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Almost Again: On the Semantics and Acquisition of Decomposition Adverbs

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Almost Again: On the Semantics and Acquisition of Decomposition Adverbs

Ting Xu, PhD

University of Connecticut, 2016

This dissertation investigates the adverbs ‘again’ and ‘almost’. These adverbs can “look inside” a predicate and modify just the result state. Sentence-final *again* modifying a complex predicate is ambiguous between a repetitive and a restitutive reading; *almost* modifying a complex predicate is ambiguous between a counterfactual and scalar reading. Chapter 2 examines *you* ‘again’ in Mandarin Chinese. Many researchers have argued that the repetitive vs. restitutive ambiguity is derived structurally, with a single ‘again’ attaching to different structural positions. This account is difficult to maintain in Mandarin, however. The adverb *you* ‘again’ can only occur pre-verbally, which suggests that it is adjoined at the vP level or higher, leading to a prediction that only the repetitive reading will be available. Mandarin nonetheless allows a restitutive reading. This would seem to rule out a syntactic analysis, but I argue that there is indeed a structural ambiguity in Mandarin. The evidence comes from scope interactions between ‘again’ and an indefinite object. Interestingly, languages vary in whether their counterpart to English *again* permits a restitutive reading with goal-PP constructions. In Chapter 3 I address how English-speaking children acquire restitutive *again* with goal-PP constructions, given the cross-linguistic variation. Examining the parental input of four children, I show that parental uses of restitutive *again* with goal-PP constructions are infrequent and (usually) ambiguous. However, an experiment shows that many children nonetheless achieve a surprising degree of facility with these restitutive readings by a fairly young age. I propose that in this case children rely on more general evidence about the syntax of English goal-PP constructions, together with knowledge of a basic semantics for *again*, to deduce the restitutive reading. Chapter 4 examines English *almost*, focusing on an intervention effect: an intervening manner adverb blocks its scalar reading. I develop an account of the intervention effect, which crucially relies on two assumptions: (a) a posited minimality constraint such that *almost* cannot skip potential targets; (b) the scale associated with *almost* needs to have a fixed limit point.

Almost Again: On the Semantics and Acquisition of Decomposition Adverbs

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A Dissertation

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2016

APPROVAL PAGE

Doctor of Philosophy Dissertation

Almost Again: On the Semantics and Acquisition of Decomposition Adverbs

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Chapter 1

Introduction

Since the second half of the twentieth century, there has been an increasing interest in cases where an expression (e.g. quantifiers) is interpreted in a position that is different from the position it seems to occupy in the syntax. In this dissertation I investigate a particular subclass of such phenomena revolving around what are called “decomposition adverbs”, such as ‘again’ and ‘almost’. Different from most other adverbs, these adverbs have a unique property of looking inside a complex predicate and modifying just the result state. For example, in a sentence with a lexical accomplishment verb *open* and sentence-final *again* (1), the sentence is ambiguous: First of all, it has a reading which presupposes that the agent has performed the action before (1a), called the “repetitive reading”. Under this reading, *again* is associated with the event represented by the whole sentence “John opened the door”. Another interpretation, called the “restitutive reading” presupposes only that the door has been open before (1b), with an example provided under (1b). Under the restitutive reading, *again* seems to be associated with the result state of the predicate *open the door*, which can be interpreted as ‘causing the door to become open.

(1) John opened the door again.

a. repetitive: John has opened the door before.

b. restitutive: The door had been open before.

[example: Bill was showing John how to open the door of the lab. He opened it first as a demonstration and then asked John to do it. John closed the door and opened it again.]

Like sentence-final *again*, preverbal *almost* modifying an accomplishment verb is also ambiguous: First, it has a “counterfactual” reading, in which the agent got close to start the action represented by the predicate but did not implement it at all (2a). Another interpretation, called the “scalar” reading, indicates that the agent initiated the action but the result state was not achieved (2b). In other words, John performed a “closing” action and as a result the door is almost closed. As these adverbs seem to be able to penetrate a complex predicate and merely modify the result state, they are often used to support lexical decomposition approaches for complex predicates (see McCawley 1971, a.o.), hence the term “decomposition” adverbs.

(2) John almost closed the door.

a. counterfactual: John was about to start closing the door but he did not start the action.

[example: John planned to close the door but forgot to do it the last minute because of an emergency phone call.]

b. scalar: John got close to fully closing the door (because it was too heavy).

The unique property of these adverbs raises a series of questions: How can a decomposition adverb penetrate a complex predicate and modify just the result state? Do these adverbs behave the same cross-linguistically? How can children acquire the property of these adverbs in their target language? Understanding these issues will shed light on the nature of the mapping from syntactic structures to semantic interpretation and the acquisition of this mapping. In particular, they will help us understand the following broad questions that this dissertation attempts to address: How is interpretation derived when there is an apparent mismatch between surface

structure and compositional semantics? What is the nature of cross-linguistic variation at the syntax-semantics-pragmatics interfaces? How can children make the correct choices?

In this dissertation, I focus on three specific questions that fall under the overarching questions above: the first one concerns the ambiguity of *you* ‘again’ in Mandarin Chinese, the second concerns children’s acquisition of *again* in English goal-PP constructions, and the third concerns the ambiguity of English *almost*. I discuss these questions in each of the following chapters.

The main contribution of this dissertation lies in the following aspects: First of all, for the case of *again*, the predominant view that its ambiguity is structural rather than lexical has been successful for many languages. However, as we will see in Chapter 2, Mandarin *you* seems to be a counterexample, which no previous studies have investigated. In the dissertation I provide a solution, thus fix a loose end in the cross-linguistic picture of the ambiguous ‘again’.

After investigating the underlying knowledge native speakers have about ‘again’, I further explore In Chapter 3 how native speakers end up having the knowledge of ‘again’, focusing on the acquisition of *again* in English goal-PP constructions. This construction has some features that make its acquisition process interesting: In the first place, the construction is subject to cross-linguistic variability. In addition, the direct input in the care-givers speech is scarce. Most importantly, ambiguity in the input is rampant, due to the fact that the more frequent interpretation of the construction entails the less frequent interpretation (across-languages). Studying the acquisition of this construction is furthermore of interest since it also concerns the acquisition of a prototypical semantic/pragmatic phenomenon: presupposition.

For the case of *almost*, I provide in Section 4 a new piece of data on an intervention effect: when a manner adverb intervenes between *almost* and the predicate, the “scalar” reading

becomes unavailable. For example, *John almost slowly closed the door* cannot mean that John performed a slow action of closing, but did not close the door fully. An explanation of the intervention effect will shed light on the analysis of *almost*. I develop an account of the intervention effect, which bears on the semantics of *almost* and the source of its ambiguity. Following a scalar analyses of *almost* (Hitzeman 1992; Penka 2006; Amaral & Del Prete 2010; Eckardt 2007), I derive the intervention effect by examining the consequences when *almost* associates with one or two scalar items in its scope, which leads to ill-formedness.

Chapter 2

You ‘again’: How is its ambiguity derived?

1. Introduction

It is well-known that a sentence with an accomplishment predicate modified by *again* (1) is ambiguous between a repetitive reading and a restitutive reading. For the repetitive reading, the event of John opening the door has happened at a previous time (1a). For the restitutive reading, John did not open the door before, but simply restored the door to its original state (1b). Either the door had been open from the very beginning or someone else had opened it before.

(1) John opened the door again.

- a. Repetitive: John had opened the door before.
- b. Restitutive: The door had been open before.

There are three possible ways to account for the ambiguity of (1): structural, lexical or pragmatic. The structural approach suggests that the ambiguity arises because (1) has different possible syntactic structures (see von Stechow, 1995, 1996; Rapp & Stechow, 1999; among others). In a head-initial language like English, when *again* occurs in sentence final position as in (1), it can potentially adjoin to different positions in the structure. The lexical approach instead argues that the ambiguity has nothing to do with the structure, but is a result of *again* having

different meanings (see Dowty, 1979; Fabricius-Hansen, 1983, 2001; Jäger & Blutner, 2000; among others). Since (1a) entails (1b), an alternative way to analyze the ambiguity is to treat the repetitive reading (1a) as a special case of the restitutive reading (1b). And the pragmatics/context decides which meaning is intended. I refer to this analysis as the naïve pragmatic approach.

Most of the previous studies focus on English *again* and German *wieder*, which can occur in different positions of a sentence. In this chapter, I examine *you* ‘again’ in Mandarin Chinese. Like English, Chinese is also a head-initial language. Nevertheless, Chinese differs from English in that the position of *you* ‘again’ is relatively fixed: it can only occur preverbally (2a) but not postverbally (2b-c).

(2) a. Zhangsan you da-kai le men.

Zhangsan again hit-open Asp door.

b. *Zhangsan da-kai le men you.

Zhangsan hit-open Asp door again.

c. *Zhangsan da-kai le you men.

Zhangsan hit-open Asp again door.

(a-c): Zhangsan open the door again.

Like English *again* and German *wieder*, however, a bare sentence with *you* ‘again’, such as (2a), also exhibits an ambiguity between a repetitive and a restitutive reading, which raises the

following question: How do we account for the ambiguity? Is the ambiguity structural, lexical or pragmatic?

In this chapter I argue that despite the preverbal position of *you* ‘again’, its ambiguity is structural rather than lexical or pragmatic. The crucial evidence comes from the scope interaction between *you* ‘again’ and an indefinite object.

The chapter is organized as follows: In Section 2, I review previous analyses of English *again*. In addition, I present two arguments in support of the structural analysis: word order and the scope interaction between *again* and an indefinite object. Chinese *you* also displays a repetitive/restitutive ambiguity. However, we will see in Section 3 that the ambiguity cannot be explained straightforwardly by a structural analysis of English *again*, given the rigid distribution of *you*. In Section 4, I examine the scope interaction between *you* ‘again’ and an indefinite object to tease apart different analyses. The unavailability of some logically possible reading supports the structural analysis and casts doubt on other approaches. To solve the dilemma how the ambiguity can be accounted for structurally, I propose in Section 5 three possible analyses: overt movement with LF reconstruction, overt movement with semantic reconstruction and pure semantic lowering without movement. In Section 6, I compare these analyses by examining how negation and adverb affect the scope of *you* and by investigating how the interpretation of *again* across languages bears on different analyses. Empirical data favors LF reconstruction and semantic reconstruction analysis, both of which assume the movement of *you* ‘again’. However, it remains an open question whether reconstruction occurs in syntax or semantics. Before concluding the chapter, in Section 7 I extend the analysis of *you* ‘again’ to *chongxin* ‘repeatedly’,

an adverb which has a similar meaning as *you* ‘again’.

2. Analyses of English *again*

In this section, I review previous studies on the ambiguity of English *again* and German *wieder*, most of which focus on the following two approaches: structural and lexical.¹

2.1. The structural analysis

The basic idea of the structural analysis is that *again* always denotes repetition. The differences between repetitive and restitutive reading lie in what is repeated: the whole event or just its result state. Starting from von Stechow (1995, 1996), a number of studies argue for the structural analysis. Here I focus on the analysis of English *again* presented in Beck and Johnson (2004) and Beck (2005), which inherit the spirit from von Stechow (1995, 1996). For the convenience of discussion, slight modifications are made about some technical details but the crucial aspects remain the same.

Let us start from the denotation of *again* proposed by von Stechow (1996), which is presented in (3).

¹ As far as I know, previous studies did not discuss the naïve pragmatic approach. However, Beck (2006) and Klein (2001) proposed a more complicated pragmatic account to explain the effect that focus has on the ambiguity of *again*.

(3) Let P be a property of eventualities and let e be an eventuality.

$[[\text{again}]](P)(e)$ is defined only if $\exists e' [[[\text{MAX}]](P)(e') = 1 \ \& \ e' < e]$.

Where defined, $[[\text{again}]](P)(e) = 1$ iff $P(e) = 1$. (von Stechow 1996: 95, ex 3-7)

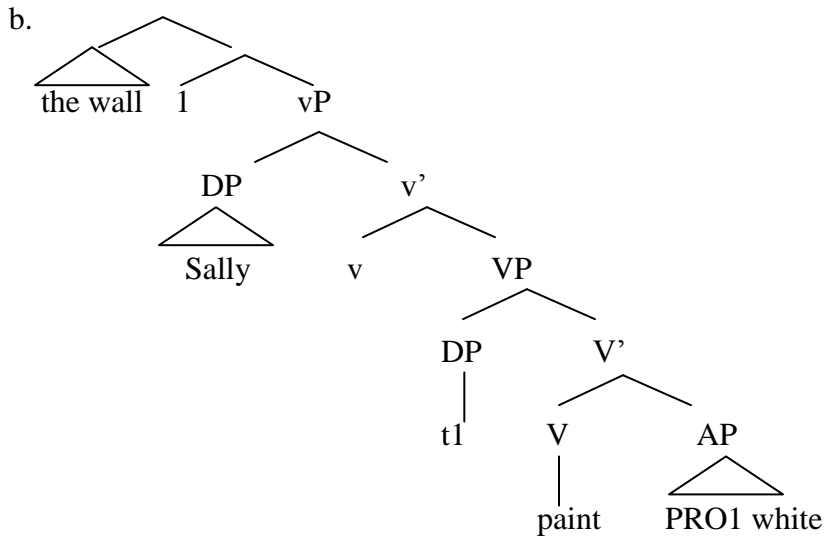
MAX is a symbol of type $\langle\langle s, t \rangle, \langle s, t \rangle\rangle$. $[[\text{MAX}]](P)(e) = 1$ iff $P(e)$ and there is no e' such that e is a proper part of e' and $P(e') = 1$. (von Stechow 1996: 95, ex 3-8)

As illustrated in (3), *again* introduces a presupposition that the proposition (a set of events) expressed by P was already true of another event e' . This other event e' must have been entirely before the current event e , which is achieved by the MAX operator.

Under the structural analysis, the presupposition of *again* is determined by *again*'s sister. Thus the different readings of *again* comes from where it adjoins to in syntax: When *again* modifies the whole event, the repetitive reading is derived. When *again* modifies the resultative state, the restitutive reading is derived.

To see how the analysis works, we first discuss the analysis of sentences with complex predicates, such as (4). Intuitively, the complex predicate *painted the wall white* can be decomposed into an Agentive event (wall painting) and a resultative state (the wall becoming white). The LF of (4a) is presented in (4b), in which the object NP *the wall* raises to semantically bind the empty pronominal (PRO) subject of AP. In overt syntax, the verb *paint* raises to v .

(4) a. Sally painted the wall white.



Several assumptions underlie the LF in (4b): First of all, I follow Kratzer (1996) in the assumption that an external argument (Agent) is not a true argument of the verb, but is introduced by a functional head in the syntax (v in the case of (4b)). v denotes a relation between individuals and events, and v combines with VP by Event Identification.

Second, since Agent is not a true argument of the verb, *paint* is of type $\langle e, \langle s, t \rangle \rangle$, which requires type e as its argument.² However, in (4b) its complement is a proposition of type $\langle s, t \rangle$. To solve the type mismatch, von Stechow (1995) proposes Principle R, a special interpretation principle that combines the verb with a proposition.

(5) Principle (R):

If $\alpha = [\nu\gamma \text{ } sc\beta]$ and β' is of type $\langle s, t \rangle$ and γ' is of type $\langle e, \dots \langle e, \langle s, t \rangle \rangle \rangle$ (an n -place

² I use s as the semantic type of events.

predicate), then

$$[[\alpha']] = \lambda x_1 \dots \lambda x_n \lambda e. \gamma_e(x_1) \dots (x_n) \& \exists e' [\text{BECOME}_{e'}(\beta') \& \text{CAUSE}(e')(e)]$$

Informal descriptions of BECOME and CAUSE are given below (Beck & Johnson, 2004; Beck, 2005, see Dowty 1979, von Stechow 1996 for the formal details).

(6) $[[\text{BECOME}]](P)(e) = 1$ iff e is the smallest event such that P is not true of the prestate of e but P is true of the result state of e .

(7) $[[\text{CAUSE}]](e')(e) = 1$ iff e' occurred, e occurred and if e hadn't occurred then e' wouldn't have occurred.

With all these assumptions, the tree in (4b) is interpreted within an event semantics. (4a) has the denotation in (8).

(8) $[[\text{the wall } 1 [\text{Sally } [v [\text{t1 paint } [\text{PRO1 white}]]]]]]^g$

$$= \lambda e. [\text{Sally is the Agent of } e \& e \text{ is an event of painting the wall} \& \exists e' \text{ s.t. } e' \text{ is an event of the wall becomes white} \& \text{CAUSE}(e')(e)]$$

Now we can explain the ambiguity of *again* in (9a). Recall that *again* is of type $\langle s, t \rangle \langle s, t \rangle$ and the presupposition of *again* is determined by its sister. If *again* adjoins to vP or higher, as shown in (9b), we get the repetitive reading that Sally has painted the wall white before. If, on the other hand, *again* adjoins to the small clause AP , which is shown in (9c), the restitutive

reading is derived.³

(9) a. Sally painted the wall white again. (repetitive/restitutive)

b. [the wall 1 [[v_{VP} Sally [v [v_{VP} t₁ paint [A_P PRO₁ white]]]] again]]

c. [the wall 1 [v_{VP} Sally [v [v_{VP} t₁ paint [A_P PRO₁ white] again]]]]

Similar to a complex predicate like *paint the wall white*, an accomplishment predicate such as *open* modified by *again* also displays repetitive/restitutive ambiguity (1), even though the predicate does not provide us with a result state in an overt way. To make the result state accessible, the structural analysis resorts to lexical decomposition, assuming that a transitive verb *open* is decomposed into the adjectival root *open*, plus other material contributing a causal and a development component like CAUSE and BECOME. Crucially the decomposition is reflected in syntax. With this assumption, (10a) has the syntactic structure in (10b).^{4,5} *Open* is decomposed into the adjective *open*, plus a phonologically empty head, which contributes the the CAUSE and BECOME component. In overt syntax the adjective incorporates into the verbal head and appears as the transitive verb *open*.

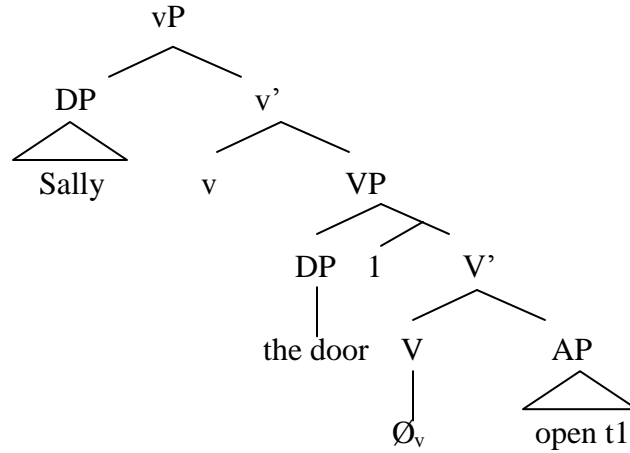
³ In principle, *again* can also adjoin to VP, yielding a reading that the action was performed before but perhaps by a different agent, i.e. someone other than Sally painted the wall white before (see von Stechow 1996, Rapp and von Stechow 1999 for some discussion). In fact, Nissenbaum (2006) argues that this adjunction site does exist. We will discuss Nissenbaum's argument in the Section 2.4.

⁴ In (10b), I assume that the object *the door* moves to Spec of VP, so that it is consistent with (3b) in that the direct object also occupies Spec of VP. However, whether the object moves does not affect the interpretation of the sentence and the structural analysis of *again*.

⁵ Notice that in the structure in (4) the DP binds PRO in the resultative, whereas in (10) the DP starts in the resultative and moves out. The syntactic difference is reflected in cross-linguistic variation - some languages lack resultative constructions as in (4), but they have lexical accomplishment verb as in (10).

(10) a. Sally opened the door.

b.



The underlying structure (10b) can be compositionally interpreted using the interpretation in (11) for \emptyset_v , which in the end yields the desired interpretation in (12).⁶

(11) $[[\emptyset_v]] = \lambda p \lambda e. \exists e' [\text{BECOME}_{e'}(p) \ \& \ \text{CAUSE}(e')(e)]$

(12) $[[\text{Sally } [v \text{ } [the \text{ door } 1 \text{ } [\emptyset_v \text{ } [open \text{ t1}]]]]]]^g$

$= \lambda e. [\text{Sally is the Agent of } e \ \& \ \exists e' \text{ s.t. } e' \text{ is an event of the door becomes open} \ \& \ \text{CAUSE}(e')(e)].$

Similar as (9a), (13a) with *again* following *open the door* is also ambiguous between a repetitive and restitutive reading. The ambiguity derives from different positions *again* can adjoin to. If *again* adjoins to vP or higher (13b), we get the repetitive reading that Sally opened the door before. If *again* adjoins to AP (13c), the restitutive reading is derived.

⁶ The denotation of the empty head \emptyset_v presented here is slightly different from the one presented in Beck and Johnson (2004) and Beck (2005), which assumes that the verb also takes an individual, the agent, as its argument. The modification is based on Kratzer (1996), who proposes that the agent is not a true argument of the verb, but is introduced by a functional head (v in our case).

- (13) a. Sally opened the door again. (repetitive/restitutive)
- b. [[_{VP} Sally [v [_{VP} the door 1 [\emptyset_v [_{AP} open t1]]]]] again]
- c. [_{VP} Sally [v [_{VP} the door 1 [\emptyset_v [[_{AP} open t1] again]]]]]

2.2. The lexical analysis

Contrary to the structural analysis, which argues that there is only one *again*, a lexical analysis claims that there is more than one *again*. Varying in details, different versions of lexical analyses share the common assumption that the ambiguity of *again* has nothing to do with the structure but simply because the lexical entry itself is ambiguous. The idea can be traced back to Dowty (1979), who assumes decomposition in semantics but not in syntax. The ambiguity of *again* is accounted for by postulating two *again*s: one *again* accounts for the repetitive reading whereas the other one accounts for the restitutive reading. For Dowty (1979), this ‘lexical ambiguity’ is not accidental homophony; instead, some sort of type-shifting is involved between two *again*s, as represented in (14). According to the type shifting rule, the restitutive *again* is interpreted as if the repetitive *again* takes narrower scope than CAUSE + BECOME.

- (14) $\forall x \forall P \forall p \text{ NEC } [\text{again}_{\text{res}} (\wedge [\text{CAUSE}(\wedge [P(x)], \wedge [\text{BECOME} (p)])])]$
- $\leftrightarrow [\text{CAUSE}(\wedge [P(x)], \wedge [\text{BECOME} (\wedge [\text{again}_{\text{rep}}(p)])])]$

Where NEC is the necessity operator [Dowty 79: 267, modified by von Stechow, 1995]

The idea has been implemented since then in various different forms. For example, Jäger

and Blutner (2000) propose that *again* is lexically ambiguous between a repetitive and a restitutive adverb. The former says that the property is instantiated by an event only if there was an event of the same type in the past (15a). The latter denotes that the property is instantiated by an event if the result state of the event occurred in the past (15b). RESULT takes a proposition and yields a proposition that is the result of the original. OBTAINS applies to a possible event/state and says that it occurs in the real world.

- (15) a. $[[\text{again}_{\text{rep}}]] = \lambda p \lambda e. p(e) : \exists e' < e (\text{OBTAINS}(e') \ \& \ p(e'))$
b. $[[\text{again}_{\text{res}}]] = \lambda p \lambda e. p(e) : \exists s < e (\text{OBTAINS}(s) \ \& \ \text{RESULT}(p)(s))$

Fabricius-Hansen (2001) proposes a slightly different version of lexical analysis from Dowty (1979) and Jäger and Blutner (2000). In addition to expressing repetition (16a); *again* can also express reversal of the direction (counterdirectional *again*) (16b), which leads to the restitutive reading.

- (16) a. $[[\text{again}_1]](P_{\langle s, t \rangle})(e) = 1 \text{ iff } P(e) \ \& \ \exists e' [e' < e \ \& \ P(e')]$
 $= 0 \text{ iff } \sim P(e) \ \& \ \exists e' [e' < e \ \& \ P(e')]$
undefined otherwise.
- b. $[[\text{again}_2]](P_{\langle s, t \rangle})(e) = 1 \text{ iff } P(e) \ \& \ \exists e' [e' < e \ \& \ P_C(e') \ \& \ \text{res}_{P_C}(e') = \text{pre}_P(e)]$
 $= 0 \text{ iff } \sim P(e) \ \& \ \exists e' [e' < e \ \& \ P_C(e') \ \& \ \text{res}_{P_C}(e') = \text{pre}_P(e)]$
undefined otherwise.

According to (16b), counterdirectional *again* takes a predicate of events P and an event e as its arguments. It has a presupposition that there is a preceding event e', of which the counterdirectional predicate P_C is true. The result state res_{P_C} of e' is the starting point or prestate pre_P of the new event e.

Here is how the restitutive reading of *open the door again* is derived under (16b). The counterdirectional predicate of “opening the door” is “closing the door”. The result state of a “closing” event is the door being closed, which can be the starting point of the event of “opening the door”. Given the availability of a counterdirectional predicate, we can derive the restitutive reading that the door is restored to its original opening state, because the availability of a counterdirectional event “closing the door” guarantees that the door was open before. However, it is a puzzle how this analysis can be carried over to predicates like ‘hammer the metal flat’ because it is not clear what its counterdirectional event is.⁷ In addition, under this analysis “ambiguity” means accidental homophony, which is suspicious in face of the cross-linguistic recurrence of the ambiguity.

2.3. Arguments for the structural analysis I: Word order

Von Stechow (1996) demonstrates that word order determines the ambiguity of *again*, which convincingly shows that the prerequisites for restitutive *again* are indeed syntactic but not lexical.

In German when *wieder* ‘again’ follows a definite direct object, both restitutive and repetitive

⁷ One can argue that in this case, the counter-directional event can be an event that yields ‘metal not flat’, for example, bend the metal, warp the metal, etc. One possible challenge for such an analysis would be to identify a unique counter-directional event (Jonathan Bobaljik, p.c.).

readings are available (17a). However, when *wieder* ‘again’ precedes the direct object, only the repetitive reading is available (16b). In English, if *again* is at sentence final position, both repetitive and restitutive readings are available (18a). On the other hand, if *again* precedes the verb, only the repetitive reading is available (18b).⁸

- (17) a. dass Ali die Tür wieder öffnete. (restitutive and repetitive)

that Ali the door again opened.

- b. dass Ali wieder die Tür öffnete. (repetitive only)

that Ali again the door opened.

that Ali opened the door again.

- (18) a. John opened the door again. (repetitive and restitutive)

- b. John again opened the door. (repetitive only)

The lack of resitutive reading in (17b) and (18b) is puzzling under a lexical analysis,

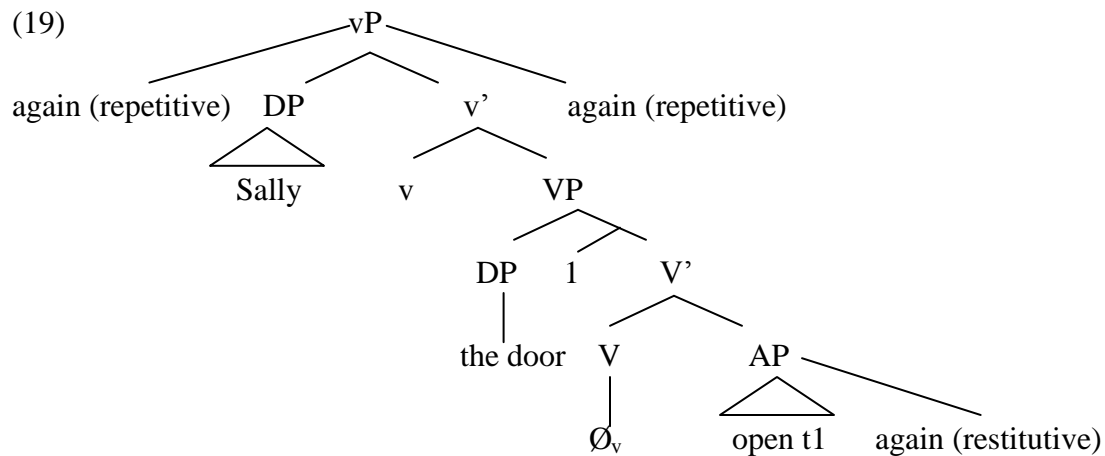
⁸ Von Stechow (1996) points out there exists some counterexamples to the German generalization. Some verbs in German, for example, *verlassen* ‘leave’, allows the restitutive reading when combining with *wieder* ‘again’, even if *wieder* precedes the object (i).

- (i) Als Anna wieder das Haus verließ, (repetitive and restitutive)
 when Anna again the house left
 When Anna left the house again.

Von Stechow accounts for the counterexample by complicating the syntactic decomposition of verbs in question, which allows the object to surface in a lower position. Consequently, *wieder* ‘again’ can adjoin to the constituent denoting the result state and still precedes the object. Different from German, verbs like *leave* in English are not counterexamples of the English generalization, as shown in (ii) (Beck & Johnson, 2004). This is consistent with von Stechow’s account, because the verb surfaces as the functional head *v* in overt syntax. Since the interpretation of English *again* depends on the relative position of the verb and the adverb, preceding *again* only has the repetitive reading.

- (ii) Anna again left the house. (repetitive only)

because it is hard to explain how the restitutive reading disappeared. Similarly, a naïve pragmatic analysis which argues that the repetitive reading is just a special case of the restitutive reading cannot explain why the restitutive reading is unavailable either.⁹ On the contrary, the contrast between the two sentences in (17) and (18) follows directly from the structural analysis. Let us focus on the English examples in (18), whose syntactic structures are presented in (19).



When *again* occupies the sentence final position, it can either adjoin to AP or vP, which gives us the ambiguity. However, based on the assumption that *open* undergoes incorporation and moves to v in overt syntax, preverbal *again* can only adjoin to vP or higher positions. Thus only the repetitive reading is available.¹⁰ Therefore, the arguments in (17) and (18) are convincingly in favor of the structural analysis.

⁹ In the literature there are more complicated pragmatic analysis (see Beck, 2006; Klein, 2001).

¹⁰ Noting that left adjunction of *again* leads to a wrong prediction for a predicate like *paint the wall white*: Since there is no incorporation of *paint*, there should be a position for restitutive *again* to the left of *white*. Therefore, *paint the wall again white* is expected to give rise to a restitutive reading. However, it does not seem so. Rather, *white* seems to be an afterthought of sorts (Thank Jonathan Bobaljik for pointing this out). This may have something to do with the fact that separating a verb from its complements with an adverb leads to ill-formedness. As shown in the examples below, this phenomenon is quite robust in English.

- (iii) a. *I hit again bill.
 b. I consider usually him unintelligent.
 c. I want always to win.

2.4. Argument for the structural analysis II: Two kinds of restitutive readings

So far we have been focusing on a two-way dichotomy of *again*: repetitive vs. restitutive. In this section, we discuss the restitutive reading of *again*, which concerns the repetition of a result state. Notice that both scenarios in (20a) and (20b) are compatible with the restitutive reading of (20). As a matter of fact, (20b) can be treated as a special case for (20a).

(20) Sally painted the wall white again.

a. The wall was white before.

b. Someone other than Sally, say, Bill painted the wall white before.

(21) a. Sally painted the wall white.

