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Overt, covert, and clandestine operations: Ambiguity and ellipsis in acquisition

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Abstract

One of the major challenges on the path to becoming an adult speaker arises from ambiguous sentences – sentences that are in principle compatible with multiple interpretations. In this chapter, I review experimental evidence from a series of studies run with children age four to six years, focusing on three cases of sentential ambiguity. The first is the case of ambiguity of question-answer relations arising from the interaction of *wh*-phrases and universal quantifiers. The second is ambiguity resulting from covert movement of a quantificational phrase yielding different interpretations of verb phrase ellipsis. The third is the interpretation of comparative constructions involving pronominal reference. In each instance, a successful interpretation depends on one or more successful abstract syntactic-semantic *operations*, for which the child must deploy special forces. But as history tells us with such operations outside of the grammar, not every operation is a success, and failures (in this case, retrieval of a non-target interpretation, or the generation of interpretations beyond the target one), can either indicate the child's developing linguistic capacity or the extent to which the range of possibilities presented by the adult grammar may have been underestimated.

1. Introduction

My goal in this paper is to draw from three separate lines of language acquisition research to present evidence for the presence of abstract syntactic-semantic operations in child language. These lines of research collectively demonstrate how children arrive at interpretations of (uncontroversially or potentially) ambiguous sentences in which some sort of movement has taken place – whether signaled on the surface or not. They therefore provide a window into the structure of the child grammar. But where the range of interpretations that children are able to access does not align with that of adults, we are also presented with evidence bearing on the composition of the adult grammar.

I have chosen to adopt terminology from special forces operations to refer to these three lines of evidence (*overt*, *covert*, and *clandestine* operations) – not because I want to draw special attention to the U.S. Department of Defense or think this organization should be connected in any way to language acquisition research – but because each line of research illustrates at least one of these types of operations, metaphorically speaking, and this terminology becomes rather useful when categorizing and referring to each of these lines of research. I will begin the paper with an introduction to the terminology, and how it applies to certain linguistic phenomena that will form the core of our three target case studies. I will then identify and review each of these case studies in turn, and then close by connecting them together and summarizing what they reveal collectively about the child and adult grammars.

2. Terminological background and selected case studies

Let me first define the terms *overt*, *covert*, and *clandestine* operations, and then describe how this terminology might apply to particular cases in language, which will feed into our case studies in language acquisition.

2.1. Overt operation

An *overt* operation is an operation conducted openly and without concealment; there's no doubt about what happened, who did it, or why. You know the shape of the operation and the forces involved, even if you don't know all the details, and even if the sponsor or operator takes great measures to maintain security and secrecy prior to and during the operation.

This is the *modus operandi* of *wh*-movement. You know it happened and you know who (or what) was responsible, because the *wh*-word was displaced, as illustrated in the questions in (1). In each, the *wh*-word is underlined, and its base position is signaled with a trace (*t*).

1. a. Where did the 2008 Summer Olympics take place *t*?
- b. What was the nickname of the 2012 USA female Olympics gymnastics team *t*?

Now, perhaps we do not know all of the details of what went on behind the scenes, because there is no trace of that on the surface (at least in English). But it is clear that *wh*-movement has taken place, because (a) the *wh*-word is no longer in its base position, and (b) the illocutionary force of the sentence is a question, not an assertion as signaled by a declarative statement.

2.2. Covert operation

A *covert* operation is one that is planned and executed in a way as to conceal the identity of, or permit plausible denial by, the sponsor. In a military covert operation, emphasis is placed on the concealment of the identity of the sponsor, rather than concealment of the operation itself. Thus, you have evidence that the operation took place, but cannot say who was responsible.

There are two kinds of covert operations represented in the research presented here. The first is Quantifier Raising (QR) of a quantificational phrase (QNP), as shown in (2).

2. Aly's gold-winning floor routine impressed everyone in the audience.

In a Generative framework, a QNP must raise covertly from its base position for reasons of type mismatch (i.e., because it is the wrong semantic type to compose with the transitive verb taking it as an argument) (Heim & Kratzer, 1998). This covert movement shares many of the same features with *wh*-movement in terms of the path of movement through the structure, but the QNP is not noticeably displaced from its origin. Thus, a listener cannot tell that the QNP has been displaced in the representation; evidence that the operation has taken place is simply that the sentence is interpretable.

A QNP may also move covertly to take ‘scope’ at a different level of the representation (Fiengo & May, 1994; May, 1977, 1985, 1988), motivated by the possibility of generating a new interpretation (Fox 1995a, 2000), as in (3). Here, the QNP *every gymnast* in object position interacts scopally with the indefinite *a reporter* in subject position to generate two different interpretations, based on whether it takes ‘narrow’ or ‘wide’ scope with respect to the indefinite.

3. A reporter interviewed every female gymnast that competed in the 2012 Olympics.
- a. indefinite > QNP: one reporter (the same one) interviewed every gymnast
 - b. QNP > indefinite: every gymnast was interviewed by a (possibly different) reporter

The fact that there is a QNP in a sentence should be a relatively reliable indicator that a covert movement operation has taken place, since QR is obligatory to resolve type mismatch. However, one might ask who is harboring this displaced quantificational fugitive? That is, where did the QNP land when it raised? To know the answer to this question is to know something about the scope of the QNP and the possible interpretations of the sentence in which it occurs.

QR is also implicated in many sentences that do not have an overt quantifier such as *every*. For example, in comparative constructions such as the one in (4), what is being compared is the degree to which each gymnast’s score was high, and each gymnast’s score can be

represented as a set of degrees d such that it is d -high. The degree phrase headed by the *-er* morpheme is taken to be a degree quantifier, which is claimed to obligatorily raise via QR to make the sentence interpretable.

4. The score Aly earned on the floor routine was higher than Jordyn's score.

Thus, the set of degrees representing Jordyn's score was exceeded by (or was a subset of) the set of degrees representing Aly's score, as represented in (5) (Hackl, 2000; Heim, 1985; a.o.).

5. [-er than Jordyn's score ~~was d -high~~]₁ [the score Aly earned...was d_1 -high]

The second type of covert operation is Verb Phrase Ellipsis (VPE). This is situation where an entire VP has been elided. You therefore know that the operation has taken place, because the sentence lacks an overt VP, but also because the absence of this VP on the surface may be signaled by a word such as *did* on the surface, as in (6), which should be interpreted in the same way as its antecedent, the underlined VP preceding it (Hankamer & Sag, 1976) (or at least highly similar way, allowing for possible mismatches in active/passive voice).

