend is op het gebied van eerste-, tweede-, en bilinguale taalverwerving.

We lichten bovenstaande factoren hier kort toe, te beginsen met de diverse leerder-populaties. Dit onderscheid dient om de vraag te beantwoorden of alle soorten leerders van het Nederlands moeite hebben met de verwerving van het juiste gebruik van het kwantitatieve voornaamwoord ER. Als blijkt dat dat inderdaad zo is, liggen daar dan dezelfde redenen aan ten grondslag? De verschillende leerder-populaties die we in dit onderzoek betrekken zijn T1-kinderen, 2T1-kinderen en T2-volwassenen. De reden om deze populaties met elkaar te vergelijken komt voort uit de hypothese die zij onderliggend verschillend zijn. Dit kan het best geïllustreerd worden aan de hand van de Universele Grammatica (UG) van Chomsky (1965). In deze theorie stelt hij dat ieder kind een aangeboren blauwdruk voor taal bezit waarin de basisprincipes van menselijke taal aanwezig zijn. Het is de bedoeling dat deze blauwdruk min of meer automatisch ingevuld wordt voor de te leren taal met de hulp van voldoende natuurlijke taalinput. In de literatuur bestaat geen overeenstemming over de lengte van deze periode waarin taal op een ‘eenvoudige’ manier aangeleerd wordt. De Kritische Periode Hypothese (Lenneberg 1967; Penfield & Roberts 1959), waarin gesteld wordt dat naarmate we ouder worden, onze vaardigheid om taal succesvol te verwerven afneemt, vindt echter veel navolging. Het bestaan van de Universele Grammatica en de Kritische Periode maakt de populatie T1-kinderen wezenlijk anders dan de populaties 2T1-kinderen en T2-volwassenen. Namelijk, het beginstadium van monolinguale verwerving door kinderen is enkel de Universele Grammatica, terwijl het voor bilinguale verwerving door kinderen de Universele Grammatica plus de verwerving van een andere taal is. Voor volwassen tweedetaalverwerving is het beginstadium de kennis van de eerste taal, wellicht in combinatie met Universele Grammatica.

De tweede factor omvat de potentiële invloed van T1 op het leren van T2. Een aantal decennia geleden waren de Unitary Linguistic System Hypothesis (Volterra & Taeschner 1978) en de Separate Systems Hypothesis (Genesee 1989; De Houwer 1990; Meisel 1989) populair. De eerste hypothese houdt in dat een kind meerdere talen in één gemengd taalsysteem verwerft. Daarna, rond driejarige leeftijd, begint het kind het lexicon van de talen apart op te slaan, maar de grammaticale regels van

De derde factor betreft het type context waarin het kwantitatieve voornaamwoord voorkomt: een syntactische of semantische context. Voor beide types gelden regels die de aan- of afwezigheid van het kwantitatieve voornaamwoord ER vereisen. Ons doel was om uit te zoeken hoe sterk of zwak de T1-invloed in een syntactische context en in een semantische context zijn. Hoewel het Frans bijvoorbeeld wel een equivalent heeft van het Nederlandse kwantitatieve voornaamwoord ER (in de vorm van EN), zijn de grammaticale regels van ER en EN niet identiek in beide talen. Verschillen tussen de regels met betrekking tot het kwantitatieve voornaamwoord in beide talen komen zowel op syntactisch niveau, als op semantisch niveau voor.

De vierde factor waarop we ons richten gaat over verschillende soorten kennis: expliciete en impliciete kennis. Het verschil tussen deze twee soorten kennis kan het best worden uitgelegd aan de hand van het contrast tussen T1- en T2-verwerving: als we jonge kinderen vragen om bepaalde structurele eigenschappen van de taal die ze spreken uit te leggen, dan kunnen ze dat niet omdat hun metalinguïstische kennis nog niet ontwikkeld is (Vygotsky 1986). Jonge kinderen hebben namelijk nooit formele instructies gekregen over de taal die zij spreken, maar leren de taal uit een
combinatie van aangeboren kennis en input. Volwassenen die op latere leeftijd een tweede taal leren daarentegen, krijgen vaak wel formele instructies over de taal die zij spreken, waardoor zij vaak wel in staat zijn om taalkundige karakteristieken uit te leggen. Met andere woorden, bij kinderen is het merendeel van de kennis impliciet, terwijl bij volwassen leerders vaak expliciet is (Ellis 2005, 2009; Erlam 2006).