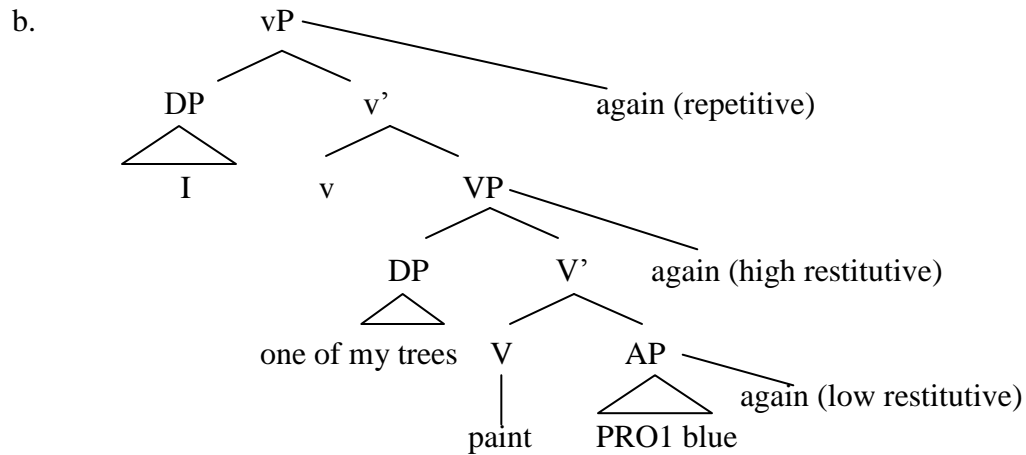
b. [the wall 1 [_{VP} Sally [_{v'} v [_{VP} t1 [_{v'} paint [_{AP} PRO1 white]]]]]]

The counterpart of (20) without *again*, (21a), has an LF presented in (21b). Under the structural analysis, when *again* adjoins to vP or higher, the repetitive reading is obtained. When it adjoins to AP, the restitutive reading is derived. In principle, *again* can also adjoin to VP, yielding a reading that the action was performed before but perhaps by a different agent, which corresponds to the scenario in (20b). Investigating the interaction between *again* and existential quantifiers in the object position, Nissenbaum (2006) argues that this adjunction site does exist. In other words, there are two types of restitutive readings: low vs. high restitutive reading in Nissenbaum's term. When *again* adjoins to AP, we have the low restitutive reading that the wall was white before and Sally restored the wall to its original state (20a). When *again* adjoins to VP,

the derived reading corresponds to a scenario in which the action was performed before but perhaps by a different agent (20b).

Evidence in favor of two restitutive readings comes from the interaction between *again* and an indefinite object. Assuming the LF in (22b), Nissenbaum (2006) makes the following predictions about possible scope readings for (22a). First of all, for a low restitutive reading (with *again* adjoined to AP), the indefinite object can never be interpreted inside the scope of *again*, because it is base generated in Spec, VP. The prediction is borne out: In the scenario in (23), it is unspecified which tree will be painted blue. It could be the same tree or a different one. It is felicitous to continue the scenario with the sentence in (23a). The usage of pronoun in (23a) forces an interpretation in which the same tree was painted blue. As a contrast, (23b) does not serve as felicitous continuation of the scenario. This is expected under Nissenbaum's account: The usage of an indefinite object in (23b) forces an interpretation in which a different tree was painted blue, which cannot be derived under the structure in (22b). Although for the low restitutive reading, wide scope of *again* with respect to the indefinite object is not available, the indefinite object can be interpreted outside the scope of *again*. This is illustrated in (24), in which the sentence with *again* and the indefinite object is a felicitous continuation of the scenario. In (24) the tree I painted blue has to be previously blue simply because of the universal quantifier in the scenario. Contrary to the low restitutive reading, for a high restitutive reading, the indefinite object can be interpreted inside the scope of *again*. Again the prediction is borne out: (25) is a scenario in which I painted a different tree blue from someone else. And it is felicitous to continue the scenario with a sentence having *again* and an indefinite object.

(22) a. I painted one of my trees blue again.



(23) Scenario A:

One of my birch trees came up blue when it was a sapling; it later turned white like the rest. But I liked the idea of a blue birch tree so much that...

a. I painted it blue again.

b. #I painted one of my trees blue again.

(24) Scenario B:

All of my birch trees were blue when they were saplings; they later turned white like birch trees are supposed to be. But I liked the idea of a blue birch tree so much that...

I painted one of my trees blue again.

(25) Scenario C:

One of my birch trees had been painted blue when I moved in. It later died and had to be cut down. But I liked the idea of a blue birch tree so much that...

I painted one of my trees blue again.

Nissenbaum (2006) did not report whether the other three possible readings exist: high restitutive reading with *again* taking narrow scope, repetitive reading with *again* taking narrow scope and repetitive reading with *again* taking wide scope. My informants report that these readings are all available. The scope interaction between *again* and an indefinite object in English is summarized below.

Table 2-1. Scope interaction between *again* and an indefinite object in English

Low restitutive reading	$\exists > \text{again}$	$\# \text{again} > \exists$
High restitutive reading	$\exists > \text{again}$	$\text{again} > \exists$
Repetitive reading	$\exists > \text{again}$	$\text{again} > \exists$

The pattern in Table 2-1 is hard to account for under a lexical analysis: Why is it the case that for the low restitutive reading an indefinite object cannot be interpreted inside the presupposition of *again* but for the high restitutive reading it can? How does the pattern in Table 2-1 bear on the naïve pragmatic analysis for *again*, which assumes that the repetitive reading and high restitutive reading are simply special cases for the low restitutive reading and it is the context that determines which reading is intended? If we simply compare the three readings of *again* (i.e. the repetitive reading, the high restitutive reading, and the low restitutive reading) under the same scope reading between *again* and the indefinite object, we notice that when the indefinite object is interpreted within the presupposition of *again*, the repetitive reading and the high restitutive reading are available, but the low restitutive reading is not. This is not consistent

with the prediction of the naïve pragmatic analysis.¹¹

3. The puzzle: The ambiguity of *you* ‘again’ in Mandarin Chinese

In this study, I examine one of the equivalents of English *again* in Chinese, *you*. Like English *again* and German *wieder*, *you* is ambiguous between a repetitive reading and a restitutive reading. For instance, (26) is compatible with all three scenarios in (a-c).

¹¹ The conclusion that the scope facts presented in Table 2-1 challenge the naïve pragmatic analysis is based on the assumption that both the high restitutive reading and the repetitive reading with *again* taking wide scope entail the low restitutive reading with *again* taking wide scope. However, under some theory of presupposition projection, both the high restitutive reading and the repetitive reading with *again* taking wide scope also entail the low restitutive reading with *again* taking narrow scope. So we can formulate an alternative naïve pragmatic analysis for a sentence with *again* and an indefinite object, i.e. the high restitutive reading and the repetitive readings (either with *again* taking wide scope or narrow scope) are special cases of the low restitutive reading with *again* taking narrow scope. The context determines which meaning is intended.

Let me elaborate on this idea. It remains controversial what the presupposition of sentences with a presupposition trigger bound in the scope of a generalized quantifier is. Heim (1983) and Schlenker (2008a,b) argue that sentences of the form given in (iv) trigger a universal presupposition in (v)a: every individual satisfying the property R expressed in the restrictor should also satisfy the presupposition triggered from the nuclear scope. On the other hand, Beaver (1994, 2001) argues that sentences in the form of (iv) triggers an existential presupposition schematized in (v)b: some individual satisfying the property R satisfy the presupposition triggered from the nuclear scope. George (2008) argues that the presupposition varies depending on the quantifier: for some quantifiers the presupposition is universal and for others it is not.

(iv) Quantified sentence: $[Qx: R(x)] Sp(x)$

in which Q stands for a generalized quantifier, R stands for its restrictor and Sp for its nuclear scope, and the subscript p indicates that this nuclear scope triggers a presupposition p.

(v) a. Universal presupposition (Heim, 1983; Schlenker, 2008a,b): $[\forall x: R(x)] p(x)$

b. Existential presupposition (Beaver, 1994, 2001): $[\exists x: R(x)] p(x)$

Let us see how different theories predict about the presupposition of the low restitutive reading with narrow scope of *again*, using the sentence *I painted one of my trees blue again* in Nissenbaum (2006) as an example. Heim (1983) and Schlenker (2008a,b) predict that it carries a presupposition that every tree was blue before. Beaver (1994, 2001) predict that it is presupposed that some tree was blue before. What George (2008) predicts is that either some tree was blue before or none of the trees was blue before. As we can tell, under Beaver’s (1994, 2001) theory, the low restitutive reading with *again* taking narrow scope is entailed by high restitutive reading with *again* taking wide scope (which presupposes that some tree was painted blue before) and repetitive reading with *again* taking wide scope (which presupposes that I painted some tree blue before). And if we adopt this naïve pragmatic analysis, the scope facts presented in Table 2-1 does not serve as its counterexample.

However, even if we assume Beaver’s (1994, 2001) theory and give credits to the naïve pragmatic analysis here, the naïve pragmatic analysis still faces other problems. For instance, it fails to account for the German and English sentences with *again/wieder* and a definite object (cf. (17) and (18)).

(26) Zhangsan you da-kai le men.

Zhangsan again hit-open Asp door.

Zhangsan opened the door again.

a. Repetitive reading

Context: Zhangsan had opened the door before. After a while, someone else closed the door.

Feeling hot, ...

b. Low restitutive reading

Context: Lisi built a wardrobe for Zhangsan. He set the door on its hinges and then closed it.

*Curious what was inside the wardrobe, ...*¹²

c. High restitutive reading

Context: Lisi first opened the door because it was very hot. Later he closed the door. Feeling hot, ...

Different from English, in which *again* may occur in different positions, you ‘again’ in Chinese has a restricted distribution: It can precede the verb (26) but not follow the verb (27).

(27) a. *Zhangsan da-kai le men you.

Zhangsan hit-open Asp door again.

b.* Zhangsan da-kai le you men.

Zhangsan hit-open Asp again door.

¹² The scenario is adapted from Beck (2005).

The ambiguity of Chinese *you* between repetitive vs. restitutive reading raises the following questions: How can we account for the availability of restitutive reading of *you* ‘again’ in Mandarin Chinese? Is the ambiguity syntactical, lexical or pragmatic?

Let us start by examining whether the structural analysis for English *again* can be applied directly to Chinese. To answer this question, we need to know the syntactic structure of resultative verb compounds (RVCs) in Chinese, combined with which *you* ‘again’ yields ambiguity. RVCs have received much attention in the literature (see Li, 1990, 1995, 1999; Shibata, Sudo & Yashima, 2004; Sybesma, 1999; Tang, 1997; Wang, 2010; Zhang, 2001; among others). For expository convenience, here I assume a head-movement-plus-control analysis of RVC (Tang, 1997; Zhang, 2001). Other analyses of RVC are also compatible with what I am illustrating here. Part of the syntactic derivation of a sentence with RVC such as (28) is shown in (29). The resultative predicate *X si* ‘dead’ in (28) undergoes head movement to a functional head *F*. And then, it has to be attached to verb *da* ‘hit’, forming a V-V compound.¹³

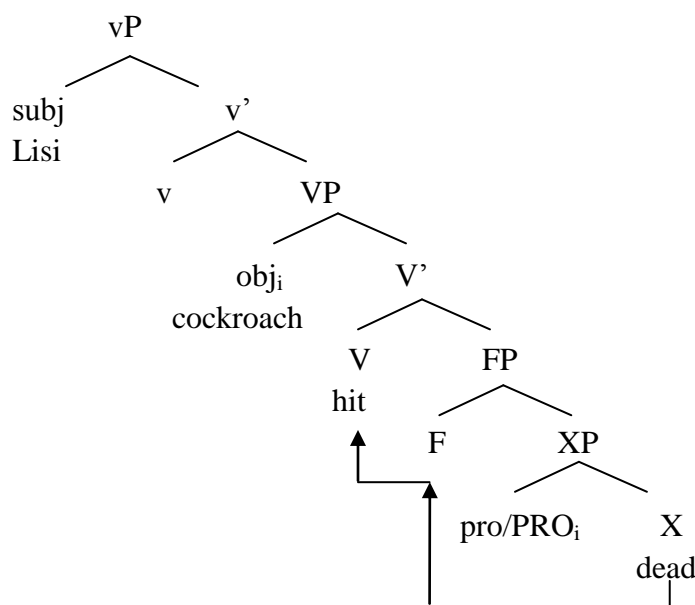
(28) Lisi da-si le na-zhi zhanglang.

Lisi hit-dead Asp that-CL cockroach.

Lisi killed that cockroach.

¹³ Zhang (2001) proposes an alternative to syntactically drive resultative verb compounds. She does not assume that functional head *F* is in the left periphery which hosts a complementizer; rather she assumes it heads an embedded v.

(29)



Apart from the analysis of RVC (29), I am following several assumptions listed below: First, assuming V-to-*v* movement in Mandarin Chinese, the V-V compound *da-si* ‘hit-dead’ ends up in *v*. Second, I assume that the adverb *you* ‘again’ has the same semantics as what von Stechow (1995, 1996) proposed for English *again* and German *wieder*. It selects a proposition of type $\langle s, t \rangle$ as its sister. Next, following Ernst (2002) and Tang (2001), I assume that *you* ‘again’ adjoins in syntax instead of being licensed in the spec position of functional categories (Alexiadou, 1997; Cinque, 1999). Based on these assumptions, the preverbal *you* ‘again’ should adjoin to *vP* or even higher in (29). Thus only the repetitive reading is expected instead of the restitutive reading. The ambiguity of *you* poses a problem for the structural analysis.

In addition to bare sentences, the Chinese *ba* construction with *you* preceding *ba* also displays a three-way ambiguity, as illustrated in (30). It is generally assumed in the literature that *ba* is an overt realization of a recursive small *v* (see Sybesma, 1999; Huang, Li & Li, 2009).

When *you* precedes *ba*, it must adjoin to vP or even higher, hence the restitutive reading becomes unexpected.

(30) *Ba*-construction

Zhangsan you ba men da-kai le.

Zhangsan again BA door hit-open Asp.

Zhangsan opened the door again. (repetitive, high restitutive, low restitutive)

If the structural analysis cannot apply to Chinese *you* directly, could the ambiguity be derived lexically or pragmatically? Under the naïve pragmatic analysis, the ambiguity is determined by context. Under the lexical analysis, *you* is a polysemous lexical entry. In fact, in addition to the English-type lexical analysis, which postulates repetitive *again* and restitutive *again*, there exists an alternative lexical analysis for Mandarin. A variety of interpretations seem to cluster in the single lexical entry *you*. For example, *you* also has an additive meaning (31)-(32) (glossed as ADD), which English *again* does not have. *You* can also be used to express some mood, for instance, strengthening negation in (33).

(31) Zhangsan xi le yifu, you zuo le fan.

Zhangsan wash Asp clothes, ADD make Asp meal.

Zhangsan did the laundry, and cooked the meal.

(32) Zuotian Zhangsan caifang le san-ge xuesheng,

Yesterday Zhangsan interview Asp three-CL student,

jintian ta you caifang le liang-ge laoshi.

today he ADD interview Asp two-CL teacher

Yesterday Zhangsan interviewed three students, and today he interviewed two teachers.

(33) Ta you bu hui chi ren, ni pa shenme?

He YOU not would eat human, you fear what

He would not eat human beings. What are you worried about?

The repetitive and the high restitutive reading can be easily accommodated under the additive reading. Whether the low restitutive reading can also be accommodated is not obvious. In fact, some researchers even propose that the repetitive meaning of *you* can be reduced to its additive meaning (Shao & Rao, 1985; Tovená & Donazzan, 2008).¹⁴ Admitting that repetition and addition are conceptually closely related, I will not commit myself to a uniform analysis of *you*. Rather I would like to examine a potential lexical account for repetitive/restitutive ambiguity: Assuming that repetition and addition are separate meanings, and the former derives the repetitive reading, is it possible that the so-called “restitutive reading” is in fact subsumed under the additive interpretation of *you*? One approach to evaluate this analysis is to consider the semantics of additive *you* and see whether its denotation can capture the restitutive reading,

¹⁴ Tovená and Donazzan (2008) propose that a number of iterative and aspectual adverbs in different languages, including English *again*, French *encore*, and Mandarin *zai*, can receive a unified semantic analysis and be characterized as additive particles.

which I will not go into here. Readers may refer to Appendix I for details. The gist of Appendix I is that additive *you* triggers a presupposition: The presupposed eventuality cannot follow the asserted eventuality and the sum of the two eventualities is more developed than the presupposed event. In addition, it is not obvious how the low restitutive reading can be also subsumed under the additive reading.

The rigid word order does not help to distinguish different accounts for the ambiguity of *you* ‘again’ in Chinese. However, Nissenbaum’s (2006) test provides a tool to tease different analyses apart. In the next section, I examine the scope interaction between *you* ‘again’ and an indefinite object.

4. Scope interaction between *you* ‘again’ and a quantifier

Since *you* ‘again’ yields a three-way ambiguity, when it interacts with another scope-bearing element, such as an indefinite object, there are altogether six logical possibilities. Native speakers were presented with scenarios for each of these possibilities and were asked to judge whether bare sentences and *ba*-constructions with *you* were felicitous. The judgment is summarized in Table 2-2, which indicates that despite that the position of *you* ‘again’ is fixed and high in Chinese, Chinese behaves exactly like English with respect to the scope interaction between *again* and an indefinite object. All readings are available except the low restitutive reading with *you* ‘again’ taking wide scope.

Table 2-2. Scope between *you* ‘again’ and an indefinite object in Chinese

Low restitutive reading	$\exists > \text{you ‘again’}$	$\# \text{you ‘again’} > \exists$
High restitutive reading	$\exists > \text{you ‘again’}$	$\text{you ‘again’} > \exists$
Repetitive reading	$\exists > \text{you ‘again’}$	$\text{you ‘again’} > \exists$

For expository convenience, I focus on the following three readings: a) low restitutive reading with *you* taking narrower scope than the indefinite object; b) low restitutive reading with *you* taking wider scope than the indefinite object; c) high restitutive reading with *you* taking wider scope than the indefinite object. For the scenarios of the other readings, see Appendix II.

First of all, when low restitutive reading is intended, the indefinite object can be interpreted outside the presupposition of *you* ‘again’, i.e. the object in the presupposition and assertion can be the same. This is illustrated in (34) and (35). The *ba*-construction has the same interpretation as its corresponding bare sentence.

(34) *Context: Lisa had a bunch of red shells. Unfortunately after a while they all got very dusty and the redness faded. In need of two red shells to decorate her Christmas tree, ...*

a. ta you tu-hong le qizhong liang-ge beike.¹⁵

she again paint-red Asp among two-CL shell.

She painted two of the shells red again.

b. ta you ba qizhong liang-ge beike tu-hong le.

she again BA among two-CL shell paint-red Asp .

She painted two of the shells red again.

(35) *Context: John ordered ten pocket watches. Unfortunately, all of them had always been open due to a manufacturing error. Yesterday he got all his watches fixed and closed them for the first time. Today, ...*

a. Ta you da-kai le qizhong yi-kuai huaibiao.

Heagain hit-open Asp among one-CL pocket-watch.

He opened one of his pocket watches again.

b. Ta you ba qizhong yi-kuai huaibiao da-kai le.

He again BA among one-CL pocket-watch hit-open Asp.

He opened one of his pocket watches again.

¹⁵ The test sentences in (34) and (35) involve a partitive marker *qizhong* ‘among’. As a matter of fact, native speakers were asked to judge sentences either with or without a partitive marker for all the scenarios. It turned out when *you* ‘again’ takes wider scope than the indefinite object, speakers tended to prefer sentences without partitive markers. On the other hand, they preferred sentences with partitive markers when *you* ‘again’ takes narrow scope. For expository convenience, when concentrating on scenarios in which *you* takes narrow scope, I only present the judgment of sentences with partitive markers; when focusing on scenarios in which *you* takes wide scope, I only present the judgment of sentences without partitive markers.

For the low restitutive reading, although the indefinite object can take wide scope with respect to *you* ‘again’, but not vice versa. In other words, when a low restitutive reading is intended, the object cannot be interpreted within the presupposition of *you* ‘again’. A number of my informants found the use of *you* ‘again’ odd in scenarios like (36) and (37), especially compared with (34) and (35).¹⁶

(36) *Context: Zhangsan went to the beach and collected a lot of white shells and two red shells. When his wife cleaned the house, she accidentally broke the two red shells. Worried that Zhangsan would notice the mishap, ...*¹⁷

a. #ta you tu-hong le liang-ge beike.

she again paint-red Asp two-CL shell.

She painted two shells red again.

b. #ta you ba liang-ge beike tu-hong le.

she again BA two-CL shell paint-red Asp.

She painted two shells red again.

¹⁶ Unfortunately the judgment for (36) and (37) is not clear-cut. Some of my informants did accept the test sentences for (36) and (37). This might be caused by the complexity of the task. Or these speakers are entertaining other interpretations of *you*, such as the additive interpretation. My analysis of the ambiguity of *you* will be based on the dialect of this subgroup who found a contrast between (34) vs. (36) and between (35) vs. (37).

¹⁷ The scenario is adapted from Dobler (2008).

(37) *Context: John ordered many pocket watches. Unfortunately, two of them had always been open due to a manufacturing error. Yesterday he got them fixed and they closed for the first time. Today...*¹⁸

a. #Ta you da-kai le yi-kuai huaibiao.

He again hit-open Asp one-CL pocket-watch.

He opened a pocket watch again.

b. #Ta you ba yi-kuai huaibiao da-kai le.

He again BA one-CL pocket-watch hit-open Asp.

He opened a pocket watch again.

The reason why *you* ‘again’ sounds infelicitous in (35) and (37) is not because it cannot take wide scope. As shown in (38) and (39), when a high restitutive reading is intended, the indefinite object can be interpreted within the presupposition of *you* ‘again’.

(38) *Context: John and Jane had some white shells. Since they needed two red shells to decorate their Christmas tree, John painted two shells red. Unfortunately, Jane accidentally broke the two red shells that John just painted. Therefore, ...*

a. ta you tu-hong le liang-ge beike.

she again paint-red Asp two-CL shell

She painted two shells red again.

¹⁸ The scenario is adapted from Bale (2007).

b. ta you ba liang-ge beike tu-hong le.

she again BA two-CL shell paint-red Asp

She painted two shells red again.

(39) *Context: Jane and John bought five pocket watches. Jane picked out one pocket watch, opened it and closed it. Later John needed to check the time. He wanted to open the watch that Jane opened just now, but he couldn't find it. Therefore,...*

a. Ta you da-kai le yi-kuai huaibiao.

He again hit-open Asp one-CL pocket-watch.

He opened a pocket watch again.

b. Ta you ba yi-kuai huaibiao da-kai le.

He again BA one-CL pocket-watch hit-open Asp.

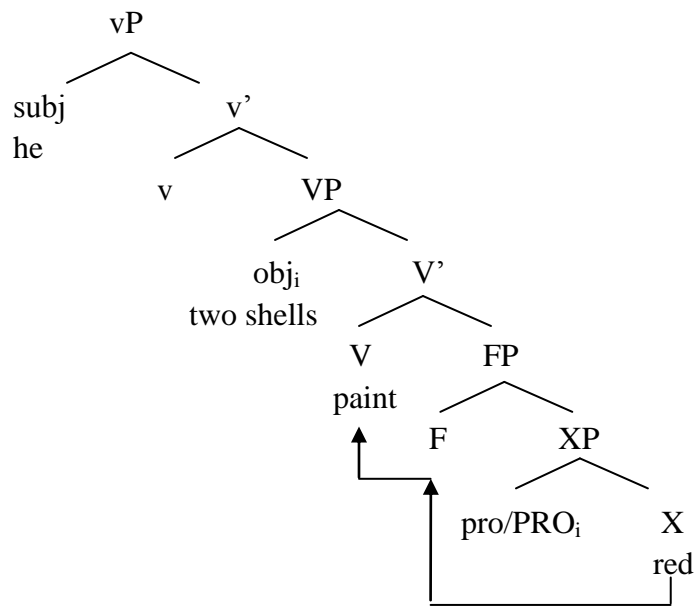
He opened a pocket watch again.

How do the scope facts summarized in Table 2-2 bear on different analyses of *you*? First, it raises a question for any lexical analysis, which argues that the ambiguity arises simply because *you* ‘again’ is polysemous: Why is the low restitutive reading not available when *you* ‘again’ takes wide scope? The scope facts also challenge the naïve pragmatic analysis, under which the repetitive reading and the high restitutive reading are supposed to entail the low restitutive reading. However, contrary to what the naïve pragmatic analysis predicts, both the repetitive and the high restitutive readings are available when *you* ‘again’ takes wide scope, the low restitutive reading is not.¹⁹ On the other hand, the scope facts suggest that syntactic structure is playing a

¹⁹ Again, the conclusion that the scope facts in Chinese challenge the naïve pragmatic analysis is based on the assumption that both the high restitutive reading and the repetitive reading with *again* taking wide scope entail the

role in the ambiguity of *you*. Let us take (38a) as an example, whose syntactic structure is presented in (40).

(40)



The scope facts would fall in place if *you* ‘again’ can adjoin to some lower projections such as VP or XP. Let us first imagine what reading is possible if *you* ‘again’ can indeed adjoin to XP, giving rise to the low restitutive reading. As the indefinite object is base-generated in Spec, VP, it must take wider scope than *you* ‘again’, which explains why the indefinite object can never be interpreted within the presupposition of *you* ‘again’. On the other hand, if *you* ‘again’ can adjoin to VP, with the high restitutive reading, the indefinite object can be interpreted within the presupposition of *you* ‘again’.

low restitutive reading with *again* taking wide scope. As discussed in fn 8, there exists an alternative naïve pragmatic analysis for sentences with *again* and an indefinite object, which crucially relies on Beaver’s (1994, 2001) theory of presupposition projection. Given that it remains controversial what the presupposition of a trigger embedded under a quantifier is, I do not commit myself to this alternative naïve pragmatic analysis here.

5. Analyses

The scope interaction between *you* and an indefinite object suggests that the ambiguity of *you* ‘again’ is structural instead of lexical or pragmatic. However, the structural analysis for English *again* cannot be applied directly to Chinese. How do we solve this dilemma? In this section I propose three possible analyses: overt movement plus LF reconstruction, overt movement plus semantic reconstruction and semantic lowering without movement.

5.1. Overt movement plus LF reconstruction

One solution to the puzzle is that *you* ‘again’ in Mandarin Chinese moves overtly and gets reconstructed at LF.

Ernst (2004) argues that adverbs are licensed in their base positions whenever the relevant semantic rule gives them their proper interpretation and does not cause any semantic anomalies elsewhere in the sentence. If this is on the right track, in principle *you* can adjoin to some lower projections in (40), such as XP or VP, and gives rise to the low restitutive reading and the high restitutive reading, respectively. Below I demonstrate that this is indeed the case.

First of all, *you* can modify a small clause that denotes a pure state. This is attested by Chinese *de*-resultative constructions, which is argued by many scholars to be structurally related to RVCs. Let us take (41) as an example, whose syntactic representation is given in (42). Following the analysis of Tang (1997), particle *de* is base-generated in the head position of the functional projection, and incorporates to V. Then V-*de* as a whole undergoes V-to-v movement.

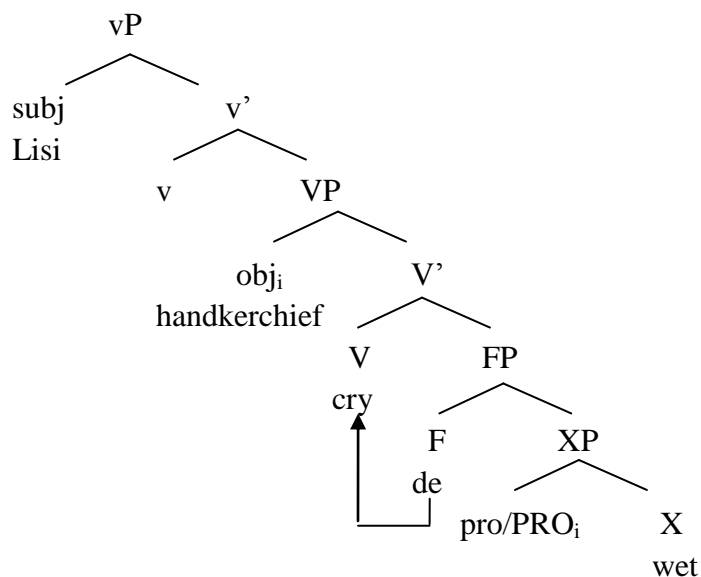
Since *you* ‘again’ can occur between the object *shoujuan* ‘handkerchief’ and the secondary predicate *shi* ‘wet’ (43), it has to adjoin to XP in syntax to derive the correct linear order.²⁰

(41) ?Lisi ku de na-ge shoujuan shi le.

Lisi cry de that-CL handkerchief wet Asp.

Lisi cried that handkerchief wet.

(42)



(43) ?Lisi ku de na-ge shoujuan you shi le.

Lisi cry de that-CL handkerchief again wet Asp.

Lisi cried that handkerchief wet.

In addition to state-denoting XP, *you* can adjoin to VP in syntax. This is demonstrated by the

²⁰ In fact, it is not clear whether *you* adjoins to FP or XP. To answer this question, we need to figure out the denotation of particle *de*. The answer will not affect our analyses. For expository convenience, I assume that it adjoins to XP, which denotes the result states, and treat the functional head *de* as semantically vacuous. This is in line with analysis which analyze the functional head *de* as a complementizer (e.g. Wang, 2010).

Chinese *ba*-construction (44). Here I follow Kuo (2009), who argues that *ba* is the head of an Applicative phrase, which is illustrated in (45).²¹ Not only can *you* ‘again’ precede *ba* (cf. (30)), it can also occur between the *ba*-NP (the NP immediately following *ba*) and the predicate, as shown in (46).²² To derive the correct linear order for (46), *you* ‘again’ has to adjoin to VP in the structure.

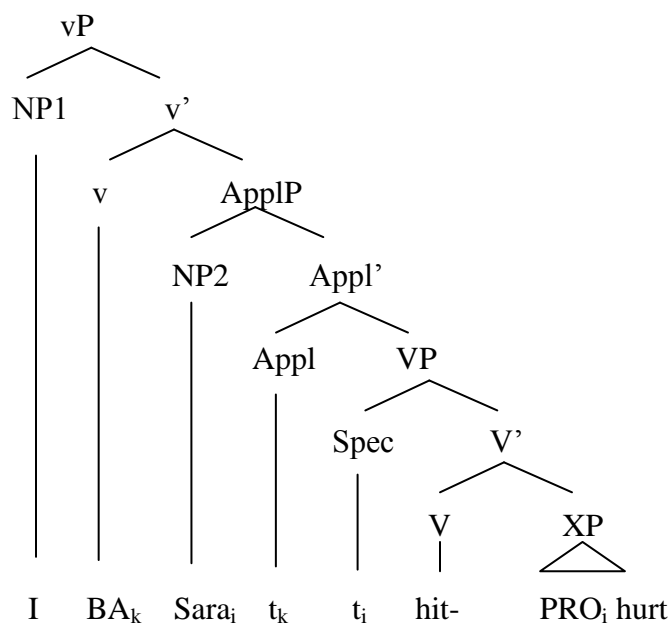
- (44) Wo ba Sara da-shang le.
 I BA Sara hit-hurt Asp.
 I hit Sara.