6. Shawn won four medals and Dominique *did*, too.

As with QR, there is, however, an open question of what the scope of this operation was. If there are multiple possible antecedent VPs embedded in each other, as in (7), then there is an open question about which VP serves as the antecedent. As a result, the sentence is ambiguous.

7. Shawn [wanted to [win four medals]], just like Dominique *did*.

did = [wanted to win four medals] or [won four medals]?

QR and VPE interact in a construction known as Antecedent-Contained Deletion (ACD), illustrated in (8a). In this construction, the site of VPE (again, signaled by *did*) is contained within its antecedent VP (*competed...*).

8. a. Aly [competed in [every event that Gabby *did*]].

- b. Aly [every event that Gabby *did*] [competed in *t*].
- c. Aly [every event that Gabby *competed in*] [competed in *t*].

The way to resolve this situation is for the QNP in which the VPE appears to raise out of this antecedent via QR, so that the VPE can be resolved (Fiengo & May, 1994; Fox, 2000; Kennedy, 1997; Merchant, 2000). There are independent reasons to think that the QNP lands in a position below the subject, as shown in (8b) (Fox 1995b; Merchant, 2000). Once the QNP has raised out of the antecedent, it can copy in the information from the antecedent to be interpreted similarly, as in (8c).

However, there may still be an open question as to the landing site of the QNP, especially when the VPE is embedded in multiple antecedents. The QNP could raise out of just the lower VP or the higher VP as well. As a result, a sentence such as (9) is ambiguous, as indicated by the two interpretations below it.

- 9. Shawn [wanted to [win [every event that Nastia *did*]]].
 - a. *Embedded*: For every event that Nastia *won*, Shawn also wanted to win that event.
 - b. *Matrix*: For every event that Nastia *wanted to win*, Shawn also wanted to win that event.

2.3. Clandestine operation

A *clandestine* operation differs from a covert operation in that it is done in complete secrecy. It is planned and executed in such a way as to conceal the *operation itself*, rather than just the identity of the *sponsor*. Clandestine missions leave no trace that the operation ever happened. If and when you somehow realize that they have happened, it's too late.

To my knowledge, this terminology is not actively used in linguistics, as the other two terms are (for movement operations). However, there is a situation where it seems to me that this

term could apply: the case of a pronoun in a site of (VP) ellipsis. Because the pronoun is contained in elided material, it is not pronounced. Unlike the entire VP, whose presence may be signaled by a word such as *did* or *does*, the pronoun – because it is contained in the VP – is not signaled by any specific lexical item. Nevertheless, it is interpreted along with the rest of the elided material, based on a relation with the overt material. However, the pronoun could stand in different identity relations with the overt material, as illustrated in examples (10) and (11).

10. Kyla_i waved to her_i mother, and Jordyn_j did {wave to her_{i/j} mother}, too.

11. The person who gave Gabby_i a medal congratulated her_i, and the one who gave McKayla_j a medal did {congratulated her_{i/j}}, too.

In both of these examples, the pronoun can be interpreted in one of two ways. Under the first interpretation, the pronoun can stand in a ‘strict’ identity relation with the overt pronoun (the anaphor) in the VP antecedent, and be interpreted precisely as the overt pronoun is, referring back to the previous name. Both pronouns then would share the same index. In (10), both pronouns would make reference to Kyla, and in (11), both would make reference to Gabby.

Under the second interpretation, the elided pronoun is not interpreted in a way that is identical to the pronoun in the VP antecedent, but is similar in some features (e.g., gender) and is coindexed with another entity. In this case, the identity relation is termed ‘sloppy’ (Fiengo and May, 1994; Reinhart, 1983; Ross, 1967; Sag, 1976). Each pronoun, then, would bear its own index, and would be linked to a different name. In (10), the first pronoun would be linked to Kyla and the second to Jordyn, and in (11), the first would be linked to Gabby and the second to McKayla.

One way to account for this difference is to posit that when the VP is copied into the site of ellipsis, either the original pronoun is copied in (resulting in strict identity), or else a variable

is copied in (allowing for sloppy identity to arise). However, there is no way of knowing what operation took place in the ellipsis site, since the material is elided, and there is no cue on the surface about which interpretation is favored. The listener would have to reconstruct the most plausible interpretation based on the discourse context – and even then may not get it right.

2.4. Three case studies

The three lines of research I will present in this paper collectively cover these three types of operations (overt, covert, and clandestine), and implicate the specific linguistic phenomena described above: *wh*-movement, QR, VPE, comparatives, and pronominal reference in ellipsis. In each instance, a successful interpretation depends on a successful operation, for which the child must deploy so-called special forces. Thus, children's successful interpretations of sentences implicating these operations reveal that children must be appealing to abstract syntactic-semantic operations in their grammar in order to arrive at a particular meaning.

But as history tells us outside of language, not every special forces operation is a success, and in this domain, not every interpretation is a success. When the child's interpretation diverges from the adult interpretation, we are left with the question of why this is the case. A failure to retrieve the target interpretation, or the ability to generate those beyond the intended one, can either reflect the child's developing grammar or processing capability, or the possibility that the range of possibilities presented by the adult grammar may have been underestimated. Thus, to the extent that children's interpretations either converge with or diverge from those of adults, we can better understand the path of language development and the nature of the adult grammar. Combined, these three case studies shed light on both child and adult language, and illustrate the value of language acquisition research for further understanding the grammar.

The first case study, illustrating both overt and covert operations, involves the possible

answers available in response to questions involving the interaction of a *wh*-phrase and a universal quantifier, as shown in (12a-b).

12. a. Which musical piece did [every/each] gymnast select?
b. Which gymnast performed [every/each] routine?

(12a) is said to allow for both a single answer (the one musical piece all of the gymnasts selected) and a ‘pair-list’ answer (a list of musical piece-gymnast pairings), while (12b) is said to allow for only a single answer (the one gymnast) (Agüero-Bautista, 2001; Chierchia, 1993; May, 1985, 1988), unless the quantifier is *each* (Beghelli, 1997; Beghelli & Stowell, 1997; Szabolcsi, 1997). The range of children’s answers to such questions – which is a superset of those adults provide in one instance and a proper subset in another – highlights the abstract mechanisms at play in the child grammar and lexical entries for universal quantifiers that are refined over the course of language development.

The second case study, implicating the covert operations of QR and VPE, is the case of embedded ACD, as shown in (13).