Voor deze dissertatie verzamelden we data uit verschillende taken om zo te kunnen beoordelen of verschillende soorten kennis (expliciet en impliciet) de productie van ER begunstigen of tegenwerken: spontane spraak (impliciete kennis), grammaticaliteitsoordelen zonder opgelegde tijdslimiet (expliciete kennis), uitgelokte imitaties (impliciete kennis), en zinsaanvullingen (impliciete kennis). Vanwege het mer ‘automatische’ karakter van impliciete kennis, beargumenteerden wij dat dit soort kennis dichter in de buurt komt van natuurlijke taalsituaties, en daardoor dichter bij de werkelijke taalcompetentie van de spreker ligt dan expliciete kennis. Dit is geformuleerd in de Implicit Knowledge Hypothesis.

In de hoofdstukken II –VII worden vijf studies beschreven die één of meer van de hierboven genoemde vier factoren bevatten. In Studie 1 (Hoofdstuk II) voerden we een corpus-analytisch onderzoek uit dat de leeftijd onderzocht waarop kwantitatieve voornaamwoorden en gelijkluidende prepositionele complementen voor het eerst voorkomen bij Nederlandse en Franse monolinguale kinderen in de leeftijd van één tot drie en een half jaar. In totaal werden 206 Nederlandse spontane spraakbestanden en 213 Franse spontane spraakbestanden geanalyseerd van de CHILDES database (MacWhinney 2000). Behalve te kijken naar de leeftijd waarop verschillende ER en EN pronomina voorkwamen, werd ook de relatie gelegd met de syntactische complexiteit van deze pronomina. Dit werd gedaan op basis van de Derivational Complexity Metric van Jakubowicz (2005). Deze hypothese baseert complexiteit op het aantal syntactische verplaatsingen. De data van deze studie laten zien dat het Nederlandse kwantitatieve voornaamwoord (Daar ligt ER één) na gelijkkluidende Nederlandse prepositionele complementen, zoals (Ga ERaf), verschijnt. Dit komt volledig overeen met de syntactische complexiteitswaarde van beide constructies: volgens onze taalkundige analyse van deze constructies vereist kwantitatief ER drie verplaatsingen, terwijl de prepositionele ER-constructie er maar twee vereisen. Dit betekent dat de verschijningspatronen van verschillende soorten ER in Nederlandse kindertaal voorspeld worden door Jakubowicz (2005) Derivational Complexity Metric. Dit is ook het geval voor cross-linguistische vergelijkingen: zoals voorspeld volgens de Derivational Complexity Metric verschijnen de Franse prepositionele complementen simultaan met Nederlandse prepositionele complementen, terwijl Franse kwantitatieve pronomina eerder verschijnen dan Nederlandse kwantitatieve pronomina. Dit was te verwachten op basis van het aantal verplaatsingen in beide talen.

Na monolinguale kinderen te hebben onderzocht, focusten we in Studie 2 (Hoofdstuk III) op een andere leerder-populatie, namelijk volwassen T2-leerders
SAMENVATTING

van het Nederlands. We hebben deze populatie onderverdeeld in twee groepen: T1-sprekers van het Frans en T1-sprekers van het Engels. Door middel van grammaticaliteitsoordeel zonder opgelegde tijdslimiet, testten we hun expliciete kennis van het Nederlandse kwantitatieve ER in drie condities binnen het syntactische domein: (1) de aan- en afwezigheid van ER in zinnen met een kwantor (*Ik zie ER vier), (2) de positie van ER in zinnen met een kwantor, (3) de aan- en afwezigheid van ER in zinnen met een kwantor en een adjectief. Voorspellingen werden gemaakt op basis van de Transfer Hypothese. We focusten specifiek op de wijze waarop de verwerving van het Nederlandse kwantitatiewe voornaamwoord ER beïnvloed wordt door de eigenschappen die kwantitatieve constructies hebben in de moedertaal van de deelnemers: Frans (EN) en Engels (O). De belangrijkste uitkomst van dit onderzoek is dat negatieve cross-linguïstische invloed wel bevestigd is, maar dat positieve cross-linguïstische invloed niet overtuigend bewezen is. Met andere woorden, grammaticale verschillen tussen T1 en T2 creëren moeilijkheden in T2-taalverwerving, maar grammaticale overeenkomsten tussen T1 en T2 creëren niet de definitievoor in T2-taalverwerving. Een andere belangrijkste conclusie is dat significante verschillen tussen T1 Frans en T1 Engels niet werden gevonden, ondanks tegenovergestelde predicties voor beide groepen. Tot slot, de data lieten een absolute standaard van er in zinnen waarin zowel een kwantor als een adjectief aanwezig is. Dit betekent dat de controlegroep deze zinnen niet unaniem afwees of accepteerde. Dit duidt mogelijkerwijs een taalverandering binnen het Nederlands aan.