²¹ Other analyses of *ba*-constructions (for example, treating *ba* as an overt realization of a recursive *v*) are also compatible with my point here.

²² In fact, the pattern is more complicated than what is presented in (46). It seems that *you* ‘again’ can follow a *ba*-NP only if the predicate in the *ba*-sentence is complex. When the predicate is mono-syllabic, it is less natural to have *you* immediately preceding the predicate (vi). In this case, native speakers prefer to put *you* ‘again’ before *ba* (vii). Meanwhile adding GEI, a marker that marks affectedness, ameliorates the sentence in (vi), which is illustrated in (viii). I leave open the question why *you* is sensitive to this requirement.

- (vi) ?Wo ba Sarayou da le.
 I BA Saraagain hit Asp.
 I hit Sara again.
 (vii) Wo you ba Sara da le.
 I again BA Sara hit Asp.
 I hit Sara again.
 (viii) Wo ba Sara you gei da le.
 I BA Sara again GEI hit Asp.
 I hit Sara again.

(45) Kuo's (2009) analysis of Chinese *ba*-construction²³



(46) Wo ba Sara you da-shang le.

I BA Sara again hit-hurt Asp

I hit Sara again.

I also assume that *you* ‘again’ cannot right-adjoin in syntax. This is in line with what Lin’s (2005) “left proliferation” of phrase structures in Chinese. Lin (2005) maintains that there is no right adjunction in Mandarin syntax. Whether this generalization holds for all adverbials is a separate issue which I will not go into in this chapter. Yet at least the adverb *you* ‘again’ cannot right-adjoin, because it never occurs in sentence-final position.

As we have observed, Chinese adverbs like *you* have a restricted distribution in a bare sentence. Without going into why this is the case, I postulate that there is a PF-requirement in

²³ The structure presented in (45) is slightly modified to be consistent with the structure of RVC we are assuming here.

Chinese, which requires adverbs like *you* to be preverbal.²⁴

With these assumptions in mind, we can now explain how the ambiguity of *you* ‘again’ is derived. In a bare sentence such as (47a), whose LF is presented in (47b), there are multiple positions that *you* can adjoin to: If *you* ‘again’ left-adjoins to XP (marked by ③), it corresponds to the low restitutive reading; if it left-adjoins to VP (marked by ②), the high restitutive reading is derived; if it left-adjoins to vP or higher (marked by ①), we obtain the repetitive reading.²⁵ However, in overt syntax *you* ‘again’ has to move as a last resort to satisfy some PF-requirement in Chinese. When it gets interpreted, it can be reconstructed at LF.

(47) a. Zhangsan you da-kai le men.

Zhangsan again hit-open Asp door.

Zhangsan opened the door again.

b. [IP...①[_{vP} Zhangsan v ②[_{VP} the-door 1 hit [_{FP} F ③[_{XP} PRO₁ open]]]]]

you ‘again’ adjoins to...

²⁴ It has been widely observed that there exists a restriction in Mandarin that a transitive verb with an object cannot be modified by a post-verbal manner expression (ix). The verb has to be doubled (ix)a. The PF requirement proposed here may be part of a broader (but unexplained) generalization about modifiers in Chinese resisting VP-internal surface positions, even when they are interpreted there (Jonathan Bobaljik, pc).

(ix) a. Wo pa shan *(pa) de kuai.
 I climb mountain climb DE fast.
 I climbed the mountain fast.
 b. *Wo pa de kuai shan.
 I climb DE fast mountain.

²⁵ Similar to how I treat the functional head *de* in the *de*-resultative construction, I assume here that the function head F is a complementizer and is semantically vacuous, following Wang (2010). Thus *you* ‘again’ adjoins to XP instead of FP.

5.2. Overt movement plus semantic reconstruction

The analysis sketched above assumes that reconstruction occurs at LF. It is also possible that moved *you* ‘again’ lowers in semantics, which is along the line of semantic reconstruction (Cresti, 1995; Lechner, 1998; Rullmann, 1995; Sharvit, 1999; among others). In brief, the semantic reconstruction approach assumes that traces (or non-privileged copies) can be interpreted in semantics as higher types, giving rise to the effect of scope reconstruction without actually lowering at LF/in syntax. Let us take (48) as an example. The overtly moved *wh*-phrase can strand a higher type trace (represented as T) of Generalized Quantifier. Since T is in the scope of the intensional operator, semantic reconstruction yields the *de dicto* reading, with the *wh*-phrase taking narrow scope. Notice that semantic reconstruction entails movement, because it crucially relies on higher type traces.

(48) How many books does Chris want [_{CP} $T_{\langle\langle e, t \rangle, t \rangle}$ to buy $t_{\langle e \rangle}$]?

(intended: the *de dicto* reading)

We can follow the same logic to resolve the ambiguity of *you* ‘again’: *you* ‘again’ moves overtly to satisfy some PF requirement specific in Chinese. Instead of lowering at LF, it undergoes semantic reconstruction, yielding the desired ambiguity. Previous works on semantic reconstruction focus on raised quantifiers or *wh*-phrases, which strands a higher type trace T of type $\langle\langle e, t \rangle, t \rangle$, i.e. the type of a Generalized Quantifier. How do we interpret the higher type trace T that is stranded by *you* ‘again’? To answer this question, let us look at the low restitutive

reading of *Zhangsan you da-kai le men* ‘Zhangsan opened the door again’, whose corresponding LF is presented in (49). In (49), *you* ‘again’ moves to vP-adjoined position or higher, leaving behind a trace T_2 . Given that the verb *hit* can take a result-state-denoting clause (of type $\langle s, t \rangle$) via von Stechow’s (1995) Principle R and the small clause XP is of type $\langle s, t \rangle$, the trace T_2 should be of type $\langle s, t \rangle \langle s, t \rangle$, which is the same as the type of *again*.

(49) $[_{VP} \text{ again } 2 [_{VP} \text{ Zhangsan } v [_{VP} \text{ the-door } 1 \text{ hit } [_{FP} F [_{XP} T_2 [_{XP \langle s, t \rangle} \text{ PRO}_1 \text{ open}]]]]]]]$

5.3. Lowering in semantics without movement

Both analyses sketched above (LF reconstruction and semantic reconstruction) assume that *you* ‘again’ moves overtly. The difference between them lies in where reconstruction occurs: in syntax or in semantics. A third possibility that I would like to lay out here does not assume the overt movement of *you* ‘again’. It is base-generated in a high position, and there exists a brute force rule that allows *you* ‘again’ to lower in semantics. Ernst (2002) proposed a rule of this kind, Core State Accessibility (50), which permits preverbal adverbs to be interpreted as if they were adjoined to a lower position. According to Ernst (2002), (50) is subject to some ceiling effect. It can only apply in a certain domain (what Ernst calls the Low range). Above a certain point, more rigid mapping from syntax to semantics must be observed. Careful readers may notice already that this rule gives too much leeway, since it predicts the availability of restitutive reading for preverbal *again* in English. We will come back to this point in Section 6. At the moment, let us assume that at least such a rule is available in Chinese to derive the ambiguity of *you*.

(50) Core State Accessibility (Ernst, 2002: 268)

ADV_[E''] CAUSE (e''), [_{E'} BECOME (e') & Th (e', [_E F (e)...])]]

→ [_{E'''} CAUSE (e'''), [_{E'''} BECOME (e'') & Th (e'', [_{E'} ADV [_E F (e)...])]])]

6. Comparing different analyses

In the last section, I propose three possible analyses: overt movement with LF reconstruction, overt movement with semantic reconstruction and pure semantic lowering without movement. The first two analyses assume overt movement of *you* ‘again’, but not the third analysis. Which analysis is on the right track? In this section, I compare these three analyses by examining two issues: The first issue concerns the interpretation of *you* ‘again’ in sentences with negation or adverbs. As we will see, when *you* ‘again’ precedes negation or adverbs, only surface scope is available. I argue that these facts are consistent with analyses which appeal to the movement of *you*. The second issue concerns how the interpretations of *again* across languages bear on the analyses of *you* in Chinese.

6.1. Interpretation of *you* ‘again’ in sentences with negation or adverbs

I will start this section by presenting the data about negation and adverbs. To begin with, English and Chinese behave differently with respect to the scope interaction between *again* and negation. In Chinese, only surface scope reading is available when *you* precedes negation *mei*, i.e., the presupposition is negative (51a) rather than positive (51b). In contrast, the English correspondence is ambiguous, as it can trigger two different presuppositions, as illustrated in

(52a) and (52b).

(51) a. Zhangsan shang-ge yue mei dasao fangjian,

Zhangsan last-CL month NEG clean room

Zhe-ge yue ta you mei dasao fangjian.

This-CL month he again Neg clean room.

Zhangsan didn't clean the room last month. Again, he didn't clean the room this month.

b. Zhangsan shang-ge yue dasao le fangjian,

Zhangsan last-CL month clean Asp room,

#danshi zhe-ge yue ta you mei dasao fangjian.

but this-CL month he again Neg clean room.

(52) a. John didn't clean the room last month, and this month he didn't clean the room again.

b. John cleaned the room last month, but he didn't clean the room again this month.

Furthermore, both high and low restitutive readings are not available when *you* 'again' immediately precedes negation. This is demonstrated in (53a). In fact, to express the restitutive reading, a different lexical item *zai*, which is generally assumed to denote repetition in irrealis context, is used and it has to follow negation (53b). The English sentence with postverbal *again* is compatible with the scenario, as illustrated in (53c).

(53) *Scenario A (low restitutive reading): The door was open at the beginning. Then somehow it got closed by someone other than John. John wants to open the door but he was too tired, so...*

Scenario B (high restitutive reading): Bill first opened the door. Then somehow it got closed by the wind. John wants to open the door but he was too tired, so...

a. #ta you mei ba men da-kai.

He you NEG BA door hit-open.

b. ta mei zai ba men da-kai.

He NEG again BA door hit-open.

c. He didn't open the door again.

Another set of data concerns the scope between *you* and other adverbs. In general, when *you* 'again' precedes another adverb, surface scope reading is available, as shown in (54), (56) and (58). The inverse scope is less preferred, as illustrated in (55), (57) and (59).^{26,27} Take the adverb *guyi* 'purposefully' as an example, when both the action and the manner are repeated, the

²⁶ In fact, the judgment on adverbs is less clear-cut than the judgment on negation. Some of my informants do not completely reject (55a), (57a) and (59a). It is likely that the informants are entertaining the additive interpretation of *you* in these cases. I argue in the appendix that additive *you* is felicitous when the sum of the presupposed and asserted events brings a more developed event. By 'more developed' I mean it leads to or correlates with a higher degree measuring an eventuality on another scale. In fact, the continuation in (57a) is completely felicitous if we are emphasizing that the road is dangerous. This is consistent with my analysis of additive *you*, as adding the asserted event to the common ground lead to a higher degree of insecurity. For other examples, we can come up with some scenarios to accommodate the additive interpretation, for instance, emphasizing that an employee violated the rules frequently in (55a) and measuring the time of the door being open in (59a).

Why is the additive interpretation not available for negation, which allows some native speakers to accept the inverse scope reading? This is because negation brings a presupposition failure for additive *you*. Take (51b) as an example, the presupposed event is that he cleaned the room, and the asserted event is he didn't clean the room. Addition of these two events can by no means lead to a more developed event on any measuring scale.

²⁷ Preverbal *again* in English shows the same pattern such that only surface scope reading is available, as will be expected under the structural analysis.

continuation is felicitous (54). Comparatively, the continuation with pre-adverbial *you* ‘again’ in (55a) sounds odd, when the action ‘violate the rules’ is repeated but in an opposite manner. Native speakers prefer to use post-adverbial *you* in this case (55b).

(54) *Scenario: Last time he violated the rules on purpose. This time...*

Ta **you** **guyi** weifan le guize.

He **again** **purposefully** violate Asp rules.

He again purposefully violated the rules. (again>purposefully)

(55) *Scenario: Last time he carelessly violated the rules. This time...*

a. #Ta **you** **guyi** weifan le guize.

He **again** **purposefully** violate Asp rules.

He again purposefully violated the rules. (*purposefully>again)

b. Ta **guyi** **you** weifan guize.

He **purposefully** **again** violate rules.

Purposefully, he violated the rules again.

(56) *Scenario: Yesterday he almost got hit. Today...*

Ta **you** **chadian** bei zhuang le.

he again almost BEI hit Asp.

It is again the case that he almost got hit. (again >almost)

(57) *Scenario: Yesterday he got hit. Today...*

a. #Ta **you** **chadian** bei zhuang le.

He again almost BEI hit Asp.

It is again the case that he almost got hit. (*almost> again)

b. Ta **chadian** **you** bei zhuang le.

He **almost** **again** BEI hit Asp.

It almost happened that he got hit again.

(58) *Scenario: Five minutes ago, he opened the door quickly. Now...*

Ta **you** **xunsu** da-kai le men.

he again quickly hit-open Asp door.

Again, he quickly opened the door. (again >quickly)

(59) *Scenario: Five minutes ago, he opened the door slowly. Now...*

a. #Ta **you** **xunsu** da-kai le men.

he again quickly hit-open Asp door.

Again, he quickly opened the door. (*quickly >again)

b. Ta **xunsu** **you** da-kai le men.

he quickly again hit-open Asp door.

Quickly, he opened the door again.

Another generalization is that low restitutive reading is less desirable when *you* ‘again’ is followed by another adverb.²⁸ Here I will use *chadian* ‘almost’ as an example to illustrate this point (60).

²⁸ Here I leave aside the question whether the high restitutive reading is available when *you* precedes another adverb, because high restitutive reading can be easily accommodated under the additive usage of *you*. This complication makes high restitutive reading a less desirable test.

(60) *Scenario: A month ago, John bought a red shell. It became dusty and the color faded in a month. John wanted to paint it red. He almost did it today but ran out of time in the end.*

a. #Ta you chadian tuhong le nage beike.

He again almost paint-red Asp that shell.

He again almost painted the shell red.

b. Ta chadian you tuhong le nage beike.

He almost again paint-red Asp that shell.

He almost painted the shell red again.

The data on negation and adverbs raise a couple of questions: Why is the inverse scope reading blocked when *you* ‘again’ precedes an adverb or negation? How does the answer to this question bear on the distinction between syntactic vs. semantic lowering?

There exists a tradition to treat the negative particle *mei* ‘not’ as a type of adverb (see Chao, 1968; Li & Thompson 1981; Ernst, 1995). Assuming Tang’s (1990, 2001) theory of licensing adverbials, negative particles may be licensed in an adjoined position on a par with other types of adverb in Mandarin (see Ting, 2006 for some inconclusive discussion). If this is on the right track, analyses which assume the overt movement of *you*—overt movement plus LF reconstruction and overt movement plus semantic reconstruction (see Section 5.1 and 5.2 respectively) can account for the generalization: The fact that adverbs and negation block the inverse scope reading of *you* follows directly from Relativized Minimality (Rizzi, 1990), a well-established syntactic constraint that bans movement of an adjunct like *you* across another

adjunct. On the other hand, there is no obvious account as for how the semantic lowering analysis of *you* ‘again’ (the analysis sketched in Section 5.3) can account for the blocking effect. However, it is not obvious how the negation and adverb facts can tease apart syntactic reconstruction vs. semantic reconstruction, as both of them entail movement.

6.2. English *again* and German *wieder* vs. Chinese *you*

Any analysis which can explain why Chinese preverbal *you* ‘again’ is ambiguous must also disallow the availability of the restitutive reading of *again* in English and German, as the latter constitutes crucial evidence in favor of the structural analysis. An analysis with either LF or semantic reconstruction can straightforwardly achieve this goal for the following reason: Different from Chinese, English allows right-adjunction. There is no PF requirement for adverbials to occur preverbally, hence no Chinese-type movement as a last-resort. Thus English *again* and German *wieder* are simply interpreted in their base-generated position.

How does the pure semantic lowering analysis, which does not assume movement, disallow *again* to be ambiguous in English and German? Assuming that Core State Accessibility applies cross-linguistically, Ernst (2002) suggests that restitutive *again* is a homonym of repetitive *again* instead of an instance of a unified entry with different possible scopes. The reason is as follow: If *again* had a unitary meaning, we would expect preverbal *again* in English and German to have a restitutive reading, because the Core State Accessibility rule allows vP-adjoined adverbs to have narrow scope as if they were adjoined to VP or lower. To avoid this, we must assume that restitutive *again* is specially marked, such that it requires narrow scope. Not only is this a

stipulation, but it is not in line with the spirit of the structural analysis—having only one *again* and attributing the ambiguity to the structure. Perhaps we need to postulate that the lowering rule has to apply in Chinese but cannot apply in other languages like English and German. But why is the Core State Accessibility rule specific to Chinese?

A tentative solution is to appeal to some Economy condition. Since Chinese *you* ‘again’ can never occur at sentence final position, the only way that *you* ‘again’ can modify a result state is to appeal to Core State Accessibility. Different from Chinese, in English *again* can occur post-verbally, thus it can adjoin freely to different positions, allowing the restitutive reading to be derived without Core State Accessibility. When *again* occurs pre-verbally, Economy rules out the application of Core State Accessibility, which consequently excludes the restitutive reading.

In fact, this Economy condition for Chinese vs. English differences seems very much connected to the Scope Transparency model (henceforce ScoT) (see Bobaljik & Wurmbrand, 2012 and reference therein), which aims to explain an observed correlation between word order and scope. It has been widely observed that languages with flexible word order are often scope rigid; whereas languages with restricted word order usually have a high tolerance of scope ambiguity. For instance, an English sentence with quantified DPs is ambiguous between the surface scope and inverse scope reading (61a), but only the surface scope reading is allowed in its Japanese counterpart (61b). The inverse scope reading can be expressed through a Japanese sentence with the object scrambled across the subject (61c). So it seems that the availability of scrambling in Japanese blocks the inverse scope reading, because there exists another structure that can reflect the scope more transparently. However, since English does not allow scrambling,

the only way to express the inverse scope is to appeal to Quantifier Raising. Bobaljik and Wurmbrand (2012) propose that UG includes a soft economy condition ScoT that favors isomorphism between LF and PF representations, as stated in (62).

- (61) a. Someone read every book. $\exists \gg \forall; \forall \gg \exists$
- b. dareka-ga subete-no hon-o yonda [Kuroda 1970]
 someone-NOM all-GEN book-ACC read
 Someone read all the books. $\exists \gg \forall; * \forall \gg \exists$
- c. subete-no hon-o dareka-ga yonda
 all-GEN book-ACC someone-NOM read
 Someone read all the books. $\forall \gg \exists$

- (62) Scope Transparency (ScoT): If the order of two elements at LF is $A \gg B$, the order at PF is $A \gg B$.

Although both Economy conditions hint at how interpretation determines the flexibility of word order, the Economy condition we appeal to as an explanation for the English/Chinese difference is not identical to ScoT. ScoT evaluates which PF wins when different PFs compete to represent a given LF. Our Economy condition, on the other hand, concerns about various PFs competing to represent a given semantics instead of LF. Notice that under the Core State Accessibility rule, the position where *you* ‘again’ gets interpreted in semantics does not necessarily correspond to its position at LF. For instance, under the restitutive reading, *you*

‘again’ is interpreted low (below ν), but it occupies a higher position at LF (above ν). Given this mismatch, we need an Economy condition of similar spirit as ScoT yet regulates the connection between semantic representation and word order. A lot more details need to be fleshed out for this Economy condition to work out.

To summarize, in this section I compare the three analyses of *you* ‘again’ proposed in Section 5. The facts that negation and adverbs block the inverse scope reading of *you* ‘again’ is in favor of a reconstruction analysis (either semantic or syntactic) which assumes overt movement of *you*. Under such an analysis, the facts follow automatically from some well-established syntactic constraint. Comparatively, a pure semantic lowering analysis seems untenable to account for these facts. Meanwhile, cross-linguistic behavior of *again* gives the movement analyses slightly more advantage than the pure semantic lowering analysis, even though both assume some Chinese-specific operation. As we have seen, the unavailability of the Chinese-type movement in English and German straightforwardly explains why preverbal *again* and pre-object *wieder* lack ambiguity. Comparatively, more details need to be fleshed out for the semantic lowering analysis to explain why the Core State Accessibility rule does not apply in English or German.

Unfortunately, so far I have not been able to conclude whether reconstruction of *you* occurs in syntax or semantics. More evidence is needed to tease them apart. I leave this question for future research.

7. Further result and extension: *chongxin* ‘repeatedly’

So far I have demonstrated that the ambiguity of *you* is structural and I have proposed three possible analyses for its ambiguity and demonstrated that the movement analyses plus semantic/syntactic reconstruction is on the right track. Before concluding, I would like to show that the movement analyses is not restricted to *you* ‘again’, but can be extended to *chongxin* ‘repeatedly’, an adverb which shares a similar meaning as *you*. Like *you* ‘again’, *chongxin* ‘repeatedly’ can only occur preverbally (63). Different from *you* ‘again’, however, *chongxin* ‘repeatedly’ does not have low restitutive reading (63).

- (63) Zhangsan (*chongxin*) tu-hong le (**chongxin*) na-ge beike (**chongxin*).
Zhangsan repeatedly paint-red Asp repeatedly that-CL shell repeatedly.
Zhangsan painted the shell red again. (repetitive, high rest, *low rest)

We can account for the lack of low restitutive reading in the following way. Different from *you* ‘again’, *chongxin* ‘repeatedly’ cannot modify a small clause denoting pure state. Again, we use the resultative *de*-construction as a diagnosis. The contrast between (64) and (65) shows that this is the case.

- (64) *ta tu de na-ge beike *chongxin* hong le.
He paint de that-CL shell repeatedly red Asp.

(65) ?ta tu de na-ge beike you hong le.

He paint de that-CL shell again red Asp.

He painted that shell red again.

The difference between *you* ‘again’ and *chongxin* ‘repeatedly’ is in line with Rapp and von Stechow’s (1999) Visibility Parameter, which aims to capture the variation between different adverbs with respect to their lexico-syntactic property. Given this distinction, the fact that *chongxin* ‘repeatedly’ only displays a two-way ambiguity and the low restitutive reading is missing follows automatically. Under the movement analysis (with either LF reconstruction or semantic reconstruction), *chongxin* cannot be base-generated in an XP-adjoined position, thus the low restitutive reading is unavailable. But it can be base-generated at the VP-level, undergo overt movement and get reconstructed (either at LF or in semantics). This yields the high restitutive reading. Or it can adjoin to vP or even higher, deriving the repetitive reading.

8. Chapter conclusion

In this study, I examined how the repetitive/restitutive ambiguity of *you* ‘again’ in Mandarin Chinese is derived. Is the ambiguity structural, lexical or pragmatic? On the surface, Chinese poses a problem for the structural analysis because the adverb *you* can only be preverbal. However, the scope interaction between *you* ‘again’ and an indefinite object suggests that the ambiguity of *you* ‘again’ must be structural rather than lexical or pragmatic. The puzzle can be resolved if *you* ‘again’ moves overtly and gets reconstructed either at LF or in semantics.

Chapter 3

There and back again: An acquisition study

1. Introduction

Theories on child language acquisition seek to understand how a child acquires her target languages given the cross-linguistic variation. A satisfactory answer to this question must also address the question what kind of input a child can make use of, especially under the “poverty of the stimulus” concern that sometimes the child’s experience of the language is limited not only in terms of quantity but also in terms of quality, since it is consistent with more than one possible grammar.

This chapter focuses on the acquisition of goal-PP constructions modified by ‘again’, which gives rise to more than one possible interpretation. This construction that has some features that makes its acquisition process interesting: In the first place, the construction is subject to cross-linguistic variability. In addition, the direct input in the care-givers’ speech is scarce. Most importantly, ambiguity in the input is rampant, due to the fact that the interpretation that is used more frequently entails the one that is used less frequently. Studying the acquisition of this construction is furthermore of interest since it also concerns the acquisition of a prototypical semantic/pragmatic phenomenon: presupposition.

Presupposition refers to some background information that participants of the conversation take for granted for an utterance to be felicitous in discourse, in contrast to what the speaker asserted by the utterance. There are a large number of expressions that trigger presupposition, such as the definite article *the*, some change of state verbs (*stop*, *start*, *continue*), additive

particles (*also, too*), pseudo-clefts (*it is X who...*), etc. This chapter concerns the adverb *again*, which is argued to trigger a presupposition that a salient event of the same property has occurred before. For instance, by uttering the statement ‘John was late again’, the speaker takes it to be shared knowledge that John had been late before.

As we have seen in the previous chapter, a sentence with an accomplishment predicate modified by *again* is ambiguous between a repetitive reading and a restitutive reading (e.g. Beck & Johnson 2004; von Stechow 1996). The former presupposes that the agent has performed the action before; the latter presupposes only that the result has held before. Consider the following example in which *again* modifies a goal-PP construction, by which I refer to constructions involving a manner of motion verb (*walk*) combined with a PP indicating a location or path (*to the village*).¹

(1) John walked to the village again.

- a. Repetitive: John had walked to the village before.
- b. Restitutive: John had been at the village before.

Example (1) is ambiguous between a repetitive and a restitutive reading. The former presupposes that John had walked to the village before (cf. (1a)) and the latter simply presupposes that John had been at the village before, without necessarily having walked there (cf. (1b)). For instance, a context in which John was born in the village, left, and returned to the village, would render (1) true.²

¹ Note that this pattern observed in English is also found in Mandarin.

² Speakers report that the restitutive reading is more salient if (1) contains the adverb *back*. It has been observed that many of the most natural examples of restitutive *again* in English involve adverbs like *back* and *up*, which (for unexplained reasons) renders the result state of a goal-PP sentence more visible than in sentences without these

Interestingly, languages vary in the availability of (1b) (Beck 2005; Beck & Snyder 2001). For instance, the French and Spanish counterparts of *walk to the summit/village again* given in (2) and (3) allow only the repetitive reading (see Beck & Snyder 2001 and Beck 2005 for details).

(2) Jean a march é de nouveau au sommet.

Jean has walked again to-the summit

(3) Suresh anduvo hasta la aldea otra vez.

Suresh walked until the village again

This cross-linguistic variation raises serious and interesting developmental questions, which, as far as I am aware, have not been addressed in previous studies: How do children decide whether the restitutive reading is available in their target language? What kind of evidence can they rely on?

In the current study I will address these questions by investigating English-learning children's acquisition of *again* modifying goal-PP constructions. Examining parental input in these cases, I will show that parental uses of the restitutive reading of *again* in English goal-PP constructions are infrequent and subject to considerable ambiguity. I will also present results from an experiment which indicate that many children nonetheless achieve a surprising degree of facility with these restitutive readings by age 4 and 5. To resolve this conundrum, I will propose that in this case children rely on more general evidence about the syntax of English, together with knowledge of the basic meaning of *again*, to derive the restitutive reading of *again* in goal-PP constructions.

adverbs (see Beck 2005 footnote 8). However, this is not a necessary condition for the restitutive reading to be available for goal-PP sentences (as can be seen in Appendix III, none of the stimuli for my experimental study contains *back* or *up*).

This study will supplement previous studies on when and how children can evaluate presupposition and how experimental manipulation can enhance children's sensitivity to it. Results of some previous studies demonstrate that preschool children often ignore the additive particle 'too' in some comprehension tasks (e.g. Bergsma 2006), thus leading the authors to conclude that young children have difficulty with the presupposition. However, more recent studies (e.g. Hähle et al. 2009; Berger & Hähle 2012; Berger & Pouscoulous 2013) show that the reported difficulty is likely to be task-related, and that 3- to 4-year-olds (and even younger children) are able to take into account the presuppositions triggered by particles like German *auch* 'too'. The results of the study reported here indicate that children have considerable success interpreting *again*, thus lending further support to this view.

In this chapter, I will begin with some background on goal-PP constructions and the restitutive reading of 'again' (Section 2). Section 3 will review previous studies on the acquisition of restitutive 'again'. In Section 4, I will present the results of the corpus study on child-directed speech, which shows that children do not receive input that unambiguously cues the restitutive reading of *again* modifying goal-PPs. However, my experiment will show that children are nonetheless good at comprehending this meaning (Section 5). In Section 6 I will account for this seeming paradox by appealing to a syntactic aspect of English. To be more specific, I will explain how a child could, in principle, acquire restitutive *again* with goal-PPs by making use of more general evidence about the syntax of English goal-PPs, and their knowledge of the semantics of *again*.

2. Background: some notes on goal-PP constructions and restitutive ‘again’

By goal-PP constructions, I refer to constructions involving a manner of motion verb combined with a PP indicating a location or path. (4)-(7) are examples of such constructions from English and Spanish. Notice that “walk to the village” is grammatical in both English (4) and Spanish (6), and the two examples yield the same truth conditions. On the other hand, although “float under the bridge” in English (5) can express a meaning in which the bottle was not originally under the bridge but came to be there (called the goal-PP reading), the Spanish counterpart (7) does not permit such a reading. It can only express a locative meaning, in the sense that the floating of the bottle occurred (entirely) under the bridge, a reading we are less concerned about in this study. In fact, goal-PP constructions vary to a large degree cross-linguistically. Both the PP and the motion verb can affect whether a goal-PP construction is available; this will be discussed in more detail in Section 6.

(4) John walked to the village.

(5) The bottle floated under the bridge.³

- a. Locative reading: The location of the bottle is always under the bridge.
- b. Goal-PP reading: The bottle was not under the bridge originally but came to be there by floating.

Spanish

(6) Juan caminó hasta la aldea.

John walked until the village

John walked to the village.

³ As pointed out by an anonymous reviewer, speakers also allow an atelic reading for (5) in which the bottle passed under the bridge but did not end up there (it floated under the bridge and kept going). This reading is not relevant to the current study.

- (7) La botella flotó bajo el puente.
the bottle floated under the bridge

The bottle floated under the bridge. (locative reading, *goal-PP reading)

Crucially, in languages like Spanish and French, although some manner-of-motion verbs can be combined with a PP and give rise to a goal-PP interpretation similar to that of an English goal-PP construction, the combination of goal-PPs and ‘again’ in these languages does not yield a restitutive reading, as we have seen in (2) and (3). This leads to the following question this study investigates, with a focus on English-speaking children: how do children decide whether their target language permits the restitutive reading?

Before proceeding, I would like to point out that the repetitive versus restitutive ambiguity is not unique to goal-PPs, but is also possible with other complex predicates, such as lexical accomplishment verbs (8), adjectival resultatives (9), etc. I will discuss in Section 6 why this study focuses on the case of ‘again’ modifying goal-PPs. On the other hand, some earlier studies have examined children’s acquisition of restitutive ‘again’ in general, without focusing on ‘again’ modifying a particular construction. I review these studies in the next section.

- (8) John opened the door again.

- a. Repetitive: John had opened the door before.
- b. Restitutive: The door had been open before.

- (9) Sally painted the wall white again.

- a. Repetitive: Sally had painted the wall white before.
- b. Restitutive: The wall had been white before.

3. Previous acquisition studies of restitutive ‘again’

There are a few studies which have explored children’s knowledge of restitutive ‘again’ with complex predicates of various kinds (such as lexical accomplishments and verb particle constructions). Overall, these studies report that German- and English-learning children at ages three and four have mastered the meaning of ‘again’.