13. a. Shawn [wanted to [win [every event that Nastia *did*]]]].
Embedded reading: *did* = win...
Matrix reading: *did* = wanted to win...
b. Shawn [said that she [won [every event that Nastia *did*]]]].
Embedded reading: *did* = won...
Matrix reading: *did* = said that she won...

In (13a), ACD is embedded in a non-finite clause; in (13b), ACD is embedded in a finite, or tensed, clause. While the sentence in (13a) is uncontroversially ambiguous, allowing for both the embedded and matrix readings, the availability of the matrix reading for (13b) has, until recently,

been seen as ruled out, or at the very least deemed highly questionable, because of a boundary introduced by the tensed clause (Farkas 1981; Hornstein, 1994; Larson & May 1990; May 1985). However, the contribution of data presenting children's interpretations of these sentence types, which are subsequently observed in adults as well, has been key to revisiting the influence (or lack thereof) of the tensed clause boundary, the range of possible readings generated by the grammar, and the status of the matrix reading for (13b).

The third case study is comparative constructions involving pronominal reference, as shown in (14a-b).

14. a. More players encouraged him_{i/*j} to talk to Alicia than to Brady_j's teammate.
b. He_{*i/j} gave more attention to the coach than to Brady_j's teammate.

In both (14a-b), there is elided material between the head of the standard phrase signaled by *than* and *to* (roughly, in (14a): [d-players encouraged him to talk], and in (14b): [he gave d-much attention]). And in both instances, there is a pronoun in the site of the ellipsis. This pronoun – even while absent on the surface – stands in a particular syntactic (c-command) relation to the R-expression at the end of the sentence, leading it to be interpreted as not standing in a coreference relation with that individual (Bhatt & Takahashi, 2011; Lechner, 2004).¹ What's more, the elided pronoun should be interpreted in the same way as the overt pronoun preceding it. Interestingly, children appear to be unhindered by these constraints. Thus, there appears to be something

¹ Follow-up psycholinguistic investigations with adults by Gor and Syrett in which prosody has been manipulated reveals that a significant percentage of participants (and I) find (a) acceptable under a co-construal reading, given focus on *Alicia* and *teammate*, thereby giving rise to a so-called 'grammatical illusion' that flies in the face of what structural relations would predict is possible.

happening behind the scenes with these elided pronouns, leading us to question children's representations of these comparative constructions and speculate about how this unpronounced pronoun is being interpreted.

In the sections that follow, I will present these three case studies in turn. For each, I will summarize the theoretical background in slightly more detail than above and present relevant evidence from experimental investigations in child language that speaks to children's interpretation of the target sentences and the nature of the child and adult grammar.

3. Case 1: Questions involving *wh*-phrases and universal quantifiers

3.1. Theoretical background

Our first case of special forces operations in acquisition comes to us from questions in which a *wh*-word interacts with universal quantifier, as shown in (12), repeated here. In (12a), the quantifier is in subject position, while in (12b), it is in object position. This difference in syntactic position is critical for the availability of certain answer types.

12. a. Which musical piece did [every/each] gymnast select?
b. Which gymnast performed [every/each] routine?

As stated earlier, (12a) allows for both a 'single answer' and a 'pair-list answer', as shown in (15).

15. Question: Which song did [every/each] gymnast select?

Single Ans.: song X

Pair-list Ans.: gymnast A selected song X, B selected Y, and C selected Z.

(12b), however, only allows for the pair-list answer when the quantifier is *each*, although some speakers might consider this judgment marginal.

16. Question: Which gymnast performed [every/each] routine?

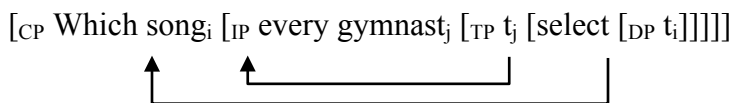
Single Ans.: gymnast X

Pair-list Ans.: gymnast A performed routine X, B performed Y, and C performed Z.

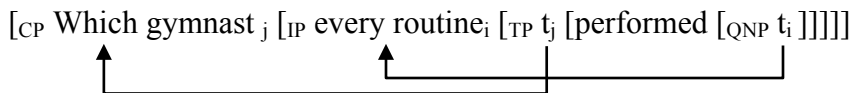
This difference between the subject and object quantifier questions arises, because in order to generate the pair-list reading, the universal quantifier must take scope over the *wh*- phrase. This can happen if the phrase undergoes covert movement via QR to take scope over the *wh*- phrase, as discussed earlier. Thus, children's ability to provide or accept a pair-list answer is evidence of the presence of QR in their grammar. However, as we have also discussed, the *wh*- phrase also moves – overtly and prior to the covert movement – to the specifier of the Complementizer Phrase.

Under one account (May 1985, 1988), the problem is that in the subject quantifier questions, the path of movement of the quantified phrase is nested within the movement of the *wh*- phrase in object position to spec, CP, as shown in (17). However, with the object quantifier questions, the paths cross, as shown in (18).

17. Which song did [every/each] gymnast select?



18. Which gymnast performed every routine?



Under another account (Chierchia, 1993), the problem is not that the paths cross, but rather that the quantified object phrase must cross over the pronominal trace left by the *wh*- phrase, which gives rise to a Weak Crossover Violation (Postal, 1971; Wasow, 1972).

However, this cannot be the whole story, since object quantifier questions do seem to

allow for pair-list answers when the quantifier is *each*. Agüero-Bautista (2001) accounts for this state of affairs by arguing that the QNP headed by *each* QRs to a higher position than one headed by *every* (Beghelli, 1997; Beghelli & Stowell, 1997; Szabolcsi, 1997), a reflection of its strong distributivity (Tunstall, 1998; Vendler, 1992). As a result, the *wh*- phrase in subject position can take scope under the quantifier, even after reconstructing to its base position inside the VP.

So, the state of affairs is this: subject quantifier questions allow both single answers and pair-list answers for both *every* and *each* QNPs, while object quantifier questions allow single answers for both *every* and *each* QNPs but only pair-list answers with *each* QNPs. If children access pair-list answers, they must be accessing a representation in which the quantifier outscopes the *wh*- phrase. Furthermore, if they allow for pair-list answers in certain instances (with subject quantifier questions and with *each* object quantifier questions), but not in other (with *every* object-quantifier questions), then this would demonstrate a knowledge of the structural and lexical factors that influence the availability of certain question-answer pairings.