Studie 3 (Hoofdstuk IV) richtte zich op kwantitatief ER binnen het semantische domein, met dezelfde participanten en dezelfde taak (grammaticaliteitsoordeel zonder opgelegde tijdslimiet) als in Studie 2. Dit betekent dat Nederlandse kwantitatieve ER-constructies beoordeeld werden in twee semantische condities: (1) het gebruik van ER in zinnen met een indefiniete/definiete kwantor (*Hij leest *er de helft / er een heleboel), (2) het gebruik van ER in zinnen met een sterke/zakke kwantor (*Hij leest *er sommige / er enkele). Deze twee semantische eigenschappen zijn samengevoegd in de eigenschap “presuppositionaliteit”. Twee resultaten van Studie 2 werden bevestigd in dit hoofdstuk: a) significante verschillen tussen T1 Frans en T1 Engels werden wederom niet gevonden, ondanks tegenovergestelde predicties voor beide groepen, en b) de controlegroep gaf wederom geen eenduidige oordelen. De Hoop (1992) en De Jong (1983) claimen dat kwantitatief ER het referentiekenmerk [-presuppositioneel] bevat en dat het alleen voor kan komen in zinnen waarin de kwantor hetzelfde kenmerk bevat. De Nederlandse dekmotivatoren sprekers in deze studie lieten dit patroon echter niet overtuigend zien. Zij zijn unaniem in hun oordeel over de grammaticale zinnen waarin ER en kwantor dezelfde kenmerken (beide [-presuppositioneel]) bevatten, maar laten na om ongrammaticale zinnen waarin ER en kwantor verschillende presuppositionele
kenmerken bevatten overtuigend af te wijzen. Een andere bevinding is dat er in zowel de Franse als de Engelse groep duidelijke aanwijzingen van semantische invloed van T1 zijn gevonden, het zogenaamde transfer. Een semantisch presuppositionaliteitsverschil tussen het Frans (T1) en het Nederlands (T2) creëerde namelijk moeilijkheden in het leren van de doeltaal (negatieve transfer, overeenkomstig met bevinding in studie 2), terwijl een semantische presuppositionaliteitsovereenkomst tussen het Frans (T1) en het Nederlands (T2) tot een beter resultaat leidde in de doeltaal (positieve transfer, niet helemaal in overeenstemming met studie 2, met als oorzaak verschillende interpretaties van een niet-significant verschil in beide studies).

**Studie 4** (Hoofdstuk V) voegt impliciete kennisdata toe aan de expliciete kennisdata die in studies 2 en 3 zijn verzameld door een *Elicited Imitation Task* af te nemen bij dezelfde groep participanten. De kennis van kwantitatieve ER-condities binnen het syntactische en het semantische domein werd getest. Voorspellingen werden geformuleerd op basis van zowel de Transfer Hypothese als de Implicit Knowledge Hypothesis. Wanneer we de impliciete kennisdata van de uitgelokte imitaten vergelijken met de expliciete kennisdata van de grammaticaliteitsoordelen, dan valt op dat de impliciete kennisbaak gevoeliger is voor transfer dan de expliciete kennisbaak. Dat wil zeggen, de grammaticaliteitsoordeeltaak detecteerde geen significant verschil tussen Franse en Engelse leerders, ondanks het feit dat Frans een kwantitatieve voornaamwoordconstructie heeft en Engels die ontbreekt. Toen we daarentegen het verschil tussen beide groepen leerders testten met een uitgelokte imitatietaka, vonden we wel significante verschillen, zoals voorspeld door de Transfer Hypothese (7 van de 8 voorspellingen kwamen uit). Deze resultaten suggereren dat deze expliciete taak (zoals grammaticaliteitsoordelen zonder opgelegde tijdsbodem worden geacht te meten) wellicht niet gevoelig genoeg is om de werkelijke taalkundige competentie van een leerder te testen, zoals impliciete taken dat wel zijn (Ellis 2005, 2009; Erlam 2006; Hulstijn & De Graaff 1994).