Bamberg (1994) showed that German children as young as three years old seem to be able to use *wieder* ‘again’ to indicate both restitution of a state and reoccurrence of an action in their narration of the Frog Story, which was Mercer Mayer’s (1969) wordless picture book, *Frog, where are you?*. The book is about the disappearance of a boy’s frog and the boy’s search for it. Bamberg (1994) reports a few possible examples of children’s restitutive *wieder* ‘again’: *wieder da rauf wollen* ‘wanting to move back up again’ (onto the tree trunk in the last picture), and *wieder nach Hause gehen* ‘going back home again’.

Clark, Carpenter and Deutsch (1995) examined how German- and English-speaking children (age range 2;8-5;0) understand the notion of reversal through a production task. In the experiment, adults carried out different actions (e.g. wrap, crush, stick) under the direction of a puppet, Fozzie Bear. Children, who played the role of Oscar the Grouch and thus always objected to the adults’ actions, had to command the adults to restore the objects to their original states. The results of this study indicated that German-speaking children added *wieder* ‘again’ to their requests for reversal 46% of the time. Even the youngest group of children (mean age 3;7) used *wieder* in their command about 40% of the time. The same pattern holds for English-speaking children.

Using these production studies as a starting point, Wittek (1998, 2002) conducted a new study, demonstrating that 5-year-olds can even use *again* as a cue to learn novel verbs entailing a change of state. The finding further supports earlier findings that German-speaking children have the knowledge of restitutive ‘again’ from an early age. However, Wittek (1998, 2002) acknowledged that it would be ideal to conduct a comprehension study in the first place to assess how well children have grasped restitutive ‘again’. This examination will be achieved in the current study.

4. Relying on direct evidence? A corpus study

Let us return to our acquisition questions of the current study: Given the cross-linguistic variation, how do learners acquire restitutive *again* with goal-PPs in English? What kind of learning strategy can they rely on to figure out whether restitutive *again* is available in goal-PP constructions?

One possible answer is that children rely entirely on parental uses, i.e. are exposed to goal-PP sentences with *again* that describe situations where only the restitutive reading is true.⁴ This possibility raises some empirical questions: Are such parental uses actually available to children? And if so, how often?

To address these questions, I examined the parental input to four English-learning children for whom high-quality longitudinal corpora are available in the CHILDES database (Demuth, Culbertson & Alter 2006; MacWhinney 2000; Weist, Pawlak, & Hoffman 2009; Weist & Zevenbergen 2008). Table 3-1 summarizes the corpora analyzed.

⁴ A specific version of this input-based proposal is that children are guided by the Semantic Subset Principle (Crain, Ni & Conway, 1994), which is discussed in detail in (Xu 2015).

Table 3-1. English corpora analyzed

Child	Corpus	# of child utterances	Age span	# of transcripts
Naima	Providence	43,542	0;11,28–3;10,10	83
Lily	Providence	39,852	1;01,02–4;00,02	80
Violet	Providence	17,274	1;02,00–3;11,24	54
Mat	Weist	10,157	2;03,10–5;00,05	56

(Total # of child utterances: 110,825)

All the adult speech was searched for utterances containing a potential goal preposition (one of the following: *to, into, onto, under, down, up, in, across, around*) together with *again*. I applied the following criteria to code restitutive and repetitive *again*: (i) If in the preceding context, the agent has performed the action represented by the predicate, the utterance is coded as repetitive. (ii) If there is no mention in the preceding context of the same event being carried out by the same agent, it is coded as potentially restitutive. (iii) Among the utterances that were coded as potentially restitutive in (ii), if the combination of the predicate with (purely) restitutive *again* would have been pragmatically odd (for example, under the restitutive reading of *go to the library again*, the subject has been to the library but has never gone to the library before, therefore s/he must have been born in the library), it was re-coded as repetitive.⁵

⁵ An example with *go to school*, as shown in (i), was set aside in the analysis, because the mother (M) seemed to intend a figurative meaning of *go to school*, i.e. to receive education, instead of a real ‘goal-PP’ reading.

- (i) Child(C)’s name: Lily; file number: 70; line 294
M: you know Justine goes to school too.
C: ooh.
M: just like Lily and just like mommy.
C: just like daddy.
M: well daddy's already done with school he doesn't go anymore.
M: it's true it is true.
M: daddy is all done with school.
C: yeah.
C: he goes to school more after he's done.
M: really should he go back to school again?

The results are summarized in Table 3-2. Among the goal-PP utterances found in the parental input, there is some potentially restitutive usage of *again*. However, I find that examples of *again* modifying a goal-PP where the restitutive reading is unambiguously intended do not exist (0 out of 175,201 utterances across our samples of child-directed speech).

Table 3-2. Goal-PP utterances with *again* in child-directed speech

Corpus	Total adult utterances	unambiguous repetitive <i>again</i>	potentially restitutive <i>again</i>	potentially restitutive <i>again</i> per 1000 utterances	unambiguously restitutive <i>again</i>
Naima	61794	5	2	0.032	0
Lily	67238	7	7	0.104	0
Violet	25999	3	1	0.040	0
Mat	20170	3	2	0.099	0

(Total # of adult utterances: 175, 201)

If children simply rely on direct evidence in child-directed speech to acquire the restitutive reading of *again* with goal-PPs, whether these input can guide them depends on what they should do with the ambiguous cases that potentially speak to the availability of the restitutive reading. If children are simply relying on clear unambiguous uses of restitutive *again*, it seems implausible that a child will receive sufficient direct evidence of the restitutive *again* before age four and five, given the absence of clear examples that were attested in our samples of child-directed speech. If so, most English children will still be non-adult-like at ages four and five. On the other hand, it is possible that the ambiguous examples are at least partially informative, either because they

provide probabilistic evidence for the availability of the restitutive reading or because some of them are in fact unambiguous for children. If this is the case, we can ask a further question: Do the ambiguous cases provide “enough” evidence for learners to determine the availability of the restitutive reading? As far as I am aware of, it is not well-established how much input counts as “enough” for learners. However, there is some number that we can compare to. Yang (2004) argues that there exists a negative correlation between the timing of parameter setting and the frequency of relevant input a learner receives, all else equal. In other words, parameter settings are determined late by learners if the requisite evidence is low in frequency. Among the examples provided by Yang (2004), the parameter of scope marking of long-distance *wh*-questions is considered to be set late by English children (not until they are four years old or after) and the frequency of the requisite evidence in the input (long-distance *wh*-questions) is only 0.2% (i.e. 2 per 1000 utterances). Comparatively, among the four children whose child-directed speech we examined, Lily has the highest frequency of potentially restitutive *again*: 0.1 per 1000 utterances. However, even this number is still far lower than 2 per 1000 utterances. Based on this estimation, it seems implausible that four- and five-year-old children have enough direct evidence to allow them to learn the restitutive reading, if they simply rely on these ambiguous examples.

On the other hand, is it possible that children infer the availability of restitutive *again* with goal-PPs that from other utterance-types, which are much more frequent in their input? If this is the case, children around age 4 and age 5 might already know that this reading is possible in English. In the next section, we examine whether English-learning children can understand this reading through a comprehension task.

5. Experiment

5.1. Participants

The participants in this experiment included 31 English-learning children between the ages of 3;10 and 5;07 (mean age 4;09) and 12 adult native speakers of English.⁶ An additional 8 children were tested but they were excluded from data analysis for the following reasons: failure to understand, comply with or complete the task; failure to pay attention; or failure to understand goal-PP sentences without *again* (during the pretest, which is to be discussed later in Section 5.2).

5.2. Materials and procedure

Participants were tested on their interpretation of repetitive *again* and restitutive *again* modifying goal-PP sentences. I used a slightly modified version of the Truth Value Judgment Task (TVJT, Crain & McKee 1985; Crain & Thornton 1998). The format was similar to the traditional TVJT: The experimenter told stories through cartoon pictures presented in PowerPoint on a laptop computer. At the end of each story, a puppet on the computer screen, Parrot, said the test sentence, and the participant was asked whether the puppet “got it right.” If Parrot got it right, he was rewarded with a smiley stamp. If he got it wrong, he was given a dinosaur stamp. If a child participant rejected the test sentence, s/he was asked a follow-up question like, “How do you know”? On the other hand, adults were not asked to justify their answers after each trial, but were given an informal interview after all the test sentences were presented. This was to avoid a potential problem of the adult participants overanalyzing the test sentence.

Crucially, I introduced a modified version of the TVJT. Remember that *again* triggers a presupposition that a salient event with the same property as the asserted event has occurred

⁶ Bilingual children may have been tested in the study, since the information about what language(s) children spoke at home was not collected. A possible improvement in future studies is to exclude bilingual children. Meanwhile it would also be interesting to examine how bilingual children interpret *again*.

before. In fact, the meaning contribution of *again* to its host sentence is strictly presuppositional, i.e. taking out the adverb does not change the asserted content of a sentence. For example, *John danced again* presupposes that John had danced before, and has the same asserted content as *John danced*. What the participants evaluate in our experiment is whether the test sentences' presuppositions have been met, rather than whether the test sentence is true. Thus, the traditional TVJT would not have been appropriate, for the following reasons: First, the participants may give answers based on the assertion, and thus downgrade the relevance of the presupposition. Second, since a presupposition failure often gives rise to a "squeamish" feeling rather than a plain sense of falseness, participants may be unable to decide whether the puppet's sentence with *again* is correct. For these reasons I introduced a modified version of the TVJT, in which I included a "contrastive" character in the stories for the *again*-conditions. In other words, the stories for both interpretations of *again* (repetitive and restitutive) involved two characters, where exactly one of the two satisfied the presupposition of *again*. The presence of a contrasting character, who did not meet the presupposition of *again*, highlighted the relevance of the presupposition.

To illustrate this point, consider a sample story (10) for restitutive *again*. In the story, the lizard meets the presupposition of restitutive *again* (i.e. the lizard was under the rock before) by being born under the rock. The other character, the snail, was born near a river and thus did not meet the presupposition.⁷ Two possible test sentences are included in the sample: a match (M) sentence and a mismatch (MM) sentence. In the experiment, the participant heard only one test

⁷ For restitutive *again* with goal-PP sentences, such as *John walked to the village again* (1), the sentence presupposes that John was at the village before (without necessarily having walked there). This reading was often illustrated in the literature (e.g. Beck 2005) through a context where the agent, John, was born at the destination (the village) from the beginning. Such contexts were also widely used in our experiment for the examination of children's interpretation of restitutive *again*, as shown in (10). In principle, restitutive *again* should also be felicitous in a context where John went to the village before, but through a different manner of motion than walking; for example, perhaps last time John drove to the village, but this time he walked there. In our experiment, I included one such story (see (11) in Appendix III), which involves different manners of motion (flying versus swimming).

sentence per story (either (10a) or (10b) for (10)). A sample story to test children's repetitive *again* is given in (11).⁸

(10) Restitutive story:

Experimenter: This is a story about a baby lizard and a baby snail. Look, they are hatching from their eggs! The lizard is hatching under the rock, and the snail is hatching by the river. The lizard decides to stay under the rock for a while, enjoying the cool shade and the breezy air. Then he starts to feel thirsty. So he crawls away from the rock to the river and gets some water. But then he starts to feel hot. "Should I go back? It's pretty out here, but I really like the cool shade under the rock," says the lizard. So he crawls back, and takes a break under the rock. The snail hatched by the river, but she thinks the riverside is too hot. She wishes she had been born under the rock! She crawls toward the rock. It's a bit far. She gets tired halfway, because she's too small and not strong enough. "Should I keep going?" asks the snail. "Yes, I'll keep going. I need the shade." She finally gets there and decides to stay under the rock.

- a. *Puppet:* I know what the lizard did in the end. The lizard crawled under the rock again. (M)
- b. *Puppet:* I know what the snail did in the end. The snail crawled under the rock again. (MM due to presupposition failure)⁹

⁸ An anonymous reviewer expresses the following concern about testing participants' interpretation of the repetitive reading: Since the repetitive reading entails the restitutive reading, how can we tell that participants are in fact interpreting test sentences like (11a) as repetitive? I believe this is the case for two reasons. First, on the plausible assumption that frequent use of an interpretation makes it easier to access, and on the further assumption that repetitive readings of *again* are more frequent than restitutive readings (as seems likely, given that restitutive readings are available in a much more restricted set of environments), we might expect the repetitive reading to be preferred when both are possible. Second, as will be discussed, only the repetitive reading is available when *again* is stressed (Fabricius-Hansen 1983; von Stechow 1996, Beck 2006). In the experiment, *again* was not stressed in the stimuli for restitutive stories, yet it was stressed in stimuli for repetitive stories. If (child) participants are following the adult grammar, they should entertain the repetitive interpretation under a repetitive context.

(11) Repetitive story:

Experimenter: This is a story about a baby dinosaur and a baby crocodile. They're near a river, where they've just hatched from their eggs. They stay and play by the river for a while... Then they notice that there's a tree not far away. The dinosaur wants to play under the tree, and he asks the crocodile to join him. "No," says the crocodile. "I'm too sleepy to crawl right now." So the dinosaur crawls to the tree by himself, and plays there for a while. Later when he crawls back to the river, he starts missing the tree, and he wonders if he should go there for a second time. "It's a little bit far, but I think I'll crawl there anyway. It's a lot of fun to play under the tree!" He decides to ask the crocodile to come with him. The crocodile is still sleepy, but he feels bad saying no for a second time. So, the crocodile and the dinosaur both crawl under the tree, and they both have a great time there!

- a. *Puppet:* I know what the dinosaur did in the end. The dinosaur crawled under the tree again.
(M)
- b. *Puppet:* I know what the crocodile did in the end. The crocodile crawled under the tree again.
(MM due to presupposition failure)

Fabricius-Hansen (1983), von Stechow (1996), Beck (2006), and others report that focus helps disambiguate: only the repetitive reading is available when *again* is stressed. In the experiment, *again* was not stressed in the stimuli for restitutive stories (e.g. (10a) and (10b)) to make the test sentences most natural under the intended reading. Yet it was stressed in stimuli for repetitive stories (e.g. (11a) and (11b)) to draw the participants' attention to the crucial adverb.

⁹ Ideally one would place focal stress on *lizard* / *snail* in the lead-in, and thereby turn the snail/lizard into a "contrastive topic"; this could highlight the issue of whether it's the snail or the lizard who better meets the description. This was not done in the present experiment, but it would be a possible improvement in future studies.

Each adult participant received four stories for repetitive *again* (e.g. (11)) and four stories for restitutive *again* (e.g. (10)). Each child participant received these eight stories plus two more stories for restitutive *again*, for reasons to be discussed later. In addition to stories for repetitive and restitutive *again*, adult and child participants also received a pre-test that included four goal-PP trials without *again*. The purpose of the pre-test was twofold: to prepare the participants for the test stage and to make sure that the subjects could understand goal-PP sentences in the first place. Only children who got at least three out of four trials correct were included in the analysis.

Six combinations of motion verb and preposition (*walk to*, *crawl under*, *fly into*, *swim to*, *jump into* and *run into*) were used in the experiment. Four of them (*walk to*, *crawl under*, *fly into*, *swim to*) were used in all three types of stories (goal-PP stories, repetitive stories, and restitutive stories), and two (*jump to* and *run into*) were only used for restitutive stories, as summarized in Table 3-3. These two restitutive stories were also the two stories that were presented only to child participants.

Table 3-3. Test sentences under different story types

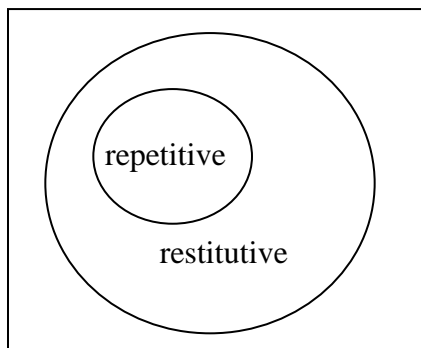
Story types	Puppet's statements
Goal-PP stories	<p>Daisy walked to the store.</p> <p>The turtle crawled under the bridge.</p> <p>The bee flew into his hive.</p> <p>Ariel swam to the land.</p>
Repetitive stories	<p>Aladdin/Abu walked to the castle again.</p> <p>The dinosaur/The crocodile crawled under the tree again.</p> <p>The sparrow/The woodpecker flew into the lighthouse again.</p> <p>Elmo/Cookie Monster swam to the boat again.</p>
Restitutive stories	<p>The puppy/The bunny walked to the doghouse again.</p> <p>The lizard/the snail crawled under the rock again.</p> <p>The robin/The crow flew into the birdcage again.</p> <p>Woody/The fisherman swam to the island again.</p> <p>The bear ran into the forest again. (for children only)</p> <p>The pony jumped into the farm again. (for children only)</p>

Four different versions were created to control the order of presentation of the *again* stories. Two versions were created first with everything identical except the subject of the puppet's utterance. Take (10) as an illustration: in one version the test sentence is (10a), while in the other version the test sentence is (10b). The third and fourth versions were created by reversing the presentation order of *again*-trials to cancel out any item-specific effects of either fatigue or practice. Children and adults were divided roughly equally among the four versions. All four

versions started with the presentation of a story containing a test sentence with a stressed repetitive *again*, in an attempt to call the participants' attention to the word *again*. In subsequent trials no more than two trials in the same condition were presented in a row. For participants who gave the same judgment to three consecutive trials, a filler item with the opposite expected answer was inserted, in order to confirm that the participant understood the task and was not simply responding *Yes* (or *No*) to all items.

Ideally we would have liked to have the test trials in two conditions: repetitive and restitutive, with each condition having match and mismatch items. However, in the context of goal-PPs, truth of the presupposition of repetitive *again* entails truth of the presupposition of restitutive *again*. In other words, contexts compatible with repetitive *again* are a proper subset of those compatible with restitutive *again*, as represented in the Venn diagram in (12).¹⁰

(12)



Due to the entailment relation, the test trials with *again* fell under three conditions, as summarized in Table 3-4. The first condition included true repetitive items like (11a). By “true” I

¹⁰ However, by stressing *again* in the repetitive items, the restitutive reading may have been blocked there, at least for children who were following the adult grammar. In this experiment *again* is stressed in the test items for repetitive stories, which stacks the cards against us. This is because participants are likely to be primed for repetitive readings and may have more difficulty accessing the restitutive reading. As we will see later, however, children in our experiment still showed a surprisingly high degree of facility with restitutive *again* despite the possible priming effect.

mean ‘both true and felicitous’, and the consequence of an unsatisfied presupposition is simply a percept of infelicity. These trials were also true under the restitutive reading, because of the entailment relation. Each participant received two trials in this condition. The second condition included true restitutive sentences which failed to meet the presupposition of repetitive *again*, as exemplified by (10a). Each adult participant was asked to judge two items in this condition, and each child participant was asked to judge these two and two more, for reasons to be discussed later in this paragraph. The third condition, called ‘mismatch items’, failed to meet the presupposition of repetitive or restitutive *again*, as shown in (10b) and (11b). Each participant received four items of this category. Logically, there exists a fourth condition: sentences that are true under repetitive *again* yet fail to meet the presupposition of restitutive *again*. However, such sentences do not exist, because in the context of goal-PPs, truth of the presupposition of repetitive *again* entails truth of the presupposition of restitutive *again*. Among the three conditions, the true restitutive condition was the only condition that was informative about children’s knowledge of restitutive *again*. Ideally, we would have liked mismatch restitutive items to be informative as well. However, because the repetitive reading asymmetrically entails the restitutive reading, the mismatch items that failed to meet the presupposition of restitutive *again* (cf. (10b)) also failed to meet that of repetitive *again*. This explains why items like (10b) and (11b) were grouped together. If children only had knowledge of the repetitive reading, they would reject these items anyway. Consequently, we included two more true restitutive trials for the child participants than adults, with the hope of better tapping into their knowledge of restitutive *again*. The true repetitive items served as a control. The mismatch items were included to make sure that children were not simply ignoring the adverb in their interpretation. If they were doing so, they would accept the mismatch items.

Table 3-4. Conditions for test trials with *again*

Conditions	Repetitive reading	Restitutive reading	Number of items	Example
True repetitive items	True	True	N=2	(11a)
True restitutive items	Presupposition failure	True	children: N=4 adults: N=2	(10a)
Mismatch items	Presupposition failure	Presupposition failure	N=4	(11b), (10b)
N/A	True	Presupposition failure		

5.3. Plan for data analysis

If children in the age range of 3;10 to 5;07 know that restitutive *again* with goal-PPs is possible in English, they will accept the puppet's statement as "right" substantially more often when it is a true restitutive item than they will when it is a mismatch item. On the other hand, if children in this age range do not understand restitutive reading, few if any of them will make any distinction between the true restitutive and mismatch items. Hence, we do not expect a significant difference. The plan is to compare the acceptance frequencies for true restitutive vs. mismatch items, by applying a non-distributional test of within-subject difference, the Wilcoxon signed-ranks test.

Additional analyses were performed on the children's accuracy through mixed logit models, to check for possible effects of sentence type (true repetitive vs. true restitutive vs. mismatch), and of individual verb-preposition combinations. Such models are well-suited for modeling data like the binary felicity judgments that the participants made in this study. They also provide

information about effect size for each factor in the magnitude of the coefficients β , which eliminates the need for additional post-hoc tests.

5.4. Results

Each participant's responses for each condition (goal-PPs, true repetitive, true restitutive and mismatch) were analyzed. I first present the accuracy of all adult and child participants, assessing whether they were sensitive to the distinction between match and mismatch *again* for both repetitive and resitutive *again* (in Section 5.4.1). Then I examine the performance of each individual child participant (in Section 5.4.2). The results indicate that a number of children ignored *again*, the critical element in the test sentence. Focusing on children who did not ignore *again*, I present their overall accuracy and assess whether these children were sensitive to the distinction between match and mismatch *again* for both repetitive and resitutive *again*. In the end, I present results based on an alternative way of classifying the data, and address the questions of whether signal detection is modulated by story types (repetitive vs. restitutive) and whether individual verb-preposition combinations play a role in participants' interpretation (Section 5.4.3).

5.4.1. Overall performance

The adults' and children's accuracy on each type of test sentence is presented in Figure 1.¹¹ The results indicate that children's accuracy on true repetitive items (82.3%) and on true restitutive

¹¹ Figure 1 indicates a drop in adults' accuracy on true restitutive items compared with true repetitive items. Three out of twelve adults each rejected one true restitutive item, which suggests that they sometimes had a strong preference for the repetitive interpretation. This led to an accuracy of 87.5%. I speculate that the drop may stem from a processing bias, given that the repetitive reading is more accessible than the restitutive reading. On the other hand, given that there were only two items in each condition, it is hard to make any conclusion based on the results here. Adding more items per condition could be another improvement of the experiment.

items (83.9%) are similar. Yet their accuracy on mismatch items (i.e. where there was a presupposition failure) is much lower than adults’.

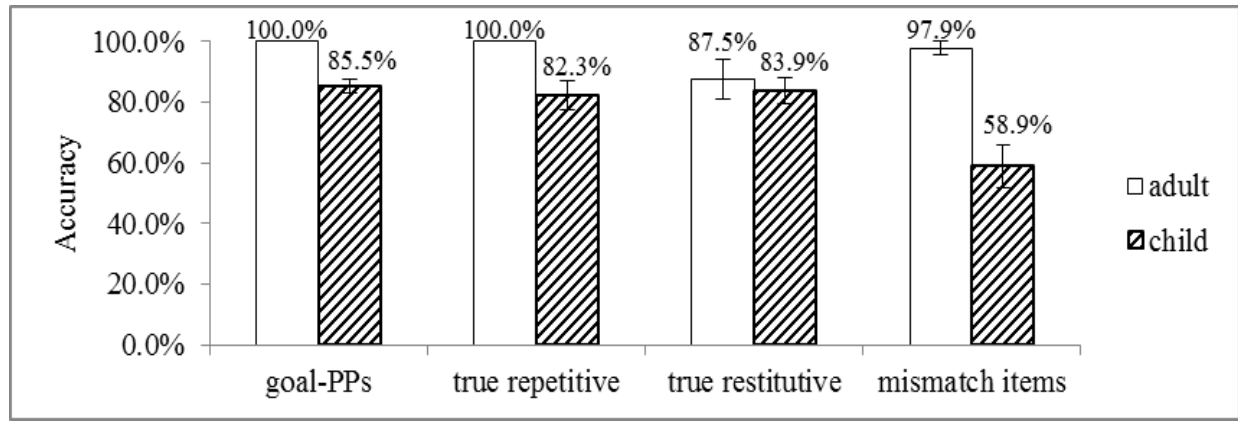


Figure 1. Adults’ (N=12) and children’s (N=31) accuracy (percentage correct) on each condition

Wilcoxon Signed-Ranks tests were used to assess whether a given subject group was reliably making the expected distinctions between item types. Results indicated that both adults and children are sensitive to the distinction between match and mismatch *again* items for both repetitive *again* (adults: $z=3.04$, two-tailed $p=.002$; children: $z=3.92$, two-tailed $p<.001$) and restitutive *again* (adults: $z=3.04$, two-tailed $p=.002$; children: $z=4.12$, two-tailed $p<.001$). As a group, the children (like the adults) accepted restitutive-true items significantly more often than they accepted mismatch items. Hence, the main finding of the study is that a sizable proportion of the children tested already knew restitutive *again* was possible with goal-PPs in English.

A mixed logit model of children’s accuracy on all test sentences was created with sentence type (true repetitive, true restitutive, mismatch) as a fixed factor. This model found that the overall accuracy on mismatch items are significant lower than those on the true repetitive items ($\beta=1.175$, $z= 9.60$, $p=.002$) and true restitutive items ($\beta= 1.290$, $z= 17.9$, $p <.001$). Yet there was no significant difference between overall accuracy on true repetitive and true restitutive trials

($\beta=0.115$, $z=0.077$, $p=.781$). As we will see in Section 5.4.2, children's accuracy on the mismatch items is lower because a number of children seemingly ignored *again* and accepted all the *again*-sentences.

Children's justifications of their answers, with a few listed in (13) and (14), were as expected. Although children were only asked how they figured out the answer when they rejected the test sentence, occasionally they justified their 'yes' answers (15).

(13) Story: same as in (10).

Puppet: I know what the snail did in the end. The snail crawled under the rock again.

Child #19 (3;10,9): No, he didn't crawl under the rock...crawled one time.

Child #6 (5;0,6): ...because he didn't go... the first time. HE (pointing to the lizard) went there.

Child #28 (5;1,21): No, he just went there one time.

(14) Story: same as in (8) in Appendix III

Puppet: I know what the woodpecker did after he napped in the tree. The woodpecker flew into the lighthouse again.

Child #6 (5;0,6): He didn't go there AGAIN.

Child #28 (5;1,21): Because the woodcracker[woodpecker] just flew into the tree and then went there. The parrot...[s]parrow just flew in and he went again.

(15) Story: same as in (11) in Appendix III

Puppet: I know what Woody did after he met the fisherman on the boat. Woody swam to the island again.

Child #19 (3;10,09): Yes, he swims to the fisherman's boat and then back to the island.

To examine whether the factor of children's age affect the child participant's interpretation of the sentences, I divided the child participants into a younger group (3;10-4;09, n=15) and an older group (4;10-5;06, n=16). A mixed logit model of accuracy on all trial types was created with children's age group (young and old) as a fixed factor. This model found no significant effect of age ($\beta=.211$, $z= 2.64$, $p=.105$). When a fixed factor of sentence type (true repetitive, true restitutive, mismatch) was added to the same model, there was still no significant main effect of age ($\beta=.236$, $z=2.36$, $p=.125$).

5.4.2. Individual subject analysis

Below I examine the performance of each individual child participant in terms of the response patterns summarized in Table 3-5.

Table 3-5. Possible response patterns

Sentence type	Possible response patterns		
	Adult-like	<i>Again</i> dropper	Rep-only knower
True repetitive item (N=2)	Yes	Yes	Yes
True restitutive item (N=4)	Yes	Yes	No
Mismatch item (N=4)	No	Yes	No

First, if a child was adult-like (categorized as 'adult-like' in Table 3-5), s/he accepted (said 'yes' to) the true repetitive and restitutive items, but rejected (said 'no' to) the mismatch items, which failed to meet the presupposition of *again*. Second, if a child seemingly ignored *again* (and is therefore categorized as an '*again* dropper' in Table 3-5), s/he accepted all the *again*

items, since in all test items, the asserted portion is true in the context given. Third, if a child only knew repetitive *again* (categorized as a ‘rep-only knower’ in Table 3-5), s/he accepted the true repetitive items, yet rejected the true restitutive items and mismatch items. Children who did not fall under any of the response patterns above are simply categorized as ‘others’.

The following criteria were used when classifying the children: (i) ‘Adult-like’ children had to get at least three out of four true restitutive items correct and three out of four mismatch items correct. In addition they had to get at least nine out of ten *again* items correct. In other words, they were allowed to make at most one mistake on a true repetitive item, and this only if they made no mistakes on other *again* items. (ii) An ‘*again* dropper’, who was expected to say ‘yes’ across the board, had to say ‘yes’ on at least nine out of ten *again*-items. (iii) A rep-only knower had to say ‘no’ on at least three out of four true restitutive items and on at least three out of four mismatch items. Meanwhile s/he had to say ‘yes’ to at least one of two true repetitive items.¹²

Analysis of individual subject data indicates that 9 out of 31 children (29.0%) were fully adult-like, while another 9 out of 31 children (29.0%) systematically responded as if they were ignoring *again*, by accepting all the *again*-sentences regardless of whether the presupposition was met. This is what led to the children’s low overall accuracy on the presupposition-failure items (Figure 1). Of the remaining 13 children, only 2 had difficulties specifically with restitutive *again*. One of them got all the mismatch items correct, yet got one out of two true repetitive items and three out of four true restitutive items wrong; the other got all true repetitive and mismatch items correct yet got three out of four true restitutive items wrong.¹³

¹² It is difficult to set the standard for the true repetitive condition, because there were only two items in this category. For rep-only knowers, I tried to stack the cards against myself by deciding that the child knows repetitive *again* if s/he gets at least one out of two true repetitive items correct. I think that this should not be too problematic, since the mismatch items also help to distinguish rep-only knowers and *again* droppers.

¹³ For the remaining eleven child participants categorized as ‘others’, their patterns were hard to identify because of the following reasons: first, there were only two true restitutive items, which makes it hard to conclude whether child know the repetitive reading if s/he gets one item wrong. Second, the task involved judgment on pragmatic

As we have shown in the individual subject analysis, some children simply ignored *again*, and responded according to the truth/falsity of the assertion. The data of these children do not reveal their knowledge of *again*. Therefore, I exclude these children and show in Figure 2 the accuracy of the remaining 22 children, which is similar across conditions.