3.2. Evidence from child language acquisition

Previous research by Roeper & de Villiers (1993) showed that children overproduce pair-list answers in response to both subject and object quantifier questions. However, there is a catch: Roeper & de Villiers had included *who* as the *wh*-phrase in their linguistic stimuli, and since *who* is not marked for number, it could have induced pair-list answers by leaving open the possibility that it referred to a plurality. Moreover, the scenarios employed by Roeper & de Villiers seemed to have made the single answer difficult to access – an observation followed up on in experimental work by Yamakoshi (2002). In turn, Yamakoshi's research highlighted the fact that responses provided by children should be analyzed carefully, as they may be constrained by production and/or subject to a conversational maxim to be concise. That is, responses that are not

complete pair-list answers as in (16) may as yet be (attempts at) pair-list answers and not single answers. Thus, the previous literature had left open the question of whether or not children do in fact overproduce pair-list answers, and whether or not they display a subject-object asymmetry, but had not addressed the question of whether the type of universal quantifier interacting with the *wh*-phrase made a difference on the rate of pair-list answers.

Achimova *et al.* (2013) and Achimova *et al.* (2017) were interested in investigating precisely these questions. In our experimental paradigm, participants (adults and children age four to five) viewed a series of animated stories, each of which was followed by a question about the events that had transpired, posed by a puppet. In each story, there were three characters and three objects. Each of the three characters interacted with one of the objects, and then two moved on separately to interact with one of the two other objects (e.g., friends playing board games, or eating different flavors of ice cream). Target questions were subject and object quantifier questions of the form in (12), presented within a session, and participants were randomly assigned to a condition in which they heard questions with either *every* or *each*. Children's response to the puppet's question was transcribed and analyzed for its status as a single or pair-list answer. Given previous findings that children often do not produce complete pair-list answers, non-single answers were further subcategorized based on whether they were (non-) exhaustive, involved pairings or lists of single entities, or listed the correct or incorrect entities.

Adults consistently produced pair-list answers to subject and object quantifier questions with *each*, but single answers to subject and object quantifier questions with *every* (even though pair-list answers were licensed when the quantifier appeared in subject position). Thus, adults did not exhibit a subject-object asymmetry. However, since they had the choice to respond with either a single or a pair-list answer in some circumstances, a choice to respond with a single

answer with *every* does not mean that a pair-list answer is barred. What is interesting is that the pair-list answer was produced for object-quantifier questions with *each*. The pattern displayed by children was strikingly different: children allowed pair-list answers for both *every* and *each* in subject position, and preferred single answers for all object quantifier questions. Thus, relative to adults, they *overproduced* pair-list answers in response to *every* subject quantifier questions and *underproduced* pair-list answers in response to *each* object quantifier questions.

The emerging picture from Achimova *et al.* (2013) and Achimova *et al.* (2017) is that children are sensitive to the structural position of the quantifier and exhibit a subject-object asymmetry, but do not appear to be sensitive to the type of quantifier – and specifically, its potential requirement of strong distributivity. Thus, they allow the quantifier and *wh*-phrase to interact in the abstract representation in such a way as to license a pair-list answer, interacting with the structural constraints, but lack the lexical knowledge that adults have about differences among universal quantifiers. The path of language development must then involve children enriching the lexical entries for *each* in such a way that not only distinguishes it from *every*, but that means that its strongly distributive nature allows it to give rise to pair-list answers in both subject and object position. The next case study complements this one in illustrating the similarity between children and adults in their syntax-semantics representations.

4. Case 2: Embedded Antecedent-Contained Deletion (ACD)

4.1. Theoretical background

The second case of special forces operations comes from research on embedded ACD as illustrated in (13), repeated here.

13. a. Shawn [wanted to [win [every event that Nastia did]]].

Embedded reading: did = win...

Matrix reading: did = wanted to win...

- b. Shawn [said that she [won [every event that Nastia did]]].

Embedded reading: did = won...

Matrix reading: did = said that she won...

As described above, the QNP *every event that Nastia did* must undergo QR for reasons of type mismatch, but in order for the instance of VPE to be interpretable, the QNP hosting the ellipsis site must raise out of its antecedent in order to be parallel in form to that antecedent and copy in the information provided by the antecedent for interpretation.

In both (13a) and (13b), there are two VPs (one embedded in the other), and therefore (in principle) two possible antecedents. In order to target the matrix VP as the antecedent, the QNP would have to move out of both the embedded and the matrix antecedent so that it is no longer contained in its antecedent. Now, in (13a), ACD is embedded in a non-finite clause, while in (13b), ACD is embedded in a finite, or tensed, clause. The problem that seems to be presented by the latter situation is that the tensed clause has been claimed to present a boundary to covert movement (Farkas 1981; Hornstein, 1994; Larson & May 1990; May 1985). Thus, while in both (13a) and (13b) the embedded antecedent can be targeted, it has been thought that the matrix antecedent can only be targeted in (13a), since in (13b), the QNP cannot escape the matrix VP and therefore cannot target it as an antecedent.

4.2. Evidence from child language acquisition

Syrett and Lidz (2011) were interested in investigating whether children are able to access both the embedded and matrix readings of sentences such as these, with the goal of determining whether children's QR operation was constrained or not. The prediction was that if children can

only target the shortest, or nearest, landing site, then they should only be able to access the embedded reading of such sentences. Under the theoretical assumption that the matrix reading is available for when ACD is embedded in a non-finite clause and not available when it is embedded in a finite clause, the prediction would be that the matrix reading would be available in the former case, but not the latter.

Syrett and Lidz administered a truth value judgment task (Crain & Thornton, 1998) to both adults and children. In each trial, an experimenter acted out a scenario with toys, at the end of which a puppet (who had watched the story unfold alongside the child) delivered a target statement, which the children were asked to evaluate. If the puppet's statement was correct, he was rewarded with his preferred sweet; if it was incorrect, he was given something less desirable. There were two experiments involving embedded ACD. In Experiment 1, participants heard sentences with the structure in (13a); in Experiment 2, they heard sentences similar to (13b). In each, participants were randomly assigned to a condition in which either the embedded or the matrix reading of the target sentence was favored in the story.

In an example story in Experiment 1, Kermit the Frog has two set of cars: an old set he has driving many times and is tired of driving, and a newer set he has just received for his birthday and is not yet allowed to drive. Miss Piggy is interested in his cars, and asks him to drive them. Kermit complains, because in order to oblige, he is stuck driving the old cars, which he does not want to drive. He drives each of these grudgingly. Thus, participants see that there are cars that Kermit drives, but does not want to drive (the old ones), and cars that he wants to drive, but does not drive (the new ones). After Kermit drives the cars, he gives Miss Piggy the choices of which cars she would like to drive. In the condition favoring the embedded VP reading, she expresses an interest in the old cars, and in the condition favoring the matrix VP

reading, she expresses an interest in the new cars. (19) illustrates this difference.