Met **studie 5** (Hoofdstuk VI) voegden we een andere populatie toe, namelijk Engels-Nederlands tweetalige kinderen. Door middel van een *Sentence Completion Task* werd onderzocht of de verwerving van het Engels naast het Nederlands, de verwerving van ER beïnvloedt. De voorspellingen van deze studie zijn gebaseerd op Hulk & Müller’s (2000) Cross-Linguistic Influence Hypothesis. We hebben duidelijke aanwijzingen gevonden van cross-linguïstische invloed van het Engels op het Nederlands in Engels-Nederlands tweetalige kinderen; zij produceren minder vaak kwantitatief ER dan monolinguale Nederlandse kinderen in constructies waar ER verplicht is. We schrijven dit toe aan het ontbreken van een kwantitatief voornaamwoord in het Engels.

Samenvattend kunnen we melden dat we verscheidene belangrijke factoren gevonden hebben die een rol spelen in de verwerving van het Nederlandse kwantitatieve voornaamwoord ER. Allereerst maakt het uit of je een kind bent of
een volwassene: kinderen (monolingualen en waarschijnlijk bilinguaal ook) overwinnen uiteindelijk de fouten die te maken hebben met de kwantitatieve ER, terwijl volwassenen dat lang niet altijd doen. De Universele Grammatica en de Kritische Periode Hypothese volgend, kennen we dit toe aan de hypothese die stelt dat de manier waarop volwassenen het equivalent van het kwantitatieve voornaamwoord ER in de thuistaal hebben geleerd in de weg staat van een correcte verwerving van deze constructie in de tweede taal, het Nederlands. Bovendien speelt de aard van de ‘andere’ taal een belangrijke rol: L1 Engels (zonder kwantitatief voornaamwoord) en L1 Frans (met EN) hebben op een verschillende manier invloed op de verwerving van het Nederlandse kwantitatieve voornaamwoord ER. Dit biedt bewijs voor de Cross-Linguistic Influence hypothese en de Transfer hypothese. Bovendien hebben we laten zien dat grammaticale context (syntaxis versus semantiek) geen effect heeft op de T2-verwerving van het Nederlandse kwantitatieve ER bij volwassenen. Tot slot kan gesteld worden dat het duidelijk erg belangrijk is om zich ervan bewust te zijn of impliciete of expliciete kennis getest wordt. Het testen van expliciete kennis vertroebelt wellicht het inzicht in de werkelijke kennis met betrekking tot het Nederlandse voornaamwoord ER.
Curriculum Vitae

Sanne Berends was born in Emmen, The Netherlands, on July 26th, 1985. In 2003 she graduated from the Esdal College in Emmen. Subsequently, Sanne graduated in 2008 from the University of Groningen with a bachelor’s degree in Spanish linguistics. She had carried out a large part of the third year at the Universidad de Granada, Spain. She successively started the regular master Applied Linguistics and the research master Linguistics, also at the University of Groningen. During these years, she had been a research assistant in various linguistics projects, supervised by dr. Van Hout, prof. dr. Hendriks, and dr. De Swart. Because of these three research assistantships, Sanne gained much experience in the experimental field of (child) linguistics. She graduated from the regular master in 2010 and from the research master in 2012, and followed up her (research) master studies with a research assistant position for two years at the universities of Leeds and Manchester. She focused on topics pertaining to child bilingualism, including linguistic- and cognitive development. In 2014 she successfully closed this project and started as a PhD candidate at the University of Amsterdam, which she combined with teaching activities. A research stay at the University of Massachusetts (2017) was also part of her PhD. This dissertation is the result of Sanne’s PhD research.