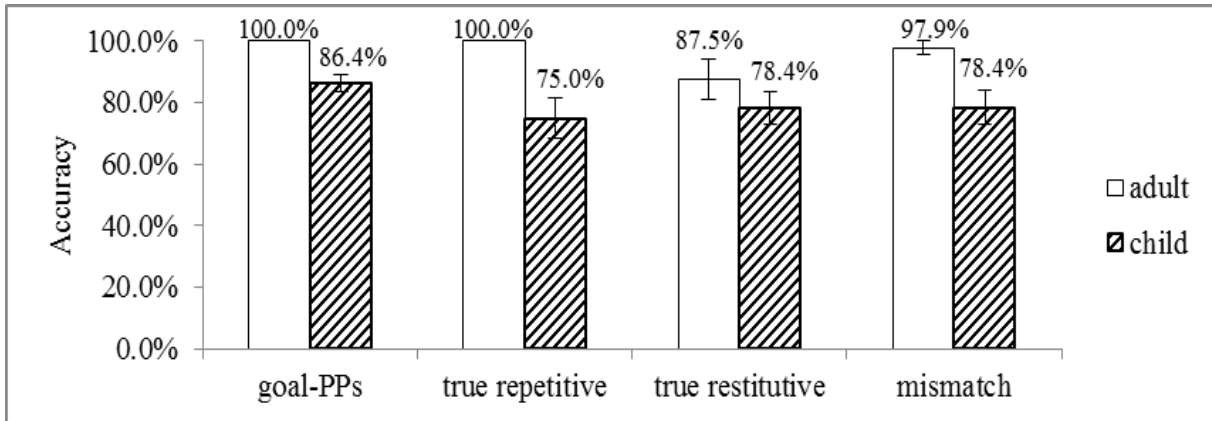


Figure 2. Adults' (N=12) and children's (N=22) accuracy on each condition

Wilcoxon Signed-Ranks tests indicate that these children's sensitivity to the distinction between true and false *again* items was statistically reliable for both repetitive *again* ($z=3.61$, two-tailed $p<.001$) and restitutive *again* ($z=3.81$, two-tailed $p<.001$).

A mixed logit model of these 22 children's accuracy on all test sentences was created with sentence type (true repetitive, true restitutive, mismatch) as a fixed factor. This model found no significant effect of sentence type ($z=0.236$, $p=0.889$).

felicity (whether the presupposition was met), which was subtle and complex, and thus contained some noisy data. Third, some standards of categorization may be too strict, given the complexity of the task. For instance, the standard that a child needed to get at least nine out of ten *again*-items correct to be counted as adult-like excluded three children who got eight out of ten items correct and could be potentially adult-like.

5.4.3. An alternative way of categorizing the test trials

The next goal is to examine whether signal detection is modulated by story type (repetitive vs. restitutive). To do this, we analyze the data through an alternative way of categorizing the test trials. Test trials were divided into repetitive versus restitutive *again* based on the story types they occur in (repetitive story vs. restitutive story). Although the mismatch restitutive *again* items would also have been rejected under a repetitive reading, it is likely that participants rejected them with the restitutive reading in mind, because the character in the test sentence was contrasted with another character who met the presupposition of restitutive *again*, and neither of the characters met the presupposition of repetitive *again*.

Under this way of categorizing the data, children's and adults' accuracy of match and mismatch items for each story type (repetitive, restitutive) is summarized in Figure 3 and Figure 4. In Figure 4, data from the nine children who consistently ignore *again* (i.e. those classified as *again*-droppers in Section 5.4.2) was excluded.

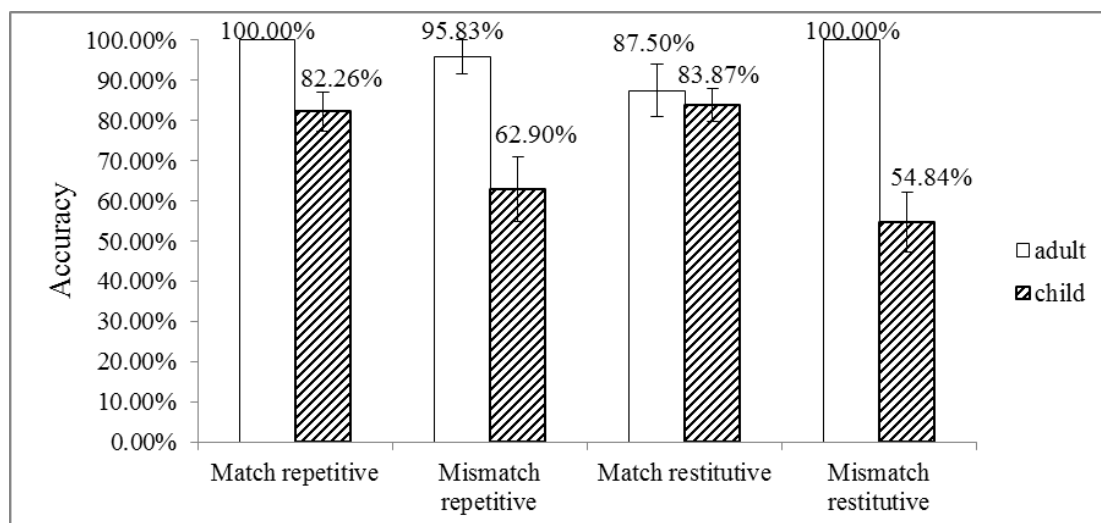


Figure 3. Adults' (N=31) and children's (N=31) accuracy on each context

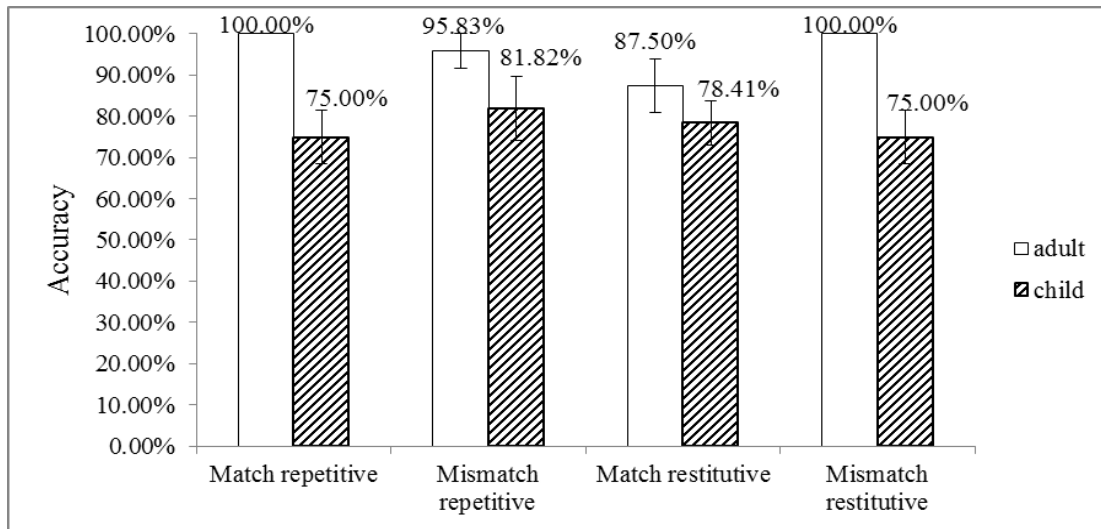


Figure 4. Adults' (N=31) and children's (N=22) accuracy on each context

To examine whether signal detection is modulated by context (in other words, whether children's sensitivity to the un/availability of a restitutive interpretation was comparable to their sensitivity to the un/availability of a repetitive interpretation), I calculated the d' score for each participant under each of the two story types (repetitive vs. restitutive), and then compared d' scores across them using mixed logit models. This model found no significant main effect of story type for children ($\beta=-0.2913$, $z=1.150$, $p=.284$) or adults ($\beta=-0.5718$, $z=0.881$, $p=.348$).

Under this approach to the data, we can also check for effects of specific verb-preposition combinations. This analysis is facilitated by the fact that the stimuli were counterbalanced in such a way that across subjects, every verb-preposition combination occurred in every experimental treatment (i.e. in both Match and Mismatch items, in all three of the repetitive, restitutive, and goal-PP stories). Table 3-6 and Table 3-7 summarize adult's and children's accuracy on each combination of manner of motion verb plus preposition. Comparatively, children's accuracy on *walk to* under each condition seemed a bit lower compared with other verb-preposition combinations.

Table 3-6. Adults' accuracy (percentage correct) on each verb-preposition combination

	<i>crawl under</i>	<i>fly into</i>	<i>swim to</i>	<i>walk to</i>
goal-PPs (no <i>again</i>)	100.0%	100.0%	100.0%	100.0%
repetitive <i>again</i>	100.0%	100.0%	91.7%	100.0%
restitutive <i>again</i>	100.0%	100.0%	91.7%	83.3%

Table 3-7. Children's accuracy (percentage correct) on each verb-preposition combination

(N=31)

	<i>crawl under</i>	<i>fly into</i>	<i>swim to</i>	<i>walk to</i>	<i>run into</i>	<i>jump into</i>
goal-PPs (no <i>again</i>)	93.5%	87.1%	96.8%	64.5%	N/A	N/A
repetitive <i>again</i>	77.4%	80.6%	77.4%	54.8%	N/A	N/A
restitutive <i>again</i>	74.2%	74.2%	61.3%	58.1%	93.5%	83.9%
Totals	81.7%	80.6%	78.5%	59.1%	93.5%	83.9%

The accuracy on *run into* and *jump into*, for which only true restitutive items were presented, were much higher compared with other combinations of motion verb and preposition. This is because a number of children seemingly ignored *again*, and accepted all the *again*-sentences, leading to a high accuracy on *run into* and *jump into*. Excluding these two verb-preposition combinations and the goal-PP trials, I created a mixed logit model of children's accuracy on each verb-PP combination, with verb-PP combination and story type (repetitive, restitutive) as fixed factors. This model found no significant difference between overall accuracy by story type ($\beta=-$

0.149, $z=1.077$, $p=0.299$), but there was a significant difference between children's accuracy on *walk to* compared to *crawl under* ($\beta=-0.884$, $z=5.080$, $p=0.024$) and *fly into* ($\beta=-0.982$, $z=6.045$, $p=0.014$). The differences between other verb-PP combinations are not significant (*crawl under* vs. *fly into*: $\beta= 0.098$, $z= 0.052$, $p=0.819$; *crawl under* vs. *swim to*: $\beta=-0.298$, $z=0.528$, $p=0.467$; *fly into* vs. *swim to*: $\beta=-0.396$, $z= 0.901$, $p= 0.343$; *swim to* vs. *walk to*: $\beta=-0.586$, $z=2.356$, $p=0.125$).

I see two potential sources for children's specific difficulty with *walk to*. For one thing, it could stem from an experimental artifact. In most of the stories for *again*, the movement trajectory of the characters was marked through footprints, paw prints, etc., even in the cases of *swimming* and *flying*, so as to alleviate the memory/processing demand. However, in the two *again* stories with *walk to*, the movement of the characters happened not to be marked. Note that adults' accuracy on *walk to* with restitutive *again* was also lower compared with other verb-preposition combinations (cf. Table 3-6).

Another possibility is that children have difficulty with *walk to*, as suggested by the low accuracy on the goal-PP trial. It is not transparent from the preposition *to* that the goal-PP entails a result state in which the subject is at the destination. As a result, some children may not have an adult-like understanding of *to* and may thus interpret it as *towards*. This idea is in line with a previous finding that English-learning children between four and seven years old tend not to treat the end-state component of some lexical accomplishment verbs such as *fill* as a necessary meaning component (Gentner 1978; Gropen, Pinker, Hollander & Goldberg 1991). The pre-test sentence with 'walk to' did not match the given story context, in which the character walked only halfway to the store. Children who entertained a 'walk toward' interpretation would judge the sentence as true, leading to a low average. But why do they seem to be adult-like with *swim*

to? This is because the pre-test sentence with *swim to* was a match item. Since ‘swim to’ entails ‘swim toward’, children with a non-adult-like interpretation would still accept the test sentence. I leave this hypothesis as a direction for future research.

6. Discussion

6.1. A proposal

Overall, the results of the experiment indicated that three- to five-year-olds achieved a surprising degree of facility with both repetitive and restitutive *again* modifying goal-PP constructions. Participants were sensitive to the distinction between true and false items for both repetitive *again* and restitutive *again*. In addition, they showed very similar performance in the true repetitive and the true restitutive conditions.

To account for the children’s considerable success, I propose that they are benefiting from more general evidence about the syntax/semantics of English goal-PPs. To lay out the details, let us first see how the ambiguity of *again* is derived and how the cross-linguistic variation of *again* with goal-PPs is accounted for.

Many researchers (von Stechow 1995, 1996, and Beck & Johnson 2004, among others) argue that the ambiguity of ‘again’ (in German and English) is structural: a single *again*, denoting repetition, can adjoin to different syntactic projections within a complex VP. The semantics of *again* is presented in (16), according to which *again* adjoins to a proposition and triggers a presupposition that an eventuality with the same properties has occurred previously.¹⁴ The presupposition of *again* is determined by its sister. Thus different readings of *again* come from where it adjoins in syntax. Take (17a) as an example: *walk to the village* denotes a complex

¹⁴ Following Bach (1986), I use eventuality as a cover term for activities, accomplishments, achievements, and states.

event with walking as its development and being at the village as its culmination. When *again* modifies the whole complex event (17b), the repetitive reading is derived. When it modifies the resultative state (17c), the restitutive reading is derived (17c), under the assumption that *to* can mean *at* (17d) (see Beck 2005).¹⁵

(16) Let P be a property of eventualities and let e be an eventuality.

$[[\text{again}]](P)(e)$ is defined only if $\exists e'[P(e')=1 \ \& \ e' < e]$.

Where defined, $[[\text{again}]](P)(e)=1$ iff $P(e)=1$. (adapted from von Stechow 1996)

(17) a. John walked to the village again.

b. $[[\text{John } 1[\text{t}_1 [\text{walked } [\text{PRO}_1 \text{ to the village}]]]] \text{ again}]$ Repetitive

c. $[[\text{John } 1[\text{t}_1 [\text{walked } [[\text{PRO}_1 \text{ to the village}] \text{ again}]]]]$ Restitutive

d. $[[\text{PRO}_1 \text{ to the village}]]^g = \lambda e. \text{at}_e(\text{the_village})(g(1))$ ¹⁶ (see Beck 2005)

However, we have seen that the restitutive reading for goal-PPs is not permitted in all languages. To account for this cross-linguistic variation, Beck and Snyder (2001) and Beck (2005) propose that the syntax of goal-PPs varies across languages. A proposition denoting just the result, as needed for the restitutive reading of *again*, is present only if the language provides a special semantic composition rule. This semantic composition rule can interpret the combination of a manner-of-motion verb (e.g. *walk*) and a prepositional phrase indicating location or path (e.g. *to the store*) as an accomplishment predicate. The content of the special

¹⁵ Without the assumption that *to* can be interpreted as ‘at’ in English, the restitutive reading of *again* for (17a) would require that there was a path of going to the village or direction toward the village that was repeated, which is incompatible with the classical context for the restitutive reading in which John was born at the village and has never left (cf. Section 1). Sufficient for our purpose in this study, (17d) is a simplification of Cresswell’s (1978) semantics of *to*, which involves the notion of a path derived from progress through time (see Beck 2005 for more details).

¹⁶ In (17d), g is an assignment function (see Heim & Krazter 1998) which interprets variables, in this case PRO_1 .

semantic composition rule has evolved over the years. Here, I illustrate the idea with Snyder's most recent proposal (2012) about the semantic composition rule, which he calls Generalized Modification (18).

(18) Generalized Modification (GM)

“If α and β are syntactic sisters under the node γ , where α is the head of γ , and if α denotes a kind, then interpret γ semantically as a subtype of α 's kind that stands in a pragmatically suitable relation to the denotation of β .”

Furthermore, Snyder (2012) proposes that whether GM is available is a point of cross-linguistic variation, which he calls the Compounding parameter (TCP) (19).

(19) The Compounding Parameter (TCP):

The language (does / does not) permit Generalized Modification.

Let us first examine how a goal-PP construction is interpreted in [+TCP] languages (e.g. English), where GM is available. Take *floated under the bridge* as an example. In the assumed structure in (20a), PP is a small clause with a PRO subject. Extending Chierchia's (1998) concept of 'kind', Snyder (2012) proposes that for a property of events, there corresponds an eventuality-kind. The motion verb *float* denotes a kind of activity, i.e. the floating-kind, and the locative phrase “under the bridge” denotes a kind of state. GM can combine the two constituents and give rise to the interpretation in (20b). Snyder (2012) assumes that the “pragmatically suitable relation” between eventuality kinds is limited and that the main relation between an

activity kind and a state kind is as follows: the former serves as development of an accomplishment event and the latter serves as its culmination.¹⁷ Thus (20b) can be translated into (20c). Similarly, for *walk to the store* in (21a), GM gives rise to the interpretation in (21c), under the assumption that *to* be interpreted as ‘at’ ((21b), see Beck 2005).

(20) a. [The bottle 1 [t₁ [floated [PP PRO₁ under the bridge]]]].

b. a subtype of the “floating” event-kind, which stands in a pragmatically suitable relation to the state of “the bottle being under the bridge.”

c. a kind of accomplishment event, with the bottle floating as its development and the bottle being under the bridge as its culmination.

(21) a. [John 1 [t₁ [walked [PP PRO to the village]]]]

b. [[PRO₁ to the village]]^g= $\lambda e.at_e(\text{the_village})(g(1))$ (see Beck 2005)

c. an accomplishment event-kind with “John walking” as its development and “John being at the village” as its culmination.

In contrast to [+TCP] languages, GM is not available in [-TCP] languages such as Spanish and French. The lack of this special semantic composition rule makes certain types of goal-PP constructions harder to construct. This explains why (7), the Spanish counterpart to *float under the bridge*, does not have a goal-PP reading. But even in [-TCP] languages, the apparent

¹⁷ Snyder (2012) assumes that “standing in a pragmatically suitable relation to...” has to be interpreted by the conceptual system, outside of linguistic semantics. He proposes that the human conceptual system provides only a tiny repertoire of possible relations between eventualities (and eventuality-kinds). The one that is relevant here is the relationship between the development (activity) and culmination (state) of a larger accomplishment event. Crucially, GM does not give rise to a “locative” interpretation that the floating event occurs under the bridge. Interpretation of the locative type is done differently, for instance, via the standard Davidsonian account of adverbs as predicates of eventualities, which treats Spanish *bajo el puente* ‘under the bridge’ as specifying that the “floating” eventuality took place under the bridge. And the structure corresponding to the “locative” interpretation is different from (20a) in that it does not contain an empty category.

counterparts to some English goal-PP constructions are perfectly grammatical, as in the French and Spanish examples in (22) and (23).

(22) Jean a marché au sommet.

Jean has walked to-the summit

John walked to the summit.

(23) Suresh anduvo hasta la aldea.

Suresh walked until the village

Suresh walked to the village.

Beck (2005) proposes tentatively that the “goal” PP in a sentence like (23) may actually be serving as an event modifier (i.e. an adjunct without a PRO), which renders such sentences grammatical. An alternative account for grammatical goal-PP constructions in a [-TCP] language is that the manner of motion verb has become semantically “bleached” to the extent that it is no longer a true manner-of-motion verb, but rather has become a change-of-location verb, and can select a goal as its argument (William Snyder, pc). For instance, the PP “to the summit” in (22) may simply be serving as a regular type e argument of the motion verb “walk” in French.¹⁸ Despite the variation in different proposals, PPs in such examples are not propositions, hence not an appropriate adjunction site for the adverb *again*, which takes a proposition as its argument.

An important note about TCP, as Snyder has proposed in a series of works (1995, 2001, and 2012, among others), is that the parameter connects a number of constructions, including

¹⁸ On this view, *au sommet* ‘to the summit’ is not associated with a proposition.

endocentric root compounds (e.g. *banana box*), verb particle constructions (e.g. *lift the book up*), adjectival resultatives (e.g. *hammer the metal flat*), and goal-PP constructions.¹⁹

Based on this background, what an English-speaking child really needs to learn about restitutive *again* modifying goal-PPs includes two components: a) the syntax of English goal-PP constructions, and b) the meaning of *again* in its simple, repetitive use. To acquire the former, children need to figure out that English is [+TCP] and therefore permits the special composition rule of GM, and thus that a manner of motion verb and a small clause with PP can be combined together to form an accomplishment event. Exposure to structures that require the composition rule GM (e.g. verb-particle combinations, endocentric root compound, or adjectival resultatives) will guide children to set the value to +TCP. The question is whether there is enough cues in the input for English learners to set TCP and how early children set the parameter. Checking the frequency of verb particle constructions in maternal speech, William Snyder (pc) reported that in the first transcript from each of the Brown (1973) corpora on CHILDES, when the child Adam was age 2;03,04, Eve was 1;06,15, and Sarah was 2;03,05, the frequency (per 1,000 utterances) of V-DP-Particle sequences in the mother's speech was 17.9 for Adam, 5.05 per thousand utterances for Eve, and 10.2 per thousand utterances for Sarah. These results indicate that there are a considerable amount of uses of verb particle constructions, for which TCP is a prerequisite of, which can help children set the parameter. As a result, the setting of TCP is achieved pretty early (before age 3), as shown in many previous studies, since other consequences of the TCP, aside from goal-PPs, can be observed in young children. For instance, Snyder & Stromswold

¹⁹ The connection between some of these constructions has been made before and debated in the literature (for example, Aske 1989; Goldberg 1995; Levin & Rappaport Hovav 1995 and references therein). More recently, Son and Svenonius (2008) argues against the idea that a single parameter like TCP captures the availability of both adjectival resultatives and goal-PP constructions. In the face of these challenges, Snyder (2012) points out that one needs to be cautious about the possibility that an expected surface form tied to the [+TCP] setting is nonetheless disallowed in particular languages due to independent properties of the language (see Snyder 2012 for more details).

(1997) examined 12 children, and found that their verb-particle combinations occurred between 1;09 to 2;07 years (for similar results, see Snyder 2001:332 and Snyder 2007). Like verb-particle combinations, novel endocentric, bare-stem compounds in English also shows up in children's spontaneous speech between 1.9 to 2.6 years (see Snyder 2001: 332; Snyder 2007: 92).

Another component the child needs to learn is the basic meaning of *again*. I speculate that children can learn the lexical meaning of this adverb from its parental uses in child-directed speech. These uses include the combination of *again* with a variety of predicates, whether or not their combination gives rise to a repetitive versus restitutive ambiguity. Checking the child-directed speech to the four English-speaking children, whose information was summarized in Table 3-1, I searched for all utterances containing *again* with the CLAN program Combo. The results, presented in Table 3-8, indicate that there were a considerable number of *again* uses in the child-directed speech, which can help children acquire its basic meaning.²⁰

²⁰ There is a complex learnability question involved here, which goes beyond the scope of this paper: How can learners tease apart the presupposed content from the asserted content of a presupposition trigger like *again*? This question is especially interesting given that a positive sentence containing *again* (iia) seems to have a similar meaning as a positive sentence containing *twice* (iiia).

A possible answer is that children may be sensitive to the parental uses of a presupposition trigger like *again* in constructions where presupposition projects. For example, presupposition projects under negation, which distinguishes it from simple logical entailment. Take *again* as an example: if negation takes wider scope than *again*, (iib) presupposes that John had been late before. In contrast, (iiib) does not entail that John had been late before. For instance, it is compatible with a context in which John was not late last time but was late this time. However, (iib) is not compatible with such a context (even with negation taking narrow scope than *again*).

- (ii) a. John was late again.
b. John wasn't late again.
- (iii) a. John was late twice.
b. John wasn't late twice. (In fact, he was never late./In fact, he was late only once.)

If children (somehow) have the knowledge of this property and also pay attention to such indirect negative evidence that sentences like (iib) never occur in a context where John was not late last time but was late this time, they may be able to distinguish *again* and *twice* and deduce the presupposition component of *again*.

Table 3-8. *Again* in child-directed speech

	Uses of <i>again</i>	Total adult utterances	Frequency of <i>again</i> per 1000 utterances
Naima	270	61794	4.3694
Lily	199	67238	2.9596
Violet	126	25999	4.8463
Mat	141	20170	6.9906

Checking the spontaneous speech of the same four English children (see Table 3-1), I extracted all child utterances containing *again* with the CLAN program Combo. Results were checked against the original transcripts to exclude imitations, repetitions, and formulaic routines. Fragments (e.g. *again?*) were also excluded. The results are summarized in Table 3-9. To estimate the time in which children acquire *again*, I adopted the measure of FRU, which stands for “first clear use soon followed by repeated use” (see Stromswold 1996 and Snyder & Stromswold 1997, among others). Therefore, to measure the emergence of a certain construction, not only do we look for the child’s first clear use of the construction in her longitudinal corpus, but also check whether there is additional uses with different lexical items in the portion of the corpus immediately following the first clear use of the construction. If there is no repeated use soon after a potential first use of the construction, we need to exclude it. Table 3-9 summarizes children’s FRU of *again*. In particular, the FRU reported were pragmatically felicitous in the sense that the eventualities represented by the predicates had occurred in the preceding context, hence the presupposition was satisfied. The results suggest that children’s productive and felicitous use of *again* was also in place fairly early, before two and a half years.

Table 3-9. Children's FRU of *again*

Child	Age of FRU	File number	FRU
Naima	1;05.26	nai17, line 695	*CHI: yyy moose xxx read the book again Mommy.
Lily	1;11.28	lil24, line 1227	*CHI: yyy wet again.
Violet	1;10.29	vio18, line 869	*CHI: xxx read it again.
Mat	2;05.10	mat08, line 114	*CHI: I saw another two honkers again.

I propose that a child will permit restitutive readings as soon as s/he has acquired the syntax of English goal-PPs and the basic meaning of *again*. In other words, while the child does not reliably get direct evidence for restitutive *again* with goal-PP constructions, s/he could deduce this possibility from evidence concerning the basic meaning of *again*, and from evidence that other structures (e.g. verb-particle combinations) requiring the composition rule GM are well-attested in English.

Given that both prerequisites for restitutive *again* are in place before age three, this proposal makes the prediction that children as young as four years old should be able to interpret restitutive *again* with English goal-PPs. If many or all children are using this type of strategy, instead of the simply relying on direct evidence in the child-directed speech, it is entirely expected that most four- and five-year-olds will be successful.

At the end of this subsection, I would like to explain why in this study I focus on 'again' modifying goal-PPs, although this is not the only construction that gives rise to ambiguous readings when modified by *again*. As shown in Section 2, the ambiguity can also be observed in sentences with other accomplishment predicates, such as lexical accomplishment verbs (e.g. *open*) and adjectival resultatives (e.g. *hammer the metal flat*). However, the restitutive reading is

not always related to TCP. For example, *open the door again* in English gives rise to the restitutive reading, because the lexical accomplishment verb *open* is decomposed in syntax into the adjectival root *open*, plus other material contributing a causal and a development component like CAUSE and BECOME (see von Stechow 1995, 1996, Beck & Johnson 2004). In other words, whether a lexical accomplishment verb can give rise to a restitutive reading when modified by ‘again’ depends on the decomposition property of the verb itself instead of TCP. This explains the findings reported in Beck and Snyder (2001) and Beck (2005) that cross-linguistically there is no connection between the availability of the restitutive reading for ‘open the door again’ and the availability of resultative constructions, whereas the restitutive reading for goal-PP constructions is only available in languages that permit adjectival resultative constructions (e.g. *hammer the metal flat*): Both goal-PPs and resultatives are related to TCP whereas lexical accomplishment verbs are not. This shows that whether goal-PP modified by ‘again’ has a restitutive reading is not predictable from other instances of restitutive readings. In other words, knowing her language allows ‘again’ with an accomplishment predicate to have a restitutive reading does not inform the child that ‘again’ with a goal-PP will also allow this reading. Therefore, the learnability problem with goal-PPs plus ‘again’ lies precisely in the structural combination, which is why there is a learnability problem and why I studied this structure in particular.

6.2. Children’s evaluation of presupposed content

Another issue that is involved in our study is whether and how children evaluate presupposed content as opposed to asserted content. Some studies reveal that children also have some difficulty with certain presupposition triggers: for example, Karmiloff-Smith (1979) and

Schaeffer and Matthewson (2009) observed that children use the definite determiner *the* in a non-adult-like way. In addition, some comprehension studies demonstrate that preschool children often ignore discourse particles such as ‘too’ (see Bergsma 2006 on Dutch *ook*, Matsuoka et al. 2006 on Japanese *mo* and reference therein), thus concluding that young children have difficulty with the presupposition. However, more recent studies (e.g. Höhle et al. 2009, Berger & Höhle 2012, Berger & Pouscoulous 2013) indicate that the reported difficulty is likely to be task-related and that three- to four-year-olds (and even younger children) are able to take into account the presuppositions triggered by particles like *auch* (‘too’). Our study, whose results indicated that children have considerable success interpreting *again*, lends further support to this view.²¹

Despite the success of many children, we also observed an apparent lack of sensitivity to the presupposition of *again* on the part of quite a few children. In addition, children’s overall accuracy on *again* items was much lower than adults’. There are three possible accounts for this lack of sensitivity. One possibility is that these children do not understand the basic meaning of *again*. However, this seems less plausible, because the results of the corpus study indicated that children’s felicitous uses of *again* occur pretty early, before two and a half years old. As an anonymous reviewer pointed out, there is an alternative processing explanation for why children might ignore ‘again’: since *again* always comes at the end of the sentences used in this experiment, the child might have already committed to an interpretation before hearing “again”. This could be tested by changing the placing of *again* in the sentence or by putting other modifiers at the end and see if children ignore it (e.g. testing how children interpret *The turtle kissed the rabbit twice* under the scenario where there is only one kiss; or testing how children

²¹ The acquisition of presuppositions is an issue that goes beyond the scope of this paper. As discussed in footnote 18, it is not clear what kind of evidence exactly is needed for children to acquire presuppositions. Besides, presupposition triggers of different kinds (for instance, hard versus soft presupposition triggers (Abusch 2002, among others) may have distinct learning processes and mechanisms (also see Yatsushiro’s (2007, 2008) discussion on children’s acquisition of lexical and implicated presuppositions of ‘every’).

interpret *The turtle kissed the rabbit only once* if turtle kissed the rabbit many times).²² A third possibility is in line with Berger and Höhle's (2012) account for children's insensitivity to the presupposition of 'also'. Ignoring 'also' need not indicate a non-adult-like representation of the adverb. Instead, children may simply downgrade the relevance of its presupposition when completing the experimental task. Interestingly, this idea was indicated explicitly by one adult-like child when he responded to the first mismatch *again* item he heard. The child initially seemed to think the presupposition of *again* was irrelevant, but then asked the experimenter directly:

(24) Story: same as in (10).

Puppet: I know what the snail did in the end. The snail crawled under the rock again.

(MM due to presupposition failure)

Experimenter: Did Parrot get it right?

Child #17 (5;0,25): Yes, but he didn't crawl under the rock before. So did he [the puppet] get it right?

Experimenter: What do you think?

Child #17: No.

Comparatively, children's acquisition of presupposition is less widely studied compared with their acquisition of scalar implicature (Barner et al. 2011; Guasti et al. 2005; Katsos & Bishop 2011; Noveck 2001; Papafragou & Musolino 2003; Papafragou & Tantalou 2004; Pouscoulous et al. 2007; among others). Overall, these studies on scalar implicature indicate that children

²² Thank the anonymous reviewer for the first suggestion and Jonathan Bobaljik for the second suggestion.

interpret scalar implicatures more logically than adults. However, they can be more pragmatic under appropriate experimental manipulation. As another phenomenon on the semantic-pragmatic interface, how do children evaluate presupposed content? How is it similar to or different from children's evaluation of scalar implicature? The answers to these questions go beyond the scope of this chapter. But it seems that like scalar implicature, children's sensitivity to some presupposition can be improved if its importance is highlighted in the experiment.

6.3. Future avenues of research

As suggested by an anonymous reviewer, the reasoning for English children's success in comprehending restitutive *again* with goal-PPs points to a question about children learning –TCP languages: these children should not permit the restitutive meaning, not only because it will not be in the input, but mainly because their language does not have the other properties associated with +TCP. I leave this prediction as a direction for future research.