19. Miss Piggy wanted to drive every car that Kermit did.

- a. Embedded VP: *⟨drive⟩*
- b. Matrix VP: *⟨want to drive⟩*

In a minimally different experiment, after Kermit drives the cars, their friend Fozzie Bear expresses an interest in driving a set of cars. They decide to play a game in which Miss Piggy and Kermit will leave for a few minutes, and in their absence Fozzie will drive a set of cars, Miss Piggy and Kermit will return, and they will then guess which cars Fozzie drove. Participants never actually see Fozzie drive any cars. When Miss Piggy and Kermit return, Kermit guesses first, and says that Fozzie drove the cars that Kermit did not drive (the new ones). The two conditions then diverge based on what Miss Piggy guesses. In the condition favoring the embedded VP reading, Miss Piggy guesses that Fozzie drove the cars Kermit drove (the old ones), while in the condition favoring the matrix VP reading, she guesses that he drove the cars that Kermit also guessed that he drove (the new ones). The target sentence and the two possible interpretations are illustrated in (20).

20. Miss Piggy said that Fozzie drove every car that Kermit did.

- a. Embedded VP: *⟨drive⟩*
- b. Matrix VP: *⟨say that Fozzie drove⟩*

Remarkably, Syrett and Lidz found that not only were children able to access both the embedded and matrix reading for (19), but they were also able to do so for (20). Adults also accessed both the embedded and matrix reading for (19), and largely resisted the matrix reading in favor of the embedded reading in (20), but a small cohort of adults did access this reading. Here lies the conundrum: if children are overly permissive in their QR and allow it to move

beyond a tensed clause boundary to access a matrix reading that is barred by the grammar, they are overgenerating interpretations, and producing a superset of those produced by adults. This poses a challenge from the perspective of learnability (Berwick 1985; Gold 1967; Manzini & Wexler 1987; Pinker 1989). At some point, children would have to learn that this reading is ungrammatical, and prune it from their grammar to be more conservative, but what kind of evidence could lead them to filter out a Matrix reading of ACD sentences? How often do they encounter such sentences, and what would be the universally available evidence for this shift? This pattern of results lead Syrett and Lidz to entertain the possibility that there is not, in fact, an arbitrary clause-boundedness constraint on QR.

This possibility was pursued in subsequent work exclusively targeting adult participants, in order to probe the availability of the matrix reading of sentences in which ACD was embedded in a finite clause, which should impose a barrier to movement, if previous theoretical claims are correct. Already, however, there was a hint that this might not be the case, for reasons reviewed in Syrett (2015a, b). Syrett (2015b) administered an experiment that was similar in design to those with a finite clause presented in Syrett and Lidz (2011), with a few key changes in design. First, since the experiment was geared towards adults, participants were presented with animations on slides, rather than toys (still accompanied by narration). Second, the sentences were modified in order to facilitate the processing of them: the complementizer preceding the embedded clause was removed, and a pronoun appeared as the embedded clause subject instead of a proper name, as shown in (21).

21. Woody said ø he jumped over every frog that Jessie did

Finally, and crucially, elements of the discourse signaled the focus on the reporting (i.e., what the characters guessed), rather than the actual actions (e.g., the jumping events).

This time, and in two separate experiments, adults robustly accessed the matrix reading of the target sentences. While the rate of accessing this reading was as low as 37% in some trials, it was high as 95% in others. Indeed, across the majority of cases, adult participants accessed the matrix reading, and provided unambiguous justifications for why they did so, in the context of the story. These findings were elaborated upon as Syrett (2015a) pushed the boundaries even further, investigating whether adults could not only allow the QNP to raise out of the matrix VP, but travel even further to scope over an indefinite in subject position, as in (22) – a possibility spelled out in theoretical work by Cecchetto (2004).

22. Someone said \emptyset he could jump over every frog that Jessie did

Here, too, adults demonstrated a robust ability to access the reading that would require the QNP to have raised out of the matrix VP to take scope not only over the matrix verb, but also the indefinite subject. It appears that the manipulations of the linguistic stimuli (i.e., the lack of complementizer and type of embedded subject), and the structured support for the matrix and extra wide scope readings in their respective discourse contexts influenced the accessibility of these readings for adults, who might otherwise be constrained by reasons of economy to raise the QNP only as far as it would need to go to generate a licensed interpretation (i.e., perform the ‘shortest move’) (Fox, 1995a, 2000).

Thus, what started as a query into the nature of QR in the child grammar transformed into a series of experiments in which robust empirical evidence indicated that we should abandon the assumption that there is an arbitrary boundary imposed by tense preventing QR out of a finite clause. Thus, it appears that the covert operations launched in the child grammar are highly similar in nature to those in the adult grammar, and there is no learnability challenge to be addressed. Here, the judgments of four-year-olds prompted a series of experiments resulting not

only in a simplified picture of language acquisition, but also a better understanding of the adult grammar.

The third case study, however, does just the opposite. It highlights a situation in which children unexpectedly diverge from adults in the interpretations they access, and demonstrate that there may be a clandestine operation available in their grammar, which they perform, which adults are not performing in the same sentences. But of course, since this is a clandestine operation, the evidence for it is not immediately apparent, because it is very cleverly orchestrated behind the scenes.

5. Case 3: Pronominal reference in comparatives

5.1. Theoretical background

The third case study thus brings us to evidence for a clandestine operation: one where you have no idea that it is being carried out, or by whom. Such a case comes to us from children's interpretations of comparative constructions involving pronominal reference, as in (23). In each of these examples, there is a pronoun in the matrix clause. In (a) and (b), it appears in the object position, and in (c), it appears as the subject.

23. a. More blocks connected **him**_{i*/j} to Minnie than to Flynn_i's horse.
b. Nemo delivered more presents from **him**_{i*/j} to Flounder than to Eric_i's dog.
c. **She**_{*i/j} gave more cones to Winnie-the-Pooh than to Sleeping Beauty_i's godmother.

As is common in comparatives, there is material elided in the standard clause, as is (albeit roughly) illustrated in (24). The content of this elided material is crucial for the interpretation of the comparative construction.

24. a. More blocks connected **him**_{*i/j} to Minnie than

[blocks connected **him**_{=matrix him}] to Flynn_i's horse

b. Nemo delivered more presents from **him**_{*i/j} to Flounder than

[Nemo delivered presents from **him**_{=matrix him}] to Eric_i's dog.

c. **She**_{*i/j} gave more cones to Winnie-the-Pooh than

[**she**_{=matrix she} gave cones] to Sleeping Beauty_i's godmother.

In each of these instances, the position of the pronoun in the elided clause is such that it 'c-commands' the name (R-expression) in the standard clause. This relation prevents the pronoun and the R-expression from being coreferential, since the R-expression cannot be bound by a pronoun c-commanding it (Chomsky, 1981; Lasnik, 1976; Reinhart, 1976). That is not the case with the sentences in (25), since the elided pronoun does not c-command the R-expression.

25. a. More lambs walked from Belle to **him**_{i/j} than

[lambs walked] from Harris_i's brother [to **him**_{=matrix him}].

b. King Triton gave more lizards to **her**_{i/j} than

Olivia_i's mother [gave lizards to **her**_{=matrix her}].

In addition, as indicated in each instance above, the pronoun in the elided standard material should be interpreted in exactly the same way as the pronoun in the matrix clause.

Now, this is not always the case with pronouns appearing in ellipsis. In the case of VPE in which a pronoun appears, there is the possibility of either strict or sloppy identity, as shown in (26).

26. Olivia_i gave a present to her_i mother, and Minnie_j did, too.

a. strict identity: ...and Minnie_j gave a present to her_i mother, too

b. sloppy identity: ...and Minnie_j gave a present to her_j mother, too

It is not entirely clear what disallows similar 'sloppy' reference in the case of the comparative

constructions above. It is the case that the structures in (24) differ from those typically appealed to in order to illustrate the phenomenon of sloppy identity; in the latter, the R-expression binds the pronoun, as in (26). In addition, in (24) and (25), there is no ‘functional’ relationship, as there is in (26) for ‘mother of x’. However, even when both do hold, there is still a strong preference at least that the pronouns be interpreted parallel, which seems to be stronger when the VPE is *not* overtly signaled in the sentence, as shown in (27).

27. a. Olivia_i gave more presents to her_i mother than Minnie.
b. Olivia_i gave more presents to her_i mother than Minnie did.

Regardless of whether or not the two pronouns *must* always be interpreted the same way in any or all of these cases, the examples in (23) and (25) make it clear that this phenomenon goes beyond classical instances of sloppy identity, and that the pronoun absolutely cannot be interpreted as freely as it might in other cases of elided content. Returning to the issue of learnability, it is also not clear what would indicate to children acquiring language that such ‘sloppy’ reference is allowed with VPE but something like that is not in these other comparatives. In fact, this is precisely the puzzle that arises when we consider the results of an experiment conducted by Gor & Syrett (2015) with children and adults.

5.2. Evidence from child language acquisition

Gor and Syrett (2015) were initially interested in determining whether children and adults performed as predicted by the theoretical literature and rejected coreference in sentences where the elided pronoun c-commands the R-expression in the standard. However, an unexpected pattern surfaced in the behavioral responses of the child participants in our experiments, which bears on how the elided material was interpreted. We will therefore focus less here on the results that bear on the question of c-command and coreference (although we will give a nod to them),

and instead pay closer attention to the pattern of responses that bears on the interpretation of the elided pronoun and whether it would be coindexed with the overt pronoun.

To determine how children (age four and a half to six) and adults interpret the target sentences in (23) and (25) above, and whether structural constraints guided these interpretations, Gor and Syrett administered an experimental task incorporating an act-out procedure. Each test trial was set up as a truth value judgment task right up until the delivery of the target sentence. One experimenter set some props on the table in front of the participant, and told a brief story about them. A puppet (played by a second experimenter) watched the story alongside the child. Each set of props and each story involved four characters, two of whom were intended to be made salient as possible referents for the pronoun appearing in the target sentence. At the end of the story, the experimenter delivered the target sentence. Then, instead of having the participant assess the truth value of the proposition expressed by this utterance in the context, the puppet repeated the target sentence, and asked the child to configure the props so that they made the target sentence true. (Adults only interacted with an experimenter, not a puppet.)

For example, for sentence (23c) repeated here as (28), the story involved the friends Sleeping Beauty and Hello Kitty who had some toy cones, which they decided to distribute to Winnie-the-Pooh and Sleeping Beauty's godmother. There were therefore two salient candidate antecedents for *she* (Sleeping Beauty and Hello Kitty).

28. She_{*i/j} gave more cones to Winnie-the-Pooh than to Sleeping Beauty_i's godmother.
Because of the structural c-command relation in the sentence, *she* and *Sleeping Beauty* cannot be coreferential, since the pronoun in subject position c-commands the R-expression in the standard, so *she* must be coreferential with Hello Kitty, and not with Sleeping Beauty. Since the elided pronoun must be interpreted in the same way as the overt pronoun, the elided *she* should be also

interpreted as Hello Kitty. Thus, the scene acted out in the end should have it so that Hello Kitty gives more cones to Winnie-the-Pooh than she gives to Sleeping Beauty's godmother.

Unexpectedly, across trials and a significant percentage of the time, children – but not adults – acted out the final scene so that both Sleeping Beauty and Hello Kitty gave out their cones, and the number of cones that Hello Kitty gave to Winnie-the-Pooh was greater than the number that Sleeping Beauty gave to her godmother, or in a way that the number of cones that Sleeping Beauty gave to Winnie-the-Pooh was greater than the number that Hello Kitty gave to Sleeping Beauty's godmother (an configuration that was surprising, since it violates c-command constraints)). In some cases, when props were re-set, and children were asked to act out the sentence again, they provided clear justifications as they placed the props on the table in a particular configuration, indicating that the interpretation they were accessing was similar to the one captured in (29) or (30).

29. She=_{Hello Kitty} gave more cones to Winnie-the-Pooh than
[she=_{Sleeping Beauty} gave cones] to Sleeping Beauty's godmother.

30. She=_{Sleeping Beauty} gave more cones to Winnie-the-Pooh than
[she=_{Hello Kitty} gave cones] to Sleeping Beauty's godmother.

Indeed, as Gor and Syrett noted, this response pattern was not rare by any means: 19 of the 26 child participants acted out such a scene at least once out of the five test trials. The adults did not do so.