Although the experiment demonstrated that many children have considerable success in interpreting restitutive *again* at a fairly young age, the experiment *per se* did not tell us much about the specific acquisition process. Ideally, it would be more convincing to run the experiment on younger children and show that repetitive *again* is consistently acquired either concurrently with, or earlier than, restitutive *again* with goal-PP constructions. However, it is foreseeable that the current methodology will not be applicable to children as young as two or even the early threes, given the complexity of the task.

Another possibility would be to conduct a training study, testing the following two predictions: first, we can provide training on the basic meaning of *again* for children who have acquired the goal-PP structure, but who do not know how to interpret *again* modifying goal-PP

construction. We expect that children who succeed in acquiring the basic meaning of *again* will immediately have access to a restitutive reading of *again* in a goal-PP sentence. Second, children who have acquired the basic meaning of *again*, but have not yet acquired goal-PP constructions, let alone those modified by restitutive *again*, will get the restitutive reading for free if we succeed in training them to use goal-PP constructions.

In the current study, a contrastive character which does not meet the presupposition of *again* was introduced to highlight the relevance of presupposition. Another avenue for future research is to examine more precisely how children interpret presupposition failure, as suggested by an anonymous reviewer. For instance, we can measure participants' response (either accuracy or reaction time) in complying with the direction "put x in the box again" where x either was or was not in the box before. If participants understand the basic meaning of *again*, they will see that there is a presupposition failure in the second condition but not the first, and may either not comply or take longer to comply in that condition.

Chapter 4

Almost ambiguous: An intervention effect

1. Introduction: the ambiguity of *almost*

When *almost* modifies a predicate like *close* as in (1), the sentence is ambiguous (see Rapp & von Stechow 1999; Sevi 1998; Amaral & del Prete 2010). First, it has a “counterfactual” reading, in which the subject is on the verge of performing the action represented by the predicate but does not start it (1)a. A second reading, called the “scalar” reading, indicates closeness of completing the event: the subject has initiated the action but the result state is not achieved (1)b. Intuitively, the two readings are different in the following way: under the scalar reading, the event denoted by the predicate gets started and comes close to completion; whereas under the counterfactual reading, the described event represented by the predicate does not even start. Whether these are truly independent readings will be discussed in this chapter. I begin here by presenting them from a purely descriptive perspective.

(1) John almost closed the door.

- a. counterfactual: John was about to close the door but he did not start the action.
- b. scalar: John started closing the door and come close to complete the action.

The ambiguity of ‘almost’ is not unique to English, but can be found in other languages. Some languages behave like English in that ‘almost’ gives rise to ambiguity, as exemplified in (2).

(2) a. Mandarin Chinese

Zhangsan chadian ba men guan-shang.

Zhangsan almost BA door close-up.

Zhangsan almost closed the door. (counterfactual, scalar)

b. Slovenian

John je skoraj zaprl vrata.

John is almost close door.

John almost closed the door. (counterfactual, scalar)

[Adrian Stegovec, p.c.]

c. Polish

Jan prawie zamknął drzwi

John-NOM almost closed door-ACC

John almost closed the door. (counterfactual, scalar)

[Marcin Dadan, p.c.]

d. Dutch

?John had de deur bijna dichtgedaan.

John had the door almost close-done

John almost closed the door. (counterfactual, scalar)

[Beata Moskal, p.c.]

In some other languages, ‘almost’ can be potentially ambiguous; however, different readings of ‘almost’ goes with different morphology. For instance, the counterfactual reading of German *fast* ‘almost’ requires subjunctive. Rapp and von Stechow (1999) report that the subjunctive

examples only have the counterfactual reading but not the scalar reading, regardless of the position of *fast* ‘almost’ (3)a-(3)b. On the other hand, indicatives in general cannot be used to convey a counterfactual reading (3)c-(3)d. It seems to be restricted to the scalar reading if *fast* follows the object (3)d.^{1,2}

- (3) a. weil David fast seinen Hasen erwürgt hätte
because David almost his rabbit strangled had (Subjunctive II)
(counterfactual, *scalar)
- b. weil David seinen Hasen fast erwürgt hätte
because David his rabbit almost strangled had (Subjunctive II)
(counterfactual, *scalar)
- c.??weil David fast seinen Hasen erwürgte
because David almost his rabbit strangled (preterite, indicative)
(*counterfactual, *scalar)

¹ Magdalena Kaufmann (p.c.) points out that under the scalar reading, (3)c improves if *weil* ‘because’ is replaced with *als* ‘when’, as shown below.

- (i) ? Als David fast seinen Hasen erwürgte
when David almost his rabbit strangled (preterite, indicative)
(*counterfactual, scalar)

I am going to leave open the question why (3)c cannot give rise to the scalar reading. Neither will I explain the contrast between (3)c and (i).

² Rapp & von Stechow (1999) acknowledge that there may exist idiolectal and dialectal variations about the data in (3). Also, not all forms of indicatives disallow a counterfactual reading. A present perfect indicative (ii) marginally allows a counterfactual reading (for similar examples, see Rapp & von Stechow 1999: 163, (23c)).

- (ii) John hat fast die Tür geschlossen.
John has almost the door closed. (present perfect, indicative)
[Magdalena Kaufmann, p.c.]

d. weil David seinen Hasen fast erwürgte
 because David his rabbit almost strangled (preterite, indicative)
 a-d: because David almost strangled his rabbit. (*counterfactual, scalar)

[Rapp & von Stechow 1999: 157-158, (10)]

Meanwhile, there also exist languages in which certain variants of ‘almost’ only give rise to a single reading. For example, Serbo-Croatian has two ‘almost’s: *skoro* and *zamalo*, which give rise to distinct interpretations.³ *Skoro* only gives rise to a scalar reading, as suggested by (4); whereas *zamalo* favors a counterfactual reading, as suggested by (5).

- (4) Ivan je skoro zatvorio vrata.
 Ivan.nom is almost closed door.
 Ivan almost closed the door. (#counterfactual, scalar)
- (5) Ivan je zamalo zatvorio vrata.
 Ivan.nom is almost closed door
 Ivan almost closed the door. (counterfactual, ?scalar)

[Aida Talić & Neda Todorović, p.c.]

Like Serbo-Croatian, Korean also has different means to express different interpretations of ‘almost’: *keuy* indicates that the event represented by the clause gets close to completion. For instance, (6)a indicates that the fish became very sick, almost to the point of death. In contrast, (u)l *ppen ha*, which is referred to as ‘action narrowly averted’ (ANA) by Kim (2002), indicates

³ In some dialects of Serbo-Croatian, there exists another variant of ‘almost’ *umalo*, which can be used interchangeably with *zamalo*.

that the event represented by the sentence was on the verge of happening (but did not happen).⁴

For example, (6)b can be used in the following context: I forgot that I had fed the fish today and was on the verge of feeding them again. Fortunately I remembered in the end. Had I fed the fish for a second time, the fish would have died.⁵

(6) a. koki-ka keuy cwuk-ess-ta

fish-NOM almost die-PAST-DECL

The fish almost died.

[Kim 2007, (11a)]

b. koki-ka cwuk-ul ppen hay-ss-ta

fish-NOM die-MOD ANA-PAST-DECL

The fish almost died.

[Kim 2007, (12a)]

The fact that in some languages the counterfactual and scalar interpretations of ‘almost’ are distinguished morphologically is in favor of the idea that the two readings are independent from each other, although the English case may be more complex, and the two readings are not independent from each other.

The goal of this paper is not to settle how the ambiguity is derived. Instead I examine in this chapter an intervention effect, which as far as I am aware of, has never been reported before: an

⁴ (u)l *ppen ha* is morphologically complex. According to Kim (2002), (u)l functions as irrealis, referring to an unrealized event; *ppen-* is the dependent nominal, which indicates the closeness or nearness to the occurrence of an event; *-ha* is a verb functioning as a tense carrier.

⁵ At first glimpse, it seems that *ppen ha-ta* behaves like English *almost* except that it only gives rise to the counterfactual reading. However, it has some quirks which may require some special analysis. For instance, it is possible to combine *keuy* and *ppen ha-ta*, as demonstrated below. This example gives rise to a counterfactual interpretation (cf. Kim 2002, Kim 2007).

(iii) koki-ka keuy cwuk-ul ppen hay-ss-ta
fish-NOM almost die-MOD ANA-PAST-DECL
The fish almost died.

[Kim 2007, (14a)]

intervening manner adverb blocks the scalar reading of *almost*. For example, (7) does not have the reading that John was in the process of closing the door in a slow manner, but he did not close the door fully and only gets close to it.⁶ As we will see, this intervention effect does not follow directly from some previous analyses of the ambiguity of *almost*.

(7) John almost slowly closed the door.

As we have seen, in Serbo-Croatian and Korean there is a lexical item for scalar ‘almost’. When a manner adverb intervenes between scalar ‘almost’ and the predicate, the sentence is ungrammatical, as shown in the examples below. These examples suggest that there is a true intervention effect with respect to scalar ‘almost’.

(8) Serbo-Croatian

*Ivan	je	skoro	brzo	zatvorio	vrata.
Ivan.NOM	is	almost	quickly	closed	door
Ivan almost closed the door in a quick manner.				[Aida Talić & Neda Todorović, p.c.]	

⁶ Here I illustrate the intervention effect with a manner adverb of speed, such as *slowly*, instead of an adverb like *carefully* or *cleverly*. As Jackendoff (1972) observed, adverbs like *carefully* and *cleverly* can be ambiguous between a manner reading and subject-oriented reading when immediately preceding the verb. The two readings are paraphrased in (iv). For different accounts for the alternation between these readings, see Ernst 2002, McConnell-Ginet 1982, and Piñón 2010.

- (iv) Bill carefully closed the door.
a. manner reading: Bill closed the door in a careful manner.
b. subject-oriented reading: It was careful of Bill to close the door.

In this chapter, I focus on the manner reading and leave the subject-oriented interpretation aside for future research, although some speakers reported that the intervention effect with *almost* is observed with both the manner and the subject-oriented readings for the adverb. For instance, (v) does not have the reading that John pushed the door almost closed in a careful manner. Neither does it have the reading that it was careful of John to push the door almost closed.

(v) John almost carefully closed the door.

(9) Korean

??John-i	mwun-ul	keuy	ppalli	tat-ass-ta	
John-NOM	door-ACC	almost	quickly	close-PERF-DECL	
John almost quickly closed the door.					[Jungmin Kang, p.c.]

On the other hand, the analysis of this intervention effect bears on the semantics of *almost* and an understanding about where its ambiguity comes from. Both issues have received a fair amount of discussion in the literature (for the semantics of *almost*, see e.g. Sadock 1981; Sevi 1998; Morzycki 2001; Penka 2006; Amaral & Del Prete 2010; for the ambiguity, see e.g. Amaral & Del Prete 2010; Eckardt 2007; Hitzeman 1992; Rapp & von Stechow 1999; Sevi 1998), but are still not well understood. Some interesting and leading ideas include that *almost* associates with scalar alternatives (see e.g. Penka 2006; Amaral & Del Prete 2010) and the ambiguity is derived when it takes different scalar items as its argument (Eckardt 2007). I will follow some of these ideas for my analysis of the intervention effect. To be more specific, the semantics of *almost* that I adopt is inspired and based on a scalar analysis, which argues that *almost* associates with scalar alternatives (e.g. Hitzeman 1992; Penka 2006; Amaral & Del Prete 2010). I also follow Eckardt (2007) in that *almost* is a polymorphic operator which can combine with properties of various semantic types. I derive the intervention effect by examining the consequences when *almost* associates with one or two scalar items in its scope, which leads to ill-formedness. My analysis relies on (a) a posited minimality constraint such that *almost* cannot skip potential targets; and (b) an assumption that the scale associated with *almost* needs to have a fixed limit point.

In addition, I will also examine the intervention effect in some languages which has two variants of ‘almost’, including Serbo-Croatian and Korean. These languages will provide converging evidence for my analysis.

I begin by reviewing previous analyses of the semantics of *almost* (Section 2), and how the counterfactual and scalar readings are derived (Section 3). I then discuss the intervention effect and the challenge that it presents for some previous analyses (Section 4). In the next section (Section 5), I propose an analysis of the intervention effect, followed by some converging evidence from Serbo-Croatian and Korean (Section 6).

2. Semantics of *almost*

I start with the semantics of *almost*, focusing on sentences in which *almost* modifies simple predicates, such as (10). Our intuition tells us that (10) has at least two layers of meaning: (a) Gore came close to winning; (b) Gore did not win. These two aspects of meaning have been referred to by Horn (2002) as the “proximal component” and the “polar component”, respectively. In the literature, the semantics of *almost* has often been analyzed as a conjunction of these two components, as we will see when we get to the detail of different analyses.

(10) Gore almost won the election.

It is worth mentioning that the status of the two components is not identical. A number of researchers have observed that the negative polar component is somehow placed in the background, and the proximal component is more at core (Nouwen 2006, a.o). Consider (11) and (12), although *almost* and *not quite all* at first glance seem to convey similar meanings, what we

can infer from (11) and (12) varies: (11) suggests that the speaker is pleased that most of his/her friends attended his/her wedding despite that some failed to show up. In contrast, (12) suggests that the speaker is pleased that some of his friends did not come. In (11) the evaluative adverb *fortunately* seems to ignore the negative aspect of the meaning that not all the friends came and simply assesses the proximal component, whereas in (12) *fortunately* evaluates the negative aspect of the meaning.

(11) Fortunately, almost all my friends attended my wedding.

(12) Fortunately, not quite all my friends attended my wedding.

The exact status of the polar component remains controversial (see Horn 2002, Nouwen 2006 for an overview). In the literature, it has been analyzed as an implicature (Sadock 1981; Ziegeler 2000), as a presupposition (Ducrot 1973; Anscombe & Ducrot 1983), as an entailment (Eckardt 2007), or as part of the assertion but being “assertorically inert” (Horn 2002).

As for the proximal component, there exist two main approaches for the analysis of its semantics (both terms below adopted from Nouwen 2006): One is referred to as the intensional approach, which analyzes *almost* as a modal operator: *almost p* is true only if *p* is true in a world close to the actual world (see e.g., Sadock 1981). An alternative approach, called the scalar alternative approach, is to resort to alternatives on a scale that is lexically motivated, induced via focus or determined by context: *almost p* is true only if there exists a scalar alternative *p'*, which is close to *p* on the scale, and *p'* is true (see e.g., Hitzeman 1992, Penka 2006, Amaral & Del Prete 2010). In this section, I go through some previous analyses of *almost* and discuss in detail

how the semantics of the proximal component is implemented. The analysis of the polar component will also be mentioned in passing when necessary.

2.1. The intensional approach

Sadock (1981) proposes that *almost* is a function which relates possible worlds w and propositions p . Its meaning, shown in (13), is the conjunction of two statements: p is not true in the actual world (the polar component) and there is a world which is not very different from the actual world in which p is true (the proximal component). This analysis, which alludes to close possible worlds, has been criticized for stashing away critical details in the meta-language (Eckardt 2007, Sevi 1998). Ultimately one would want an explicit account for what relevant close worlds are (see in particular the proposals by Eckardt 2007, Nouwen 2006, Sevi 1998).

(13) $[[almost]](w)(p) = 1$ iff

- (i) $p(w)=0$
- (ii) there is a world w' which is not very different from w and $p(w')=1$

Sadock (1981) analyzes the polar component (p being false) as a conversational implicature, which is derived via Grice's Maxim of quantity: p is a stronger statement than *almost* p . If the speaker utters *almost* p instead of p , the hearer can infer that the speaker does not believe that p is true.

However, as noted by many researchers, including Sadock himself, this implicature is hard to cancel (14)a, in contrast to other implicatures (14)b. This is a general concern of all analyses that treat the polar component of *almost* as an implicature.

- (14) a. ?Not only did Bill almost swim the English Channel, he did swim it.
b. Not only did Bill eat some of the cake, he ate all of it.

[Penka 2006: (6)]

Leaving the analysis of the polar component aside, there are other concerns for Sadock's (1981) proposal. First of all, it has been pointed out that such an analysis makes the wrong predictions that (15) and (16) should be false, because there is no world in the logical space where 961 is a prime number or 0.333 equals one third.

(15) 961 is almost a prime number. [Sevi 1998: 78, (24)]

(16) 0.333 almost equals one third. [Sevi 1998: 78, (26)]

However, these sentences may not constitute a strong argument against a modal analysis like (13) if we allow "imaginary" worlds (in Sadock's term) in which mathematical rules are not obeyed or logical contradictions are allowed, as Sadock (1981: 259) defends himself:

[(15)] might be adjusted true because the only blot on 961's record as a prime number is the sad fact that it is the square of 31. If this one little fact were not true, then 961 would be a prime number. The imaginary world in which 961 is a prime number is not very different from the real world in the nontechnical sense that only one proposition has to be changed to gain access to it, but of course it is very different from our world in the technical sense that it is an inconsistent world and lacks mathematics.

Along this line of reasoning, Sevi (1981) further points out that (17)-(19) should be contradictory, which is contrary to fact. Intuitively, (17) simply indicates that .333 is close to $1/3$ instead of invoking an imaginary situation where 0.333 equals one third. Similarly, the most natural way to interpret (18) is not to talk about a hypothetical situation where I am able to run. Instead, it simply claims that despite my limit of my physical ability, I can perform an action which is close to running. Similarly, (19) simply claims that the World Trade Center is a bit taller than the Empire State Building instead of invoking a hypothetical situation which is incompatible with the architects' plan. However, like (15) and (16), these examples are not strong counterarguments either, because we can still maintain a Sadock-style analysis for *almost* and (17)-(19) simply involve a change of modal bases.

- (17) It is not possible that 0.333 equals one third, but it almost does. [Sevi 1998:18, (27)]
- (18) Although I can't run, I can almost run. [Sevi 1998: 20, (33)]
- (19) The Empire State Building is almost as tall as the World Trade Center, but it couldn't have been taller (because the World Trade Center was built to be taller). [Sevi 1998: 20, (34)]

A more serious challenge for Sadock's analysis is suggested by Morzycki (2001), who shows that such an analysis cannot be extended to DP-modifying *almost*. Under the Sadock-style semantics as in (13) in which *almost* is a sentential operator, (20)a is predicted to have the same interpretation as (20)b, because the prejacent of *almost* in the two examples are identical. However, they have distinct truth conditions as paraphrased below.

- (20) a. Almost every plant is dry.

Paraphrase: Most of the plants are dry.

- b. Every plant is almost dry.

Paraphrase: Every plant is minimally moist.

[Morzycki 2001: 316, (33)]

Extending this argument, I observe a similar problem if we compare sentence pairs as in (21)-(24), which suggest that the position of *almost* helps to disambiguate. When *almost* precedes the VP, as in the (a) examples, the sentence is ambiguous between a counterfactual reading and a scalar reading, with different readings illustrated below. However, when *almost* directly modifies a subconstituent of VP (e.g. DP or PP), only the scalar reading is available.⁷

⁷ Jonathan Bobaljik (p.c.) points out that there seems to be a difference in meaning between the scalar reading of the (a) examples and the (b) examples in (21)-(24): the scalar reading of the (a) examples requires some goal or continuation of events whereas the scalar reading of (b) examples does not. For example, for the scalar reading of (23)a, there must have been some goal (e.g. a reading competition) or continuation of events (she was reading so quickly, and would have read a tenth one if she was not distracted), which would have led to her reading 10 books. Such requirement is not necessary for the scalar reading of (23)b, which simply indicates that the number of books that Mary read was close to (but below) 10. If Mary set out to read nine books and did so, then stopped reading, as planned, then (23)b is felicitous but (23)a is not. This contrast is also shown below.

- (vi) a. To get to Cambridge from Storrs, you drive almost to Boston, then take exit 18.
b. #To get to Cambridge from Storrs, you almost drive to Boston, then take exit 18. [Jonathan Bobaljik, p.c.]

However, such a contrast for the scalar reading between the (a) and (b) examples seem to disappear if the sentence with *almost* also involves a scalar item such as *whole* or *all*, at least for some speakers (Jon Gajewski, p.c.). Under the context provided in (vii), both example (a) and (b) are felicitous.

- (vii) Context: The requirement of an English literature class is to read the first 130 chapters of Moby Dick (which has 135 chapters in total plus an epilogue).
a. %We almost read the whole book.
b. We read almost the whole book. [Jon Gajewski, p.c.]

Also, for examples like (vi), once we replace *drive to* with *drive all the way to*, the contrast between the two examples for their scalar readings disappears for some speakers, as shown below (Jon Gajewski, p.c.).

- (viii) a. %To get to Cambridge from Storrs, you almost drive all the way to Boston, then take exit 18.
b. To get to Cambridge from Storrs, you drive almost all the way to Boston, then take exit 18.

I speculate that speakers who report a contrast for the scalar reading between (a) and (b) in (21)-(24) may in fact entertain a counterfactual reading for the (a) example, which usually involve some goal or continuation of events. However, the scalar items such as *whole* or *all* make the scalar reading more salient, hence the disappearance of the reported contrast.

These sentence pairs raise the following question for an analysis like (13): How do we account for the difference between the (a) and (b) examples in each pair, if the prejacentes are the same?

- (21) a. John almost arrived at 3pm. (counterfactual, scalar)

counterfactual: John missed the train and arrived at 8pm. If he had caught the train, he would have arrived at 3pm.

scalar: John arrived at 2:55pm.

- b. John arrived almost at 3pm. (#counterfactual, scalar)

- (22) a. Bill almost invited all of his friends to the party. (counterfactual, scalar)

counterfactual: Bill planned to invite all of his friends to the party. However, he didn't invite any of them in the end, because he had to cancel the party due to inclement weather.

scalar: Bill invite all of his friends to the party, except John.

- b. He invited almost all of his friends to the party. (#counterfactual, scalar)

- (23) a. Mary almost read ten books. (counterfactual, scalar)

counterfactual: Mary needed to read ten books to win a reading contest; however, she read none of them, because the contest was cancelled the last minute.

Scalar: Mary read nine books.

- b. Mary read almost ten books. (#counterfactual, scalar)

- (24) a. Sue almost walked to the park. (counterfactual, scalar)

counterfactual: Sue planned to walk to the park. However, she didn't even start because it started raining outside.

scalar: Sue started walking and got close to reaching the park.

- b. Sue walked almost to the park. (#counterfactual, scalar)

One may think that the reason why the (a) and (b) examples in (20)-(24) have different truth conditions is simply because *almost* takes different scopes. Once we tweak the semantics of *almost* so that it can directly apply to the constituent that it intuitively associates with, the truth conditional differences between the (a) and (b) examples in (20)-(24) will fall out automatically.

However, simply fixing the type of *almost* and making it a cross-categorical modifier does not work. This is shown in Morzycki (2001), who type-shifts the proposition-modifying *almost* as in (13) to a quantifier-modifying *almost* as in (25). According to (25), (20)a (repeated in (26)a) receives an interpretation in (26)b. Based on this truth condition, (26)a is true in a context where most of the plants are dry, as we expected. However, the truth condition also renders (26)a true in a context where every plant is minimally moist but none of the plants is dry. For the same reason, simply type-shifting *almost* so that it can apply to DPs and PPs is not sufficient to explain the contrast in (21)-(24), because the type-shifted *almost* is based on the propositional *almost*. To maintain a modal analysis of *almost* which appeals to close possible worlds, one needs to further restrict the possible worlds in which the prejacent is true relevant to the constituent that *almost* intuitively associate with.

(25) $[[almost_{DP}]] = \lambda w. \lambda Q_{\langle \langle e, st \rangle, st \rangle} . \lambda P_{\langle e, st \rangle} . almost(w)(Q(P)(w))$ [Morzycki 2001: 312, (24)]

(26) a. Almost every plant is dry.

b. $[[almost_{DP}]](w)([[every\ plant]])([[is\ dry]]) =$

$almost(w)([[every\ plant]])([[is\ dry]](w)) =$

$almost(w)(\forall x [plant(x)(w) \rightarrow dry(x)(w)])$

[Morzycki 2001: 313, (25)]

Morzycki (2001) attempts to fix the problem with ‘almost every plant’ and provides distinct denotations of *almost* modifying a number of categories.⁸ We will concentrate on his analysis of DP-modifying *almost*, for which he imposes a special requirement that worlds of comparison do not vary with respect to the extension of the VP (27).

(27) DP-modifying *almost*

$$[[\text{almost}_{\text{DP}}]] = \lambda Q_{\langle \langle e, st \rangle, st \rangle}. \lambda P_{\langle e, st \rangle}. \lambda w. \neg Q(P)(w) \quad \& \quad \exists w' [Q(P)(w') \& \text{CLOSE}(w)(w') \& \lambda x. [P(x)(w)] = \lambda x. [P(x)(w')]] \& \forall w'' [[w'' \leq_w w' \& Q(P)(w'')] \rightarrow w'' = w']]$$

[Morzycki 2001: 316, (36)]

Penka (2006) illustrates how adding such a restriction to the denotation of *almost* solves the ‘almost every plant’ problem. To be more specific, let us go back to example (26)a and consider a toy model which consists of the evaluation world w and one close world w' . Imagine that there are only four individuals in w : a , b , c and d , among which a , b , and c are all the plants, and a , b , d are all the dry things, as schematized in (28). Morzycki’s amended semantics of DP-modifying *almost* requires dry things being identical between w and w' . As a result, the sentence can never yield the reading that every plant is minimally moist. The only way to make “every plant is dry in w' ” true is to assume that c is not a plant in w' . This is how the undesired reading is ruled out and the desired reading is obtained.

⁸ Meanwhile Morzycki (2001) explores the issue of whether a uniform analysis can be provided for *almost* and other modifiers like *nearly*, *virtually*, *not quite*, etc. These modifiers share many essential properties of *almost*, including occupying the same positions, yielding the same range of readings, and imposing similar restrictions on the expressions that they modify. To achieve this purpose, at the end of the paper he suggests a division of labor between the semantics of these modifiers and a syntactic feature in functional structure that licenses them. The syntactic feature in the functional structure takes care of most of the meaning of *almost* and its kins. What the modifier itself did is to specify the closeness relation between possible worlds.

(28)

	Plants	dry	Individuals
w	a b c	a b d	a b c d
w'	a b	a b d	a b d

[Penka 2006, (9)]

Morzycki argues that the amended analysis in (27) explains why *almost* is not compatible with existential quantifiers (29). This is illustrated by Penka (2006) in the toy model in (30), which consists of two possible worlds (w, and w') and four individuals (a, b, c and d) in total. As required by *almost_{DP}*, the dry things have to be the same in w and w'. To make 'some/a plant is dry' true in w', something dry but is not a plant in w needs to be a plant in w'. However, according to Morzycki (2001) this is odd, because it is pragmatically strange to change essential properties of an individual across worlds. As a result, (29) is ruled out pragmatically.^{9 10}

(29) #Almost a/some plant is dry. [Penka 2006, (10)]

(30)

	Plants	dry	individuals
w	a b	c d	a b c d
w'	a b c	c d	a b c d

[Penka 2006, (11)]

⁹ However, remember that even for the good example (26)a, under the assumption that in the toy model there are only plants and dry individuals, it is required that the individual c is not an individual in w but an individual in w' (p.c. Jon Gajewski). This raises the following question: Does this also count as "changing the essential properties of an individual across worlds" and therefore should be ruled out due to pragmatic oddity?

¹⁰ Magdalena Kaufmann (p.c.) suggests that Morzycki's analysis ruling out *almost some* makes a further prediction: If the noun in the quantifier phrase denotes a non-essential property that can be changed across world (for instance, *student*), a sentence like (ix) is predicted to be good, which is contrary to the fact.

(ix) #Almost some/a student is late.

However, this analysis makes the wrong prediction that *almost* cannot modify negative quantifiers such as *no* (31). For (31) to be true, something that is in the extension of NP in the actual world *w* would not be in the extension of NP in *w'* (32), which is also expected to render (31) pragmatically odd.

(31) Almost no plant is dry. [Penka 2006, (12)]

(32)

	Plants	dry	individuals
<i>w</i>	a b c	c d	a b c d
<i>w'</i>	a b	c d	a b c d

[Penka 2006, (13)]

We now move on to Sevi's (1998) analysis of *almost*, which is partially formulated within a model-theoretic framework. Different from previous intensional analysis in which an *almost*-sentence is evaluated relevant to possible worlds, he proposes that *almost* operates on aspects of circumstances of evaluation, and formally represents them as indices from a discrete set with a strict partial order. The set *I* is assumed to be underspecified and contextually determined: it can be a set of possible worlds, a set of standards of precision for resolving vagueness (see Lewis 1970), or a set of time intervals. The formal analysis is presented in (33) (Sevi 1998: 65), which can be paraphrased as follows: *almost A* is true in *i** iff *A* is false in *i** and there is a maximally close index *i* such that *A* is true in *i*.¹¹

¹¹ Like other analysis, the contribution of *almost* is analyzed in terms of the conjunction of two statements, although Sevi notes that the asserted polar component is backgrounded.

(33) Let A be a formula, let I be a discrete set, and let $<$ be a three-place relation such that for every $I^* \in I$, $<_{i^*}$ is a strict partial order on I ($i_1 <_{i^*} i_2$ is read as i_1 is closer to i^* than i_2).

$[[\text{almost } A]]^{i^*} = 1$ iff $[[A]]^{i^*} = 0$ and there is an i' , s.t. for any i'' that is not identical to i' , $i' <_{i^*} i''$, and $[[A]]^{i'} = 1$ ¹² [modified from Sevi 1998: 65, (8)]

To illustrate Sevi's semantics, let us consider the sentence *Danny is almost bald* as an example. According to Sevi, this sentence is evaluated relevant to a set of standards of precision. A standard of precision is a contextual factor that determines the boundary between positive and negative extensions of a vague predicate, such as a gradable adjective. Sevi (1998) assumes that the set of precision standards consists of members that can be linearly ordered with respect to a relation of strictness informally defined in (34). Under this assumption, the interpretation of *Danny is almost bald* involves a comparison between the current standard of precision and a more relaxed standard of precision. Given the semantics of *almost* in (33), *Danny is almost bald* is true iff 'Danny is bald' is false relevant to the current standard of precision s^* and true relative to the closest (contextually relevant) standard s .

(34) $s' > s''$ (the standard of precision s' is stricter than s'') iff s' requires that a sentence be true relative to more precisifications than s'' requires.

If s' is not more strict than s'' then it is more relaxed.

[Sevi 1998: 69, (12)]

¹² One may wonder whether the minimality requirement in (33) is too strong: Does *almost* really requires a minimally close possible world, standard of precision, or time interval? Sevi (1998) emphasized that the minimality involved is contextually determined (see his Section 3.4 for more discussion).

On this account *almost* relaxes the standard of evaluation: individuals which do not belong to the extension of the predicate “bald” under the current standard of precision s^* fall within the extension of the predicate under the closest standard s . Amaral (2007) notes that this is problematic, since we would expect that *almost* behaves on a par with other relaxers of standards, such as *approximately*, *not exactly* or *loosely speaking*. However, this prediction is not borne out, as demonstrated in (35) and (36). (35) sounds like an adjustment, whereas (36) sounds contradictory.¹³

(35) Loosely speaking, Danny is bald. But more accurately, he has a reasonable amount of hair. [Amaral 2007: 32, (46)]

(36) #Danny is almost bald. But more accurately, he has a reasonable amount of hair. [Amaral 2007: 32, (47)]

2.2. The scalar alternative approach

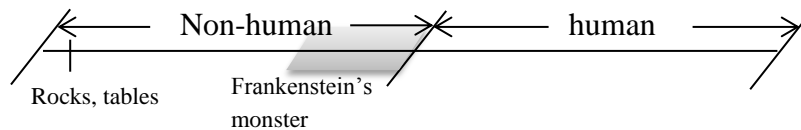
Instead of treating *almost* as a modal operator, some researchers propose that *almost* associates with scalar alternatives. The idea goes back to Hitzeman (1992), who proposes that *almost* maps one category of a scale to a close and preceding category on the same scale, with “category” defined as a continuous subset of a scale whose members share a property or a set of properties. For example, the predicate *human* in (37) has as part of its semantic interpretation a category

¹³ Some speakers report that (36) is as odd as (35). However, if we replace *more accurately* with *actually*, as indicated below, there is a contrast between *loosely speaking* and *almost* (Jon Gajewski, pc).

- (x) Loosely speaking, Danny is bald. But actually, he has a reasonable amount of hair.
- (xi) #Danny is almost bald. But actually, he has a reasonable amount of hair.

called “human”. *Almost human* denotes a category (which is a subcategory of non-human) represented by the shadowed portion that is close to and precedes the category “human”.

(37) Frankenstein’s monster was almost human. [Hitzeman 1992, (11)]



Penka (2006) proposes a similar idea, focusing on the case in which *almost* modifies a quantificational DP. She argues that *almost* requires an alternative set which consists of propositions in which the modified constituent is replaced by objects of the same semantic type. She also assumes that the elements in the alternative set are ordered on a scale based on entailment relation, namely a Horn scale. In her analysis, *almost* takes propositional scope and its associated alternatives are provided lexically by the modified constituent. The formal implementation is given in (38), in which the alternatives are propositions instead of subpropositional constituents (e.g. VP or DP). \approx relates two relatively close propositional alternatives ordered on the relevant scale. Based on (38), *almost p* is true iff *p* is false in the evaluation world *w*, and there exists a relatively close alternative *q* that is true in *w*.

(38) $[[\text{almost}\approx]] = \lambda w.\lambda p_{\langle s,t \rangle}.\neg p(w) \ \& \ \exists q \ [\ q \approx p \ \& \ q(w)]$ [Penka 2006, (16)]

With the semantics of *almost* introduced in (38), Penka (2006) explains some selectional restrictions *almost* shows in the DP domain. First of all, quantifiers like *several*, *many*, *most*,

more than half (which she calls vague quantifiers) are not compatible with *almost* (39). This is because these quantifiers do not correspond to precise values on the quantifier scale (< all, most, many, several, some >, see Horn (1972)). This is also argued by Hitzemann (1992). As a result it is unclear what part of the scale counts as “close by”, as required by the semantics of *almost*.

(39) *Almost several / many / most / more than half students passed the exam.

[Penka 2006, (22a)]

Penka also explains why *almost* is incompatible with existential quantifiers like *a* and *some* (40): This is due to the fact that existential quantifiers occupy the bottom of the quantifier scale. Therefore, there does not exist a lower value which is a scalar alternative to the prejacent and true, which is required by the semantics of *almost*.

(40) *Almost a / some student passed the exam.

[Penka 2006, (23)]

With the attempt to provide a unified analysis of *almost* as a cross-categorical modifier, however, Penka (2006) focuses on cases in which *almost* modifies a DP. Amaral and Del Prete (2010) extend Penka’s analysis to other categories, bringing in a broader notion of scale on which the alternatives can be ordered in various ways other than entailment relation (Hirshberg 1985). For example, (41) involves a scale on which alternatives are ordered temporally. The involved scale can also be ‘rank orders’ (Horn 1972, 2002), like <full professor, associate professor, assistant professor>, which provides the relevant scale for the interpretation of (42).¹⁴

¹⁴ Intuitively, (42) does not mean that John is an associate professor. Rather, it is much narrower in the sense that he got really close to becoming a full professor, which raises the question whether the rank scale <full professor,

(41) It is almost 3pm.

(42) John is almost a full professor.

Amaral and Del Prete's (2010) analysis of 'almost' is close to Hitzeman's (1992) and Penka's (2006) in that the interpretability of *almost* requires an ordered set of alternatives. They assume that the alternatives are generated through focus on the expression that is intuitively modified by 'almost', and that the ordering of the alternatives is constrained by the semantics of the modified expression and by the context of utterance. The specific semantics of Italian *quasi* 'almost' is given in (43), where γ is a variable over semantic types. $\langle P_{\langle \gamma, t \rangle}, S \rangle$ is an ordered pair with two coordinates: The first coordinate is the ordinary semantic value of the constituent modified by *almost*. The second coordinate S is a set of alternatives to P , which is of the same semantic type as P . Applying to a scalar item and its argument, *quasi* 'almost' yields a conjunction of two elements: The modified constituent P is not true of its argument, but a close alternative Q , which is lower than P and close to P is true.

(43) $[[quasi]] = \lambda \langle P_{\langle \gamma, t \rangle}, S \rangle. \lambda x_{\gamma}. \neg P(x) \exists Q_{\langle \gamma, t \rangle} \in S [Q <_S P \wedge \text{close}_S(Q, P) \wedge Q(x)]$

[Amaral & Del Prete 2010: 89, (51)]

In the end, I would like to review Eckardt's (2007) semantics of *almost*, which also appeals to scales yet is formulated differently. Eckardt argues that *almost* is a polymorphic functor which combines with relations and properites of various types. This is represented in (44)a, where \bar{x} is a vector of lambda bound variables. There are several requirements for *almost* to apply

associate professor, assistant professor> seems right. To capture this intuition, we can say that (42) involves a more fined scale.

successfully. First of all, the use of *almost* requires that the speakers can perceive the property modified by *almost* as a subproperty of a more general superproperty, which is formally represented as $\lambda\bar{x}.\lambda s.\Pi(s,\bar{x})$ in (44)b. Second, the superproperties in question must be ordered by some salient strict partial order, which is transitive and asymmetric (44)c. The third requirement concerns the maximum condition on P: the property that is modified by *almost* must contain all the maximal elements according to the strict partial order. This is represented in (44)d. $\langle \bar{y}, s' \rangle < \langle \bar{x}, s \rangle$ indicates that $\langle \bar{y}, s' \rangle$ is ranked lower than $\langle \bar{x}, s \rangle$ on the scale.

- (44) a. ALMOST + $\lambda\bar{x}.\lambda s.P(s,\bar{x})$ [Eckardt 2007, (4.1)]
 b. $\lambda\bar{x}.\lambda s.P(s,\bar{x}) \subset \lambda\bar{x}.\lambda s.\Pi(s,\bar{x})$ [Eckardt 2007, (4.2)]
 c. $\langle \bar{a}, s \rangle < \langle \bar{b}, s' \rangle \wedge \langle \bar{b}, s' \rangle < \langle \bar{c}, s'' \rangle \rightarrow \langle \bar{a}, s \rangle < \langle \bar{c}, s'' \rangle$
 $\langle \bar{a}, s \rangle < \langle \bar{b}, s' \rangle \rightarrow \neg \langle \bar{b}, s' \rangle < \langle \bar{a}, s \rangle$ [Eckardt 2007, (4.3)]
 d. For all \bar{x}, \bar{y}, s, s' such that $\bar{x} \neq \bar{y} \wedge s \neq s'$: $P(s, \bar{x}) \wedge \Pi(s', \bar{y}) \rightarrow \langle \bar{y}, s' \rangle < \langle \bar{x}, s \rangle$ ¹⁵
 [Eckardt 2007, (4.6)]

To illustrate these requirements, let us consider an example *x almost loves y*, in which *almost* modifies the predicate *love* (45)a. We can perceive the predicate LOVE to be a subproperty of a more general superproperty: POSITIVE-EMOTION (45)b. The superproperty is ordered by some salient strict partial order (45)c, where LOVE is perceived to have the highest degree of positive emotion (45)d.

¹⁵ In fact, (44)b and (44)d is logically inconsistent for the following reason: According to (44)b, tuples that meets P also meets Π given the proper subset relation. This, together with (44)d, suggests that any two tuples that meets P will be below each other, which is logically inconsistent (Jon Gajewski, p.c.).

- (45) a. $\text{ALMOST} + \lambda x \lambda y \lambda w \text{LOVE}_w(x, y)$
 b. superproperty Π : $\lambda x \lambda y \lambda w \text{POSITIVE-EMOTION}_w(x, y)$
 c. strict partial order: $\langle x, y, s \rangle < \langle x', y', s' \rangle$ iff x is less attached to y in s than x' is attached to y' in s'
 d. maximality of P : for all $\langle x, y, s \rangle$ which are tied by positive emotion, and $\langle x', y', s' \rangle$ such that x' loves y' in s' , the degree of attachment that is called 'love' is perceived to be stronger than the degree of all other kinds of attachment exemplified in Π .

[Eckardt 2007, (4.7)]

When all these requirements are met, *almost* maps the property P to another property which is close to P regarding the ordering. The specific formulation is given in (46), which states that “ x has the property of $\text{ALMOST-}P$ in worlds s iff $\langle \bar{x}, s \rangle$ range in the upper part of the ordering on the superproperty Π but is not in the maximal domain that is specified by P ” (p. 17).

- (46) $\text{ALMOST}(\lambda \bar{x} \lambda s P(s, \bar{x})) :=$
 $\lambda \bar{x} \lambda s [\text{MOST} \langle \bar{y}, s' \rangle (\Pi(s', \bar{y}) \rightarrow \langle \bar{y}, s' \rangle < \langle \bar{x}, s \rangle) \wedge \forall \langle \bar{z}, s'' \rangle (P(\langle s'', \bar{z} \rangle \rightarrow \langle \bar{x}, s \rangle < \langle s'', \bar{z} \rangle)]$

[Eckardt 2007, (4.8)]

For the example x *almost loves* y , the sentence is true iff x is attached to y to a degree which is higher than most degrees of attachment but is not among the highest degrees that can be called love).

We will come back to this analysis in the next section when we discuss how it also captures the counterfactual reading. The analysis sounds intuitively correct, however, the usage of MOST in the meta-language seems dubious. Quantifying over tuples that meet the superproperty, it

makes the wrong prediction that if the domain that satisfies P, the prejacent of *almost*, occupies most of the scale, the sentence should be false even if *almost* maps P to a property that is close to P.

3. Previous accounts of the ambiguity of *almost*

3.1. Scope analysis

The ambiguity of *almost* has been used by McCawley (1972) as an argument for lexical decomposition. An assumption behind such an argument is that *almost* can take different scopes, giving rise to distinct readings. Such an idea has been pursued and discussed in detail in Rapp and von Stechow (1999). Appealing to lexical decomposition in syntax (Dowty 1979; von Stechow 1995, 1996), they assume that an accomplishment verb such as *close* has the following underlying representation: CAUSE BECOME + result state ‘closed’. In addition, they adopt Sadock’s (1981) analysis of *almost*, which is repeated in (47).¹⁶

(47) $[[almost]](w)(p) = 1$ iff

- (i) there is a world w' close to w such that $p(w')=1$
- (ii) $p(w)=0$

Based on the assumptions above, the ambiguity of *almost* stems from the scope interaction between *almost* and various elements of the decomposed verb: When *almost* takes scope over

¹⁶ For lexical decomposition, there is some variation with respect to the covert morpheme that a predicate like *close* can decompose into. Some people simply represent the covert morphemes that contribute to a causal and developmental component as CAUSE and BECOME. Others use the terms like AGENT and BECOME (e.g. von Stechow 1996, Rapp & von Stechow 1999) or collapse these two into a phonologically empty verb (e.g. Beck & Johnson 2004). These variations are orthogonal to our purpose here.

CAUSE BECOME in (48)a, the counterfactual reading is derived. When *almost* takes scope under CAUSE BECOME in (48)b, the scalar reading is derived.

- (48) a. [John [almost [CAUSE [BECOME [the door closed]]]]]
 b. [John [CAUSE [BECOME [almost [the door closed]]]]]

Such a scope analysis has been criticized. Sevi (1998) provides the following argument against a scope analysis: the ambiguity of *almost* is not restricted to accomplishments, but can be observed for states (49), activities (50), and adjectives (51) as well. Unlike accomplishments, these predicates are not subject to lexical decomposition, therefore it is puzzling how the ambiguity displayed in (49) to (51) result from different scopes of *almost*.¹⁷

- (49) I almost knew Johnny Marr. [Sevi 1998: 11, (10)]

- a. I almost knew Johnny Marr; he moved next to my old apartment a day after I left.
 b. Johnny is a real shy person; after living 3 years next door to him, I got the feeling that I almost knew him.

- (50) I almost ran. [Sevi 1998: 11, (11)]

- a. I almost ran, but then I decided to stay.
 b. I walked so quickly, that I almost ran.

¹⁷ One may argue that (49) to (51) are not strong counterexamples for the scope analysis (Magdalena Kaufmann, p.c.). For (49), the structure associated with the interpretation in (a) can differ from that associated with (b): (49)a seems to be an inchoative reading in the sense that the predicate *know* is interpreted as *get to know*, which is non-stative. One can say something similar about (50): the (a) reading is inchoative. If this is the case, it raises some further questions that go beyond the scope of this study: how is the inchoative reading derived? Is it triggered by *almost* or not?

For (51), one can argue that the two interpretations are both scalar readings. They are derived by *almost* associating with different scales: In (51)a, *almost* operates on a temporal scale; while in (51)b a scale associated with the adjective *green*.

(51) The traffic light is almost green. [Sevi 1998: 11, (13)]

a. It is about to turn green.

b. Its color is a shade of turquoise close to green.

Here I would like to point out another problem for the scope analysis, according to which the scalar reading is derived when *almost* takes lower scope. Assuming that the predicate ends up in v , how could preverbal *almost*, which seemingly must be adjoined at the vP level or higher, ever have an attachment site within the VP? This is especially puzzling if we compare English *almost* with *again*: As reported in the literature, preverbal *again* does not give rise to a repetitive vs. restitutive ambiguity (52), whereas preverbal *almost* does give rise to a counterfactual vs. scalar ambiguity.

(52) a. Sally painted the shell red again. (repetitive, restitutive)

b. Sally again painted the shell red. (repetitive, *restitutive)

3.2. Pragmatic analyses

A number of authors (e.g. Sevi 1998, Hitzeman 1992, Amaral & Del Prete 2010) argue that the ambiguity of *almost* is derived pragmatically. In this section, I review two main analyses along this line: one is by Sevi (1998), and the other by Hitzeman (1992) and Amaral and Del Prete (2010).

Sevi's (1998) analysis of *almost* is repeated in (53). A crucial aspect of his analysis is that the semantics of *almost* is underspecified. The interpretation of sentences with *almost* depends on elements of a contextually chosen set I , whose members of I are ordered along a strict partial order. The set I represents the dimension of circumstances where the sentence is evaluated: it can

be a set of possible worlds, a set of standards of precision to resolve vagueness, or a set of temporal intervals. Sevi (1998) argues that different interpretations of *almost* stem from different settings of I.

(53) Let A be a formula, let I be a discrete set, and let $<$ be a three-place relation such that for every $I^* \in I$, $<_{i^*}$ is a strict partial order on I ($i_1 <_{i^*} i_2$ is read as i_1 is closer to i^* than i_2).

$[[\text{almost } A]]^{i^*} = 1$ iff $[[A]]^{i^*} = 0$ and there is an i' , s.t. for any i'' , $i' <_{i^*} i''$, and $[[A]]^{i'} = 1$

To illustrate how it works, let us consider the example *John almost closed the door*. If the sentence is evaluated relative to a set of possible worlds, i.e. I being a set of possible worlds gives rise to an interpretation that “John did not close the door in the actual world w , and he closed the world in a closest world w' ”, namely the counterfactual reading. On the other hand, the sentence can also be evaluated relative to a set of standards of precision, which is linearly ordered from stricter standards to more relaxed standards, as we discussed in the previous section. If this is the case, it gives rise to an interpretation that John didn’t close the door under the current standard of precision, yet he closed the door under a more relaxed standard of precision. This is how the scalar reading is derived.¹⁸

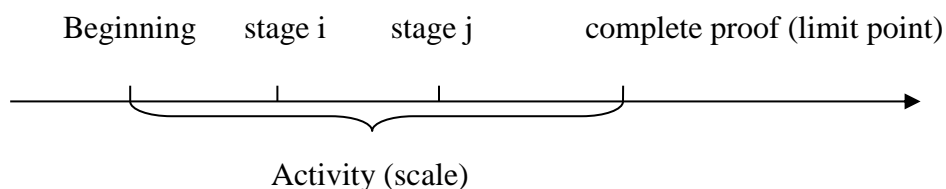
An alternative pragmatic analysis for the ambiguity of *almost* is proposed by Hitzeman (1992) and Amaral & Del Prete (2010). Despite the slight differences between the authors, both suggest that the disambiguation depends on the choice of a “goal” (in Hitzeman’s term) or a “limit” (in Amaral & Del Prete’s term) on the scale. They assume that an accomplishment VP involves a complex event structure, which consists of a sequence of successive steps that lead to the

¹⁸ As we have seen in Section 2.1, Amaral (2007) raises some concerns about the idea that *almost* relaxes the standard of precision.

completion of the event. In addition, to account for the counterfactual reading, they also assume that there is a preparatory period leading to the initiation of the accomplishment event. To illustrate the detail of their analysis, we will go through the account proposed in Amaral and Del Prete (2010), which is inspired by and shares the spirit of Hitzeman's (1992) account.

According to Amaral and Del Prete (2010), *almost* associates with a scale with a limit point, which is specified by the constituent intuitively modified by *almost*, and its basic meaning is to approach the limit on the scale. To discuss how the ambiguity of *almost* is derived, they use *Leo almost proved the theorem* as an example. First of all, they assume that the accomplishment VP involves a complex event structure E, which holds within itself a sequence of successive steps of proving. These steps specify a scale, as graphed below. E includes a starting point (beginning stage of proving the theorem) and an end point (theorem being proved), both of which can serve as a limit on the scale. Both limits can serve as a limit point on the scale for *almost*: Setting the beginning stage of theorem proof as the limit gives rise to the counterfactual reading, whereas choosing the complete proof point as the limit yields the scalar reading.

(54)



At first glance, the analysis looks elegant. However, there are several questions and concerns about this analysis. First of all, in this analysis the derivation of the counterfactual reading crucially relies on a preparatory stage that leads to the starting point of an event, which raises a

further question of how we define such a stage. One possibility, hinted in Hitzeman (1992) and Amaral and Del Prete (2010), is that we count the planning stage prior to the starting point of the event as the preparatory stage. However, Sevi (1998) argues that this does not seem right, because the truth of *almost p* does not necessarily depend on whether *p* is planned or expected. This is exemplified in (55), whose speaker can truthfully say he was almost killed in the situation described, simply because there are realistic alternatives to reality where he was killed: he could have walked more slowly or faster or the window could have fallen a few seconds earlier or later or whatever, and the window could have hit him.¹⁹

- (55) I was almost killed today. A window fell and smashed very close to me when I was passing by a construction site. [Sevi 1998: 82, (39)]

Second, both Hitzeman (1992) and Amaral and Del Prete (2010) derive the scalar reading by assuming that the predicate can be scaled into a series of successive steps towards accomplishing the goal. This makes a further prediction that a telic predicate modified by *almost* should be ambiguous, as we can envisage for an event represented by a telic predicate a series of successive steps that lead to the culmination. These successive steps form a scale, which provides an acceptable environment for *almost* to give rise to a scalar reading. However, this

¹⁹ The objection of Sevi (1998) concerns “planning” stage, which has to do with planning or expectation. An alternative way to formulate the “preparatory stage” is to get away the notions like “planning” or “expectation” and simply define it as ‘a sequence of events’ that culminates in the start of the event represented by the prejacent (Jonathan Bobaljik, p.c.). Such a definition is in line with Amaral and Del Prete’s (2010) analysis of the counterfactual reading. However, it is unclear what exactly should be included in this sequence of events and why *almost* cares about such a sequence of events. Also, as exemplified below, *almost* is felicitous in some contexts where the event not only started, but even proceeded halfway through. The context in (xii) corresponds to neither the scalar reading nor the counterfactual reading which are described at the beginning of this chapter, and it is not clear how Amaral & del Prete’s analysis can account for (xii).

- (xii) Mary almost climbed Mount Washington. She was halfway there when she came across an unexpected blizzard. So she had to turn back. Without the blizzard, she would have climbed Mount Washington.

prediction is not borne out for examples like (56)-(58). In contrast to the sentence with the *close*, the sentence with its antonym *open* only has a counterfactual reading (56) but not a scalar reading that John almost completed the action of opening the door.²⁰ (57)a is another example where the telic predicate *ate the apple* describes an event for which we can perceive a series of steps (one bite, two bite, etc.) toward an inherent end point of the event: finishing the apple. However, the scalar reading does not seem to be available, especially in contrast to (57)b. Similarly the lack of a scalar reading of (58)a in contrast to (58)b also does not follow from Hitzemann (1992) or Amaral and Del Prete (2010), although the predicate can be perceived to scale into a set of successive steps (waking up one child, two children, etc.) towards waking up all the children. These examples suggest that a complex event with an inherent end point itself is not sufficient for scalar *almost*.²¹

- | | | |
|------|--|---------------------------|
| (56) | John almost opened the door. | (counterfactual, #scalar) |
| (57) | a. John almost ate the apple. | (counterfactual, #scalar) |
| | b. John almost ate the whole apple. | (counterfactual, scalar) |
| (58) | a. John almost woke up the children. | (counterfactual, #scalar) |
| | b. John almost woke up all the children. | (counterfactual, scalar) |

[Jon Nissenbaum, p.c.]

²⁰ By “scalar reading”, I refer to the reading derived when *almost* approaches the limit that corresponds to the inherent end point of event represented by the telic predicate ‘open the door’, following Amaral and Del Prete (2010). Alternatively, one can say that the end point is specified by the predicate ‘open the door’. Since any amount of openness suffices to count as ‘open’, we can perceive the scale as consisting of a sequence of successive steps that leads to ‘open the door’ (e.g. slid the deadbolt, unlocked the lock, turned the handle, started to pull, etc.). So ‘John almost opened the door’ is not only compatible in a context where John thought about doing it, but didn’t carry out any action; but in a context where he slid the deadbolt, unlocked the lock, turned the handle and even started to pull, yet the door wasn’t open because it got stuck (Thanks to Jonathan Bobaljik for this point.) However, if we perceive the scale in this way, it is not clear whether there exists another limit point which corresponds to the regular counterfactual reading (John thought about doing it, but didn’t carry out any action). If there is, how do we define it?

²¹ As we will see later (in Section 5), the contrast between examples (a) and (b) for (57) and (58) is related to some property of definite descriptions.

In Section 4, I present another concern for the pragmatic approach proposed by Hitzeman (1992) and Amaral and Del Prete (2010): An intervening manner adverb blocks the scalar reading for *almost*. As far as I am aware, this intervention effect has not been reported before. As we will see, this also poses some challenge for Sevi's (1998) pragmatic approach. Before we jump to the next section, I discuss Eckardt's (2007) account for the ambiguity of *almost*. The goal is not to argue against Eckardt *per se*, but rather to highlight some crucial ideas in Eckardt's analysis that we may use later.

3.3. Eckardt's (2007) analysis of the ambiguity

As discussed in Section 2.2, Eckardt (2007) offers a scale-based analysis of *almost*. She argues that *almost* is a polymorphic functor that can modify properties of various sorts (see (44)). It presupposes the accessibility of a superdomain Π and a strict partial order $<$ with respect to which the property *almost* modifies is the maximal element (see (45)). If these conditions are met by world knowledge or contextual background, *almost* maps p to an adjacent sub-polar range of properties on the scale (see (46)).

This semantics of *almost* also covers cases where it modifies a property of possible worlds, i.e. a proposition. This is when the counterfactual uses of *almost* arise. Take (59) for example, *almost* takes the proposition 'Peter was dead' as its argument (60). Again several prerequisites need to be satisfied for *almost* to apply. First of all, it presupposes the accessibility of a superdomain Π , which is the logical space (61)a. Second, the superproperty in question is ordered by some strict partial order $<$. In this case, the strict partial order is defined in terms of counterfactual similarity relative to worlds where the prejacent is true (61)b. Third, all worlds in

p are above any worlds outside p in terms of the given order (61)c. If these conditions are met, *almost p* maps p to an adjacent sub-polar range of properties on the scale (62).

(59) Peter was almost dead.

(60) almost + λs . [Peter is dead in s]

(61) prerequisites:

a. superproperty $\Pi = \lambda s$. [$s = s$]

b. strict partial order: For any s, s' such that $\Pi(s)$ and $\Pi(s')$: $s < s'$ iff for any world w in λs [Peter is dead in s]: s' is closer to w than s is. (Note that the strict partial orders here are defined in terms of counterfactual similarity.)

c. maximality of P : All worlds in P are above any worlds outside P in terms of the given order.

[Eckardt 2007, (4.28)]

(62) ALMOST(λs . [Peter is dead in s])

= λs . [MOST s' ($s' < s$) $\wedge \forall s''$ ([Peter is dead in s''] $\rightarrow s < s''$)] [Eckardt 2007, (4.29)]

We have mentioned in Section 2.2 that the use of MOST in the meta-language as in (62) does not seem to be accurate. In the account for the counterfactual reading, the strict partial order is defined in terms of closeness to the worlds where the prejacent of *almost p* is true (61)b. It is opaque how the formulation can be implemented, given that there are a large number of worlds where p holds. A possible world s may be close to some of the p -worlds yet far away from some other p -worlds. Given the existence of multiple reference worlds w , it is unclear how the *not p*-worlds can be ordered among each other based on their closeness to multiple p -worlds.

3.4. Real ambiguity?

So far we have looked at different analyses of the counterfactual and scalar reading of *almost*. However, the fact that a sentence has different interpretations does not mean that there exists a real ambiguity, because the sentence can be judged true in different situations. In fact, Sevi (1998) and Eckardt (2007) point out that under Sadock's semantics of *almost*, if the 'closeness' relation is not further specified, the computed counterfactual reading subsumes the scalar reading. In other words, the scalar reading does not have to be independent from the counterfactual reading but could be simply a special case of it.

Ideally we would like to see whether it is possible to come up with contexts where the scalar reading is true yet the counterfactual reading is false. (63) is such an attempt, in which the test sentence with *almost* is embedded in a downward-entailing environment, the restrictor of a universal quantifier *every*.

(63) Three astronauts Bill, John and Mary are taking a simulation test about how to launch a space shuttle. Each astronaut has to close the door of the space shuttle before leaving. Bill is the first one to take the test. He checks the simulator to make sure that it's running properly. He is just about to start when his suit breaks. So he cannot take the test at all. Now it's John's turn. Trying hard and getting close, however, he can't shut the door fully because he is out of strength. Mary is the last person to take the test. She is about to fully close it when the door gets jammed. Although John and Mary do not manage to close the door completely, they get really close and still scored 50 points. Unfortunately, Bill doesn't score any point because he doesn't even start the test.

Every astronaut who almost closed the door scored 50 points.

If the scalar reading is truly independent from the counterfactual reading, under a downward-entailing environment, the entailment relationship between the two readings will be reversed, which makes it possible that the scalar reading is true yet the counterfactual reading is false in the provided context. Speakers who report that the sentence can be true in the provided context parse the sentence under the scalar reading of *almost*. On the other hand, if there does not exist an independent scalar reading and the counterfactual reading is the only available reading, then the test sentence in (63) is predicted to be false. It turns out that some speakers judge the sentence in (63) as true, which suggests the availability of an independent scalar reading.²²

In addition, we can also apply some traditional ambiguity tests to examine whether there is a real ambiguity. These tests involve quantifiers, conjunction and ellipsis, as illustrated in (64)-(66). If there is no true ambiguity but simply a case of underspecification, the following examples are expected to be felicitous. On the other hand, if there is a real ambiguity, the sentences are supposed to be infelicitous.

(64) Each student almost closed the door. Bill and John had planned to close it, but forgot to do it. Mary and Jane didn't forget to do it, yet they were careless and didn't close it fully.

(65) #Both John and Bill almost closed the door. John was just about to do it when he got an emergency phone call. Bill was in a process of closing the door. He didn't close it fully but got really close.

²² Jonathan Bobaljik (p.c.) is concerned that tests like (63) may not be a knock-down argument for the claim that there exists an independent scalar reading. The test sentence can still be judged as true under a pragmatic analysis of the ambiguity. To be more specific, if we are allowed to tweak the closeness relation in the Sadock-style semantics or if one evaluates the test sentence along the dimension relative to the degree of the door being closed as in Sevi (1998), the test sentence can be true. However, tweaking the closeness relation or evaluating the sentence along a different dimension is still a version of the ambiguity theory, which acknowledges the existence of another independent reading.

- (66) #John almost killed the hostages and so did Manuel. John first severely wounded them and then Manuel was on the point of finally killing them when the police burst in and tore the gun from him. [Sevi 1998, (6)]

Examples (64)-(66) are somewhat awkward and the judgments are delicate, which suggests that the scalar reading is independent from the counterfactual reading.

4. The effect of an intervening adverb

Let us consider the set of examples in (67). For the moment, I simply lay out the full paradigm with respect to the available readings for each item following a descriptive definition of “counterfactual” and “scalar” reading as described in Section 0, i.e. under the counterfactual reading, the agent did not even start to carry out the action represented by the verbal predicate; under the scalar reading the agent started and got close to completing the action represented by the predicate.

- | | | |
|------|--|--|
| (67) | a. John almost slowly closed the door. | (counterfactual, adv-associated, *scalar) |
| | b. John almost closed the door slowly. | (counterfactual, adv-associated, scalar) |
| | c. John slowly almost closed the door. | (*counterfactual, *adv-associated, scalar) |
| | d. Slowly John almost closed the door. | (*counterfactual, *adv-associated, scalar) |

Let us start with (67)a. First, it has a counterfactual reading in the sense that John had the intention to slowly close the door, but did not even start the action. A second interpretation is that John tried to close the door slowly, but slammed it instead (because he lost control of the

door). This reading can also be subsumed under the counterfactual reading, because we can easily imagine that if John had not lost control of the door, he would have slowly closed it. For the moment, I will call this interpretation *adv(erb)-associated interpretation*, simply to distinguish it from the counterfactual reading I mentioned just now. Notice that the term here is used descriptively and does not connect with any theoretical analysis. However, (67)a does not have the scalar reading that John performed a slow action of closing the door, he got close to completing the event but did not close it fully. In other words, an intervening manner adverb like *slowly* blocks the scalar reading. In contrast to (67)a, when the adverb is placed after the predicate as in (67)b, the scalar reading is available.²³ Compared with sentences in which adverbs occur before *almost*, both (67)c and (67)d only has the scalar reading in the sense that John performed a slow action of closing the door, but did not close it fully. The counterfactual is not available for (67)c or (67)d, because it is pragmatically odd to specify the manner of an action which did not happen at all. Neither do these two examples have the *adv-associated interpretation*. This is also expected because the adverb is not within the scope of *almost*.