In a follow-up experiment with 18 new children, the experimenters modified the story slightly so that it was clear that only one of the two characters should be distributing the cones (or performing whatever action was indicated in the story). Still, approximately half of the children still provided what Gor and Syrett have termed the 'two-giver response'. That is, even

though the story made clear that only *one* of the two girls should distribute the cones, children still made *both* characters do so, and compared the quantities across the two instances of giving by different givers to different recipients.

Had we not administered an act-out task, we never would have known that such an interpretation of these sentences existed. Linguistic theory would not have led us to predict this response pattern. Moreover, without a methodology such as this, many other frequently-used methodologies in child language research would have masked this response pattern. A forced choice task that targets c-command as a contributor to coreference constraints would have compared two scenes to determine the referent for the pronoun (one in which Sleeping Beauty gave more cones to Winnie-the-Pooh than to her Godmother and another in which Hello Kitty gave more cones to Winnie-the-Pooh than to Sleeping Beauty's Godmother), and never would have included the 'two-giver' scene as an option. Even if it had, if children had selected one of the other scenes instead of this one, that would not tell us that this interpretation was unavailable – just that it was dispreferred relative to the other scenes. A truth value judgment task would have favored the ungrammatical response (Sleeping Beauty giving more cones to Winnie-the-Pooh than to her Godmother) in order to elicit rejections from the children, and also never would have involved the two-giver scene as a comparison of quantities *across* rather than *within* subjects. Appealing to the terminology of this chapter, one could say that we would have had no idea that children are capable of conducting such a clandestine operation, had we not convinced them to leak their intelligence in an act-out task.

In this case study, we have thus observed children accessing an unexpected interpretation relative to the adult grammar, leading us to ponder exactly what the nature of their representation is, and how they arrive at the adult state. The question arising from the pattern exhibited by the

children is what allows their grammar to generate such a response. Gor and Syrett entertained one possibility: that instead of a coindexed *pronoun* in the elided material, children's representation instead has a *function* in this slot, mapping individuals to individuals, each represented by a variable. Such a representation, modeled after cases of functional, or E-type, pronouns (Evans 1977, 1980; Elbourne 2001, 2005; Heim, 1990), would allow the interpretation of the recipient to co-vary with the giver. Thus, the situation is similar in interpretational output to sloppy identity, but does not arise for the same reasons. If indeed children are accessing such a representation, we must ask what prompts the developmental shift in the interpretation of pronouns, and what bars such functional pronouns and 'sloppy' reference in the adult representation.

6. Conclusion

I began this paper by appealing to terminology from U.S. special forces – overt, covert, and clandestine operations – in order to discuss a particular set of case studies from child language studies that employ one or more of these operations. My goal was to demonstrate that investigating how these operations are carried out in the child grammar is beneficial not only from the point of language acquisition, but also from the point of better understanding the adult grammar (the end state).

The first case study was an investigation into whether children produce single or pair-list answers in response to *wh*-questions involving a universal quantifier – sentences that involved both overt and covert operations. There we saw that children demonstrate an expected structural subject-object asymmetry in their response pattern and that adults allowed pair-list answers not only with subject quantifier questions, but also those with *each* as the object quantifier. Both findings are in line with the theoretical predictions. Where children diverged from adults,

however, was in the treatment of *each*, where they undergenerated pair-list answers. Thus, we learned that children's lexical representations of this quantifier are not yet adult-like in this realm.

The second case study was an investigation of children's ability to access multiple interpretations of sentences with ACD embedded in either a non-finite or finite clause – sentences involving multiple covert operations. Children's ability to access seemingly ungrammatical interpretations posed a learnability problem, prompting further investigations into adult interpretations. Those subsequent experiments revealed that adults, too, access such interpretations, thus leading to revisiting the state of the relevant theory and the status of supposed constraints on movement. The combined pattern of responses across children and adults presents a more fine-grained picture of the adult grammar and a more parsimonious description of the path of language development.

The final case study was an investigation of children's interpretation of comparative constructions featuring an elided pronoun that stood in a particular relation to an R-expression in the standard clause – sentences that involved covert and clandestine operations. Here, children demonstrated an ability to access a rather unexpected interpretation, leading us to ask how they represent elided material, and how they could come to be adult-like. Unlike the last case study, these results *do* pose a learnability puzzle: how do children come to represent elided pronouns correctly, and impose limits on 'sloppy' reference or functional interpretation?

Combined, these studies illustrate two main take-away points. First, there are abstract grammatical mechanisms at work in children's grammar, which allow them to generate a host of interpretations. These mechanisms, which appear to be largely adult-like, interact with other lexical and structural material. Second, experiments in language acquisition have value beyond

determining the nature of the child grammar and the path of language development. They can also lead to a better understanding of the adult grammar, and our linguistic competence.

References

- Achimova, A., Syrett, K., Musolino, J., Déprez, V. (2017). Children's developing knowledge of *wh*-/quantifier question-answer relations. *Language Learning and Development*, 13, 80-99.
- Achimova, A., Crosby, C., Déprez, V., Syrett, K., & Musolino, J. (2013). Which account of *wh*-/quantifier interaction should everyone adopt? A new take on a classic developmental puzzle. In Sarah Baiz, Nora Goldman, and Rachel Hawkes (Eds.), *Proceedings of the 37th Annual Boston University Conference on Language Development* (pp. 1-12). Somerville, MA: Cascadilla Press.
- Agüero-Bautista, C. (2001). *Cyclicity and the scope of wh phrases*. Unpublished doctoral dissertation. MIT, Cambridge, Massachusetts.
- Beghelli, F. (1997). The syntax of distributivity and pair-list readings. In A. Szabolcsi (Ed.) *Ways of scope taking* (pp. 349-408). Dordrecht: Kluwer Academic Publishers.
- Beghelli, F. & Stowell, T. (1997). Distributivity and negation. In A. Szabolcsi (Ed.) *Ways of scope taking* (pp. 71-107). Dordrecht: Kluwer Academic Publishers.
- Berwick, R. C. (1985). *The acquisition of syntactic knowledge*. Cambridge, MA: MIT Press.
- Bhatt, R. & Takahashi, S. (2011). Reduced and unreduced phrasal comparatives. *Natural Language and Linguistic Theory*, 29, 581-620.
- Cecchetto, C. (2004). Explaining the locality conditions of QR: Consequences for the theory of phases. *Natural Language Semantics*, 12, 345-397.

- Chierchia, G. (1993). Questions with quantifiers. *Natural Language Semantics*, 1, 181-234.
- Chomsky, N. (1981). *Lectures on government and binding*. Dordrecht: Foris.
- Crain, S., & Thornton, R. (1998). *Investigations in Universal Grammar: A guide to research on the acquisition of syntax and semantics*. MIT Press: Cambridge, Mass.
- Elbourne, P. (2001). E-Type anaphora as NP-deletion, *Natural Language Semantics*, 9, 241-288.
- Elbourne, P. D. (2005). *Situations and individuals* (Vol. 90). Cambridge, Mass: MIT Press.
- Evans, G. (1977). Pronouns, quantifiers, and relative clauses (I). *Canadian journal of philosophy*, 7(3), 467-536.
- Evans, G. (1980). Pronouns. *Linguistic Inquiry*, 11, 337-362.
- Farkas, D. (1981). Quantifier scope and syntactic islands. In R. A. Hendrick, C. S. Masek, and M. F. Miller (Eds.), *Papers from the Seventeenth Regional Meeting of the Chicago Linguistic Society* (pp. 59-66). Chicago: University of Chicago, Chicago Linguistic Society.
- Fiengo, R., & May, R. (1994). *Indices and identity*. Cambridge, MA: MIT Press.
- Fox, D. (1995a). Economy and scope. *Natural Language Semantics*, 3, 283-341.
- Fox, D. (1995b). Condition C effects in ACD. In Rob Pensalfini and Hiroyuki Ura (Eds.), *Papers on minimalist syntax* (pp. 105-120). MIT Working Papers in Linguistics 27. Cambridge, MA: MIT Working Papers in Linguistics.
- Fox, D. (2000). *Economy and semantic interpretation*. Cambridge, MA: MIT Press.
- Gold, E. M. (1967). Language identification in the limit. *Information and Control*, 10, 447-474.
- Gor, V., & Syrett, K. (2015). Picking up after sloppy children: What pronouns reveal about children's analysis of English comparative constructions. In Elizabeth Grillo and Kyle Jepson (Eds.), *Proceedings of the 39th Annual Boston University Conference on*

- Language Development* (pp. 191-203). Somerville, MA: Cascadilla Press.
- Hackl, M. (2000). *Comparative quantifiers*. Unpublished Doctoral Dissertation, MIT.
- Hankamer, J., & Sag, I. 1976. Deep and surface anaphora. *Linguistic Inquiry*, 7, 391-428.
- Heim, I. (1985). Notes on comparatives and related matters. Ms., University of Texas, Austin.
- Heim, I. (1990). E-type pronouns and donkey anaphora. *Linguistics and Philosophy*, 13, 137-177.
- Heim, I., & Kratzer, A. (1998). *Semantics in generative grammar*. Oxford: Blackwell.
- Hornstein, N. (1994). An argument for minimalism: The case of antecedent-contained deletion. *Linguistic Inquiry*, 25, 455-480.
- Kennedy, C. (1997). Antecedent-contained deletion and the syntax of quantification. *Linguistic Inquiry*, 28, 662-688.
- Larson, R., & May, R. (1990). Antecedent containment or vacuous movement: Reply to Baltin. *Linguistic Inquiry*, 21, 103-122.
- Lasnik, H. (1976). Remarks on coreference. *Linguistic Analysis*, 2, 1-21.
- Lechner, W. (2004). *Ellipsis in comparatives*. Berlin: Mouton de Gruyter.
- Manzini, M. R., & Wexler, K. (1987). Parameters, binding theory, and learnability. *Linguistic Inquiry*, 18, 413-444.
- May, R. (1977). *The grammar of quantification*. Unpublished doctoral dissertation, MIT, Cambridge, MA.
- May, R. (1985). *Logical form: Its structure and derivation*. Cambridge, MA: MIT Press.
- May, R. (1988). Ambiguities of quantification and *wh*: A reply to Williams. *Linguistic Inquiry*, 19, 118-135.
- Merchant, J. (2000). Antecedent-contained deletion in negative polarity items. *Syntax*, 3, 144-

150.

- Pinker, S. (1989). *Learnability and cognition: The acquisition of argument structure*. Cambridge, MA: MIT Press.
- Postal, P. M. (1971). Remarks on weak crossover effects. *Linguistic Inquiry*, 24, 539-556.
- Reinhart, T. (1976). *The syntactic domain of anaphora*. Doctoral dissertation, MIT. Cambridge, Mass.
- Reinhart, T. (1983). Coreference and bound anaphora: A restatement of the anaphora questions. *Linguistics and Philosophy*, 6, 47-88.
- Roeper, T. & de Villiers, J. (1993). The emergence of bound variable structures. In E. Reuland & W. Abraham (Eds.), *Knowledge and Language, Volume 1, from Orwell's Problem to Plato's Problem* (pp. 105-139). Dordrecht: Kluwer.
- Ross, J. R. (1967). *Constraints on variables in syntax*. Unpublished Doctoral Dissertation, MIT.
- Sag, I. 1976. *Deletion and Logical Form*. Unpublished Doctoral Dissertation, MIT.
- Szabolcsi, A. (1997). Quantifiers in pair-list readings. In A. Szabolcsi (Ed.), *Ways of scope taking* (pp. 349-408). Dordrecht: Kluwer Academic Publishers.
- Syrett, K. (2015a). Experimental support for inverse scope readings of finite-clause embedded Antecedent-Contained Deletion sentences. *Linguistic Inquiry*, 46, 579-592.
- Syrett, K. (2015b). QR out of a tensed clause: Evidence from Antecedent-Contained Deletion. *Ratio Special issue: Investigating Meaning* (Ed. by N. Hansen and E. Borg), 28, 395-421.
- Syrett, K., & Lidz, J. (2011). Competence, performance and the locality of Quantifier Raising: Evidence from 4-year-old children. *Linguistic Inquiry*, 42, 305-337.
- Tunstall, S. L. (1998). *The Interpretation of quantifiers: Semantics and processing* (Doctoral dissertation). University of Massachusetts, Amherst.

- Vendler, Z. (1962). Each and every, any and all. *Mind: A Quarterly Review of Psychology and Philosophy*, vol. LXXI, 145-160.
- Wasow, T. (1972). *Anaphoric relations in English*. Doctoral dissertation, MIT. Revised version published in 1979 as *Anaphora in Generative Grammar*. Ghent: Story-Scientia.
- Yamakoshi, K. (2002). The acquisition of *wh/every* interaction in English. In B. Skarabela, S. Fish & A.H.-J. Do (Eds.) *Proceedings of the 26th Annual Boston University Conference on Language Development (BUCLD)*, (pp. 769-780). Somerville, MA. Cascadilla Press.