The intervention effect poses a new challenge for a pragmatic analysis: For Sevi (1998) it remains a mystery why an intervening adverb can restrict the dimension of circumstance based on which the sentence is evaluated. It is also not clear how Sevi would account for the scalar reading for (67)b, since both *closed* and *slowly* have a standard of precision that can be loosened. In order for Sevi's analysis to work, the proposal need to be supplied with more details about whether *almost* targets the standard of precision for a specific adjective or both (Magdalena

²³ Stress could play a role in the interpretation of (67)a and (67)b, although the pattern is not crystal clear. For (67)a some native speakers find it natural to put stress on *almost*, which gives rise to a counterfactual reading that John had the intension to close the door in a slow manner, but did not start the action. When stress is placed on the intervening adverb *slowly*, *almost* easily associates with *slowly* and gives rise to the adverb associated reading. For (67)b it is most natural to place stress on the sentence final adverb *slowly*, which gives rise to a variety of interpretations, including all those in the bracket that we have described. When *almost* bears stress, the scalar reading can be derived more easily, especially if there is a break between the VP phrase and the sentence final adverb.

Kaufmann, p.c.). For Hitzeman (1992) and Amaral and Del Prete (2010), the intervention effect gives rise to a puzzle why an intervening adverb prevents us from choosing the culmination point of the event (in the case of (67), the point where the door got fully closed) as the limit for *almost*.

In face of the new challenge from the intervention effect, shall we give up a pragmatic analysis and turn to other accounts for the ambiguity of *almost*? How does the intervention effect bear on other previous analyses? First of all, the intervention effect seems to be in favor of a scope analysis (see McCawley 1972; Rapp & von Stechow 1999), according to which the scalar reading, which is derived by *almost* being base-generated in a lower position and moving covertly to a preverbal position. Based on Relativized Minimality (e.g. Rizzi 1990), an intervening adverb should block this movement, leading to the absence of a scalar reading. As we have seen in Section 3.1, however, the scope analysis has been criticized due to some serious problems that cannot be easily ignored. Can the intervention effect be accounted for under Eckardt's (2007) analysis of the ambiguity? The answer is not clear because Eckardt (2007) is not explicit about how the scalar reading is derived for examples like *John almost closed the door*. This does not mean, however, that we should abandon a scalar semantics of *almost* or an Eckardt-style account for the ambiguity. In the next section, I develop such an analysis for the intervention effect, pursuing a scalar semantics of *almost*. The formal implementation of the semantics of *almost* is built on the bits and pieces of proposals from earlier scalar analyses of *almost* (e.g. Penka 2006, Eckardt 2007, Amaral & Del Prete 2010).

5. Analysis

This section provides an analysis of the intervention effect described in Section 4. It is divided into two subsections: Section 5.1 forms the background of the analysis. I start by introducing the

scalar semantics of *almost* that I assume (Section 5.1.1). Under this semantics of *almost*, I account for how the scalar reading of *almost* is derived for an example like *John almost closed the door* (Section 5.1.2) by assuming lexical decomposition (see von Stechow 1995, 1996) and the scalar structure of the gradable adjective *closed* as proposed in Kennedy and McNally (2005). This is why a lengthy discussion on adjective scale structures and how *almost* interacts with gradable adjectives is coming up in the same section. As a matter of fact, the analysis of the intervention effect also builds on this discussion. Notice that the semantics of *almost* that I assume at the beginning of Section 5.1.1 is intended at least for the scalar reading of *almost*. As for the counterfactual reading, different analyses have been proposed since the original observation of the ambiguity of *almost* (see e.g. Sadock 1981; Eckardt 2007; Amaral & Del Prete 2010), and more than one of them is compatible with my analysis of the intervention effect. Although I do not intend to give an account for the counterfactual reading, I discuss briefly at the end of Section 5.1 (Section 5.1.4), two possible analyses of the counterfactual reading. In Section 5.2, I propose an analysis of the intervention effect.

5.1. Background for the analysis of the intervention effect

5.1.1. The semantics of *almost* that I assume (at least for scalar *almost*)

My semantics of *almost* is given in (68), in which \bar{x} is a vector of lambda bound variables.

$$(68) \quad [[almost]] = \lambda p_{\langle s, \dots, \langle \sigma, \langle \tau, \iota \rangle \rangle \rangle}. \lambda w_s. \lambda \bar{x}. \neg p(w)(\bar{x}) \wedge \exists q \in S_{alt}(p) [q \prec_s p \wedge close(q, p) \wedge q(w)(\bar{x})]$$

As we can see, the semantics given in (68) is similar to Amaral and Del Prete's (2010) (cf. (43)). It states that *almost* is a polymorphic operator which can combine with an n-place property p, and this property p is scalar. As what Amaral and Del Prete (2010) propose, I assume that the scale induced from p can be lexically motivated, focus-induced or derived from context, and the predicate that *almost* modifies intuitively provides the end point (i.e. the "limit" in Amaral and Del Prete's term) on the scale. *Almost* applies to p and its arguments, and gives rise to a conjunction of two elements. The scalar property p does not hold of its arguments. However, an alternative property q which is lower than and close to p holds of the arguments.

5.1.2. Scalar *almost*, scale structures of gradable adjectives and their interaction with *almost*

Under this semantics of *almost*, let us examine how the scalar reading is derived for an example like *John almost closed the door*. First of all, we need to address the following question: What scalar alternatives are involved in the scalar reading? Assuming lexical decomposition in syntax (cf. von Stechow 1995; 1996), I argue that in this case it is the decomposed element, the gradable adjective *closed*, that provides a scale for *almost*.

This is where the semantics of gradable adjectives (e.g. *expensive*, *tall*, *closed*, *open*, etc.) comes into play. I assume the semantics of gradable adjectives proposed by Kennedy and McNally (2005). They analyze the semantics of adjectives as a measure function that maps an individual in its domain to a degree (which are formalized either as a point or an interval) on a scale. The scale consists of three components: a set of degrees, an ordering relation and a dimension along which the quantity is measured. For example, the adjective *expensive* associates with a scale consisting of a set of degree d ordered along the cost dimension. It denotes a relation

between degree of cost d and objects x such that the cost of x equals d (69)a. The adjective *closed* associates with a scale consisting of a set of degrees d ordered along the dimension of “being closed”. It denotes a relation between degree of being closed and objects x such that x is d -degree closed (69)b.

- (69) a. $[[\text{expensive}]] = \lambda d. \lambda x. \text{expensive}(x) = d$ [Kennedy & McNally 2005: 349, (12)]
 b. $[[\text{closed}]] = \lambda d. \lambda x. \text{closed}(x) = d$

One well-known property of gradable adjectives is that the interpretation of many adjectives (e.g. *expensive*, *tall*, *big*) depends on context. For instance, what counts as expensive may vary from context to context. One way to account for this context dependency is to model the truth conditions of gradable adjectives relative to a contextually defined standard of comparison. Following von Stechow (1984), Kennedy and McNally achieve this by assuming that when there is no other overt degree morphology (e.g. in English comparatives, degree modifiers and measure phrases) modifying the adjective, there exists a covert degree morpheme *pos* that relates the degree argument of the adjective to the standard of comparison. The specific semantics of *pos* is given in (70).

- (70) $[[\text{pos}]] = \lambda G \lambda x. \exists d [\text{standard}(d)(G)(C) \wedge G(d)(x)]$
 [Kennedy & McNally 2005: 350, (13)]

In the formula, the **standard** function holds of a degree d if it meets a standard of comparison for an adjective G with respect to a comparison class C . C is a contextually given set of individuals

that influence the semantic denotations of adjectives. Once we compose *pos* with *expensive*, we get the denotation of its positive form as in (71).

$$(71) \quad [[pos]]([[expensive]]) = \lambda x. \exists d [\text{standard}(d)([[expensive]])(C) \wedge [[expensive]](d)(x)] \\ = \lambda x. \exists d [\text{standard}(d)([[expensive]])(C) \wedge \text{expensive}(x)=d]$$

[Kennedy & McNally 2005: 350, (14)]

Kennedy & McNally further propose that for the case of *expensive*, the **standard** relation requires that a degree *d* exceeds a norm or average that is computed based on the comparison class *C*. Since the value of *C* is determined contextually, whether a particular degree exceeds the norm or average is also determined by context, which accounts for the vagueness of an adjective like *expensive*.

However, the requirements imposed by the standard relation are not the same for all adjectives. Instead, they vary depending on the adjectival argument of *pos*. Kennedy and McNally (2005) argue for a distinction between relative and absolute gradable adjectives: for the former (e.g. *tall*, *expensive*), the standard of comparison is context dependent, whereas the standard of comparison for the latter (e.g. *open*, *closed*, *wet*, *dry*) is not. Within absolute adjectives, there exists a further distinction between maximum-standard and minimal-standard absolute adjectives. For instance, *closed* is a maximum-standard absolute adjective in the sense that the standard of comparison associates with the maximum degree of “being closed”, the end point on the scale. In other words, (72) does not mean that the door is closed to a certain degree which surpasses some standard of comparison. Instead, it means that the door is completely closed. So for the case of *closed*, the **standard** relation in the *pos* morpheme requires that *d* must

equal the maximum of the scale associated with the adjective. The positive form (i.e. combining *pos* with *closed*) gives rise to the interpretation in (73), where S_A represents the scale associated with the adjectival head, and m_A is the measure function introduced by the adjective.

(72) The door is closed.

(73) $[[AP_{\max}]] = [[pos]]([A_{\max}]) = \lambda x. \exists d [\mathbf{standard}(d)([A_{\max}]) (C) \wedge [A_{\max}](d)(x)]$
 $= \lambda x. \exists d [d = \max(S_A) \wedge m_A(x) = d]$

[combining (34b) & (35b) in Kennedy & McNally 2005: 358]

In contrast to *closed*, its antonym *open* is a minimum-standard absolute adjective in the sense that the standard of comparison defaults to the minimal value on the scale. (74) does not mean that the door is open to some degree that is beyond some standard of comparison, but rather simply requires some minimal positive aperture of the door. For a minimum-standard absolute adjective, a degree d satisfies the **standard** relation if it is greater than the minimum value of the scale associated with the adjective, as shown in (75), when we combine *pos* with a minimum-standard absolute adjective.

(74) The door is open.

(75) $[[AP_{\min}]] = [[pos]]([A_{\min}]) = \lambda x. \exists d [\mathbf{standard}(d)([A_{\min}]) (C) \wedge [A_{\min}](d)(x)] = \lambda x. \exists d$
 $[d > \min(S_A) \wedge m_A(x) = d]$

[combining (34a) and (35a) in Kennedy & McNally 2005: 358]

As many authors have observed (see Cruse 1986, Rotstein & Winter 2004, Kennedy & McNally 2005, Burnett 2012, among others), *almost* always goes well with maximum-standard absolute adjectives, independent of context. However, in an out-of-the-blue context, it is often less acceptable with minimum-standard absolute adjectives and relative gradable adjectives, as shown in (76)- (77).²⁴

(76) a. John is almost *tall/*fat/*handsome.

b. This watch is almost *expensive/*attractive/*fashionable.

[Burnett 2012: 160, (17a)-(17b)]

(77) a. This towel is almost dry/*wet.

b. The stick is almost straight/*bent.

c. The table is almost clean/*dirty.

d. The metal is almost flat/*curved.

[Burnett 2012: 160, (16a)-(16d)]

Rotstein and Winter (2004) as well as Winter (2006) point out that when the contexts explicitly specify a standard, sentences with *almost* modifying a minimum-standard absolute adjective or a relative gradable adjective can be improved. This is illustrated in the examples below.

²⁴ Rotstein and Winter (2004) notice that for some pairs of absolute adjectives with maximum and minimum standards, this contrast is not so sharp in some contexts. In fact, in these context, *almost* modifying a minimum-standard absolute adjective is marginally acceptable for some speakers, as illustrated in the example below (for more examples, see their example (10)).

(xiii) John is almost hungry: four hours after breakfast, he is no longer satiated from breakfast; he is not yet hungry, but he is already starting to think about lunch. [Rotstein & Winter 2004: 266, (10a)]

Despite the felicity of (xiii), Rotstein and Winter show that absolute gradable adjectives with maximum standard and minimum standard give rise to different inferences when modified by *almost*. This shows that *almost* still makes an interpretative distinction between the two classes of absolute gradable adjectives.

- (78) a. We consider a glass dirty and wash it as soon as there are five spots on it. This glass is now *almost dirty*—it has four spots on it. [Winter 2006, (25)]
- b. The publisher considers a book long if it's 300 pages or more. This book is *almost long*— It's 298 pages. [Winter 2006, (26)]
- c. A tall basketball player is someone above 2.00 meters high. John is 1.98 meters, so he is almost tall. [Rotstein & Winter 2004: 279, (34)]

To account for the patterns in (76) to (78), I assume the following: *almost* requires a fixed limit point on a scale. This is how Penka (2006) rules out sentences with *almost* modifying quantifiers such as *several*, *many*, *most*, *more than half* (see example (40), repeated in (79)). Since these quantifiers do not correspond to precise values on the scale, it is not clear what part of the scale counts as 'close by'.

- (79) #Almost several/many /most/more than half students passed the exam. [Penka 2006, (23)]

According to Kennedy and McNally (2005), the positive form of a maximum-standard absolute adjective (e.g. *closed*) is true of an individual that has the maximum degree on the scale associated with the adjective (see (73)). So the set of degrees that qualify as [*pos* [*closed*]] is $\{d:d=\max(S_A)\}$. The semantics of *almost* says that the individual's closeness is not in this set, but close to it. This truth condition can be met, because the limit point provided by the maximum-standard absolute adjective is fixed on the scale. This explains why maximum-standard absolute adjectives are always compatible with *almost*, independent from the context.

For a minimum-standard absolute adjective (e.g. *wet*), the standard of comparison can be anywhere on the scale, between the minimum and maximum degree for the adjective to hold. Rotstein and Winter (2004) argue that by default the standard of comparison is set to zero degree. Following Kennedy and McNally (2005), the positive form of *wet* is true of an individual that has non-zero wetness in an out-of-the-blue context. This means that the set of degrees that qualify as $[pos\ [wet]]$ is $\{d: 0 < d\}$. On the other hand, the semantics of *almost* says that the individual's wetness is not in this set, but lower than and close to this set. However, since there is no lowest degree in the set, the limit point that *almost* approaches to is not fixed. As result, the truth condition of *almost* cannot be met. In other words, there has to be a minimum amount of having the property for *almost* to be used with a minimum-standard absolute adjective.

However, the default standard can be overridden by context. In such cases, the context fixes a standard and creates a closed interval that is associated with the adjective, as argued by Winter (2006). When this happens, the positive form of a minimum-standard gradable adjective like *wet* is true of an individual that has a degree of wetness that is equal to or greater than the fixed standard. In other words, the set of degrees that qualify as $[pos\ [wet]]$ is $\{d: standard(d)([wet])(C) \leq d\}$. *Almost* requires that the individual's wetness is not in this set, but lower than and close to this set. Given that there exists a lowest degree in the set, hence a fixed limit point, *almost* becomes compatible with *wet*.

We can apply the similar logic to explain why *almost* generally does not go well with relative gradable adjectives (e.g. *expensive*) in an out-of-the-blue context. A relative adjective lacks a default standard. In other words, its standard of comparison can be anywhere on the scale and it associates with an open interval. Given the lack of a minimum boundary, hence a fixed limit point, *almost expensive* sounds weird out of the blue. However, when the context provides an

explicit standard value, which further yields a closed interval that *expensive* associates with on the scale (see Winter 2006), a relative gradable adjective like *expensive* can become compatible with *almost*.

Whether a gradable adjective is compatible with *almost* correlates very closely with whether its corresponding verb allows a scalar reading when modified by *almost*. A verb whose corresponding adjective is a maximum-standard absolute adjective with permits a scalar reading (80)a, whereas those that corresponds to a minimum-standard absolute adjective does not (80) in an out-of-the-blue context. This connection follows automatically if we assume that *almost* can associate with the corresponding adjective, which is one of the decomposed elements of the verbal predicate.

(80) a. John almost closed the door/straighten the stick/flattened the metal.

(counterfactual, scalar)

b. John almost opened the door/bent the stick/curved the metal.

(counterfactual, #scalar)

5.1.3. The interaction between *almost* and a definite plural

Under this analysis of the scalar reading of *almost*, we can account for the contrast in (58), repeated in (81): Compared with the (b) example, the (a) example lacks the scalar reading.

(81) a. John almost woke up the children. (counterfactual, #scalar)

b. John almost woke up all the children. (counterfactual, scalar)

[Jon Nissenbaum, p.c.]

To do that, we assume Löbner's (2000) Presupposition of Indivisibility, a felicity condition on predication in natural language. Fodor (1970: 158-168) notes that a plural definite DP (e.g. *the children*) has a different semantics from a universal quantifier (e.g. *all*), although in a positive sentence they seem to have the same truth condition (82). When they are embedded under negation: a plural definite NP (83)a gives rise to a "none" reading (i.e. John woke up none of the children), instead of a "not all" reading as (83)b.

- (82) a. John woke up the children.
b. John woke up all the children.
- (83) a. John didn't wake up the children.
b. John didn't wake up all the children.

Löbner (2000) accounts for this all-or-nothing polarity contrast by proposing a felicity condition on predication in natural languages, the "Presupposition of Indivisibility", which is defined below:

(84) Presupposition of Indivisibility

Whenever a predicate is applied to one of its arguments, it is true or false of the argument as a whole (p. 239).

Although this principle is intended for all predications in natural language, it is mainly intended for a class of predications which Löbner calls summative predications. In summative predication,

the truth of a predicate applied to a complex argument depends on the truth of the predicate applied to its parts, as defined below.

(85) Definition

A predication is summative with respect to a certain argument *a* iff:

It is true/false of *a* iff it is true/false of all parts of an admissible partition into proper parts of

a. (p.237)

Based on this definition, a predicate *wake up* applying to a distributive plural *the children* is a case of summative predication. Following the Presupposition of Indivisibility, *wake up the children* presupposes that either each individual child was woken up or none of the children was woken up. Once it is embedded under negation, as in (83)a *John didn't wake up the children*, the presupposition remains intact. Together with the assertion, the sentence gives rise to the 'none' interpretation. For a negative sentence with the quantifier *all* as in (83)b *John didn't wake up all the children*, the quantifier quantifies over the atomic parts of the plural definite object *children*. The predicate *wake up* applies to the atomic parts of the plural object, thus the Presupposition of Indivisibility is satisfied trivially. *Not* negates the quantifier instead of the predication, which allows the sentence to be felicitous in a context where John woke up some of the children.

We are now in a position to explain the lack of scalar reading of (81)a *John almost woke up the children*. Following the semantics of *almost* as in (68), the polar component of *almost* indicates that John woke up none of the children. The proximal component of (81)a indicates that John woke up most of the children, assuming that the definite plural provides a scale whose alternatives are different groups of students ordered based on their cardinality. However, the

proximal component conflicts with the polar component. As a result, (81)a cannot give rise to the same scalar reading as (81)b *John almost woke up all the children*.

5.1.4. On counterfactual *almost*

We have discussed the scalar reading of *almost* (for the example *John almost closed the door*). Now let us move on to its counterfactual reading. As we have seen in Section 3.1, different analyses has been proposed since the original observation of the ambiguity of *almost*, and more than one of them is compatible with my analysis of the intervention effect. The focus of the present study will not be to tease apart competing analyses for the counterfactual reading. Here I simply discuss two options concerning the ambiguity of *almost* (see Ottshofski 2014 for more details), both compatible with my analysis of the intervention effect. One option is to propose that the ambiguity of English *almost* is a result of lexical ambiguity/polysemy. In other words, there are two *almonds* in English: one has the semantics as in (68) (repeated in (86)a), according to which *almost* is a polymorphic operator that can combine with an n-place property ($n \geq 1$). This *almost* gives rise to a scalar reading. The other variant is a modal-operator and has a Sadock-style semantics as in (13), which is slightly modified in (86)b. This variant gives rise to a counterfactual reading.

- (86) a. $[[almost_1]] = \lambda p_{\langle s, \dots, \langle \sigma, \langle \tau, t \rangle \rangle \rangle}. \lambda w_s. \lambda \bar{x}. \neg p(w)(\bar{x}) \wedge \exists q \in S_{alt}(p) [q <_s p \wedge close(q, p) \wedge q(w)(\bar{x})]$
- b. $[[almost_2]] = \lambda p_{\langle s, t \rangle}. \lambda w_s. \neg p(w) \wedge \exists w' [close(w, w') \wedge q(w)]$

Another option is to propose a unified analysis for both counterfactual and scalar readings. In fact, the formulation in (68) is general enough to be extended to cases in which *almost* modifies a proposition, i.e. properties of possible worlds. We can follow Eckardt (2007) in that a counterfactual reading arises only when *almost* modifies a proposition, as shown in (87). (87) states that *almost* combines with a proposition *p* and a world argument *w*, and gives rise to a conjunction of two elements: *p* does not hold in *w* yet an alternative proposition that is ranked lower than *p* and close to *p* holds in *w*. The question is what constitutes the alternatives to *p* and how they are ordered. Since the focus of the present study is not to propose an analysis for the counterfactual reading, I will leave these questions open for future research.

$$(87) \quad [[almost]] = \lambda p_{\langle s, t \rangle}. \lambda w_s. \neg p(w) \wedge \exists q \in S_{alt}(p) [q <_s p \wedge close(q, p) \wedge q(w)]$$

In light of the cross-linguistic data, it seems that both the polysemy analysis and the uniform analysis have their merits. On one hand, some languages have variants of ‘almost’ that are morphologically distinct and give rise to distinct interpretations. This is compatible with the polysemy analysis. On the other hand, there also exist languages which are cognately unrelated yet have ambiguous ‘almost’, which suggests that this may not be simple polysemy.

What these two approaches of the ambiguity share in common is that the counterfactual reading can be possible only when *almost* takes sentential scope. However, this is not necessarily the case for the scalar reading. This explains the pattern in (21)-(24), which is repeated in (88)-(91): When *almost* directly modifies a non-sentential constituent, only the scalar reading is available, as indicated in the (b) examples. In contrast, in the (a) examples where *almost*

modifies VP, it can take sentential scope. Therefore both counterfactual and scalar readings are available.

- | | | |
|------|--|---------------------------|
| (88) | a. John arrived almost at 3pm. | (#counterfactual, scalar) |
| | b. John almost arrived at 3pm. | (counterfactual, scalar) |
| (89) | a. He invited almost all of his friends. | (#counterfactual, scalar) |
| | b. He almost invited all of his friends. | (counterfactual, scalar) |
| (90) | a. He read almost 10 books. | (#counterfactual, scalar) |
| | b. He almost read 10 books. | (counterfactual, scalar) |
| (91) | a. He walked almost to the park. | (#counterfactual, scalar) |
| | b. He almost walked to the park. | (counterfactual, scalar) |

5.2. Accounting for the intervention effect

In this section I propose an account for the intervention effect presented in Section 4, i.e. an intervening adverb blocks the scalar reading of *almost*. I derive the intervention effect through two independent assumptions: The first one is a minimality constraint, which states that as a scalar operator, *almost* cannot skip a closer scalar item and simply associate with a farther one (see Chierchia 2013 for a similar assumption to account for NPI intervention). The second assumption indicates that the scale associated with *almost* needs to have a fixed limit point. This assumption has been used to rule out cases in which *almost* modifies quantifiers like many/most and sentences where *almost* modifies a minimum-standard absolute adjectives (e.g. *wet*) or a relative gradable adjectives (e.g. *expensive*).

In a nut-shell, I show that no matter what scalar items *almost* associates with, the sentence with an intervening adverb is ill-formed: If *almost* associates with the manner adverb, the sentence becomes uninterpretable because the scale associated with the manner adverb does not provide a fixed limit point and thus does not go well with *almost*. If *almost* associates with the scale provided by the predicate, the posited minimality constraint is violated. If *almost* associates with both scalar items, the limit point provided by the complex predicate is not fixed either. These lead to an intervention effect on the absence of a scalar reading.

To be specific, I explore a more syntax-driven way in terms of feature checking/agreement to capture the association between *almost* and scalar alternatives that it associates with. I have argued that *almost* targets constituents that introduce scalar alternatives. Here I further assume that it enters into some kind of agreement with these targets (see Chierchia 2013). The idea is formally implemented in the following way: A scalar item carries a feature σ . Its alternatives may be active or inactive. If the alternatives are active, it is signaled by the feature σ getting value “+”. On the other hand, if the alternatives are not active, it is signaled by the feature σ getting value “-”. Following Chierchia (2013) I assume that *almost* works in a “multiple agree” fashion and can in principle target a series of scalar items with active alternatives (i.e. “+”) in its c-commanding domain.

In addition, I posit a minimality effect under such a syntax-driven account (see a similar proposal in Chierchia’s 2013 treatment for NPI intervention effect): In a configuration of the form *almost* [...X...Y], with two scalar items X and Y (whose alternatives may be active or inactive) such that X is structurally closer to *almost* than Y, we will be able to expect *almost* to be able to target Y only if it targets X first. In other words, it is not expected to be able to skip over potential scalar items.

Here is another assumption regarding the scalar alternatives of a manner adverb (e.g. *slowly*) that we need in order to account for the intervention effect. Like its gradable adjective counterpart, the adverb *slowly* is also associated with a scale along the dimension of speed. Its truth condition also varies depends on the context. To capture the adverb's sensitivity to context, Rawlins (2013) extends the Kennedy (/McNally) analysis of gradable adjectives (Kennedy & McNally 2005) positing a similar covert "positive" degree operator. For details, see Rawlins (2013). Following Abrusán (2011), I assume that the domain of manners contains contraries. For any manner P, its contrary manner(s) P' and what she calls "the middle predicate" P^M are alternatives to it in any context. For instance, the adverb *slowly* has alternatives including *fast* and *with medium speed*. And for any member in the set {*slowly*, *with medium speed*, *fast*}, the other two members are alternatives to it in any context. This idea explains our intuition that normally there is a reason for having manner adverbs: to emphasize that the action represented by the predicate is carried out in a certain manner as opposed to its opposing manners. As McConnell-Ginet (1982: 152) describes, manner adverbials restricts the range of events referred to by the VP. By restricting the range of events, adverbials also have an alternative set of possible states of affairs.

With all these assumptions, we are now in a position to formulate an account for the intervention effect. (92)b-(92)e are some logically possible LFs for the example *John almost slowly closed the door* (92)a, which consists of two scalar items: the manner adverb *slowly* and the decomposed adjective *closed*.

- (92) a. John almost slowly closed the door.
- b. almost slowly_[-σ] John CAUSE BECOME door closed_[-σ]

- c. almost slowly_[+σ] John CAUSE BECOME door closed_[-σ]
 - i. almost slowly_[+σ] John CAUSE BECOME door closed_[-σ]
 - ii. [almost slowly_[+σ]] John CAUSE BECOME door closed_[-σ]
- d. almost slowly_[-σ] John CAUSE BECOME door closed_[+σ]
- e. almost slowly_[+σ] John CAUSE BECOME door closed_[+σ]

In (92)b, the scalar alternatives of neither scalar items are activated. Intuitively this means that *almost* is associated with none of the scalar items. This is against the selectional requirement of *almost*. Thus (92)b is not well-formed.

In (92)c, *almost* associates with the scalar alternatives of *slowly*. The syntactic structure associated with this configuration can be either (92)c-i where *almost* modifies a proposition, or (92)c-ii where *almost* directly modifies *slowly*. I will argue that this option is not well-formed out of the same reason why *almost* does not go with its corresponding adjective *slow* in an out-of-the-blue context: the adverb does not induce a fixed limit point on the scale that *almost* can approach if the standard of comparison is not specified in the context.²⁵ To go through the idea in

²⁵ Jonathan Bobaljik (p.c.) points out that *almost* can modify manner adverbs in some context, as shown in the following example:

- (xiv) We slackened pace a little, and when we got into the big court-yard itself, we were walking **almost slowly** (from *All the Year Round, Volume 14* by Charles Dickens).

The following example is also considered acceptable:

- (xv) John closed the door almost slowly.
Intended meaning: It was almost as if it was in slow motion.

As discussed in Section 5.1, in some context (for instance, when the contexts explicitly specify a standard of comparison), *almost* can modify a relative gradable adjective, as repeated below.

- (xvi) a. The publisher considers a book long if it's 300 pages or more. This book is *almost long* – It's 298 pages.
[Winter 2006, (26)]
- b. A tall basketball player is someone above 2.00 meters high. John is 1.98 meters, so he is almost tall.
[Rotstein & Winter 2004: 279, (34)]

more detail, let us take a look at the semantics of a gradable adjective like *slow* and its adverb counterpart like *slowly*. In Kennedy and McNally's (2005) classification *slow* is a relative adjective, whose standard of comparison is contextually dependent. To capture this sensitivity to context, Kennedy and McNally (2005) posit a covert positive morpheme for gradable adjectives, whose function is to relate the degree argument of the adjective to an appropriate standard of comparison. When the adjective occurs without overt degree morphology (e.g. comparative morpheme, degree modifiers and measure phrases), it combines with the positive morpheme and yields a predicate that measures its argument along the relevant dimension, and compares that measurement to some standard. Like its gradable adjective counterpart *slow*, the evaluation of the corresponding adverb *slowly* also depends on context. Intuitively by uttering "John walked quickly", we are asserting that the speed for subintervals of the described interval where John was walking is greater than some average or standard speed for similar intervals. To capture the adverb's sensitivity to context, Rawlins (2013) extends the Kennedy (/McNally) analysis of gradable adjectives, positing a similar covert "positive" degree operator. For details, see Rawlins (2013).²⁶ We have seen that *almost* does not go well with a relative adjective, whose positive form denotes that the subject falls within a set of degrees that lacks a minimum boundary. In this sense, the limit point provided by the positive form of *slow* is not fixed on the scale, which explains why example (93) with *almost* modifying *slow* is odd. Similar account can be provided for the oddity of (94)a in which *almost* modifies *slowly* (especially in contrast to (94)b). This also explains why the configuration in (92)c is ill-formed.

Out of the similar reason, for examples like (xv) and (xvi), the speaker may have a standard of comparison in mind, which allows these examples to be interpretable.

Also, there is an independent reason why (91)c is less felicitous, compared with (xvi). This is because the heavy adverbial constituent prefers to be extraposed (Jonathan Bobaljik, p.c.).

²⁶ The complexity of the semantics of *slowly* and the *pos* morpheme proposed by Rawlins is orthogonal to our purpose here.

(93) #He is almost slow.

(94) a. #He closed the door almost slowly.

b. He closed the door almost completely.

In (92)d, only the alternatives of the adjective *closed* are active. However, this does not conform to the minimality requirement. i.e. In a configuration of the form *almost* [...X...Y], where both X and Y are potential target scalar items for *almost* and X is structurally closer to *almost* than Y, *almost* cannot target Y without targeting X first. In other words, it is not expected to be able to skip over potential targets.

In (92)e, *almost* associates with two scalar items in its scope: *slowly* and *closed*. The set of alternatives that *almost* assesses is computed via pointwise function application (see Hamblin 1973, Kratzer & Shimoyama 2002, among others): i.e. for function application, each member of the function alternative composes with each member of the argument set (95).

(95) (Hamblin) Pointwise Function Application (Kratzer and Shimoyama 2002)

If α is a branching node with daughters β and γ , and $[[\beta]]^{g,c} \subseteq D_\sigma$ and $[[\gamma]]^{g,c} \subseteq D_{\langle\sigma\tau\rangle}$, then

$$[[\alpha]]^{g,c} \stackrel{\text{def}}{=} \{a \in D_\tau \mid \exists b \exists c (b \in [[\beta]]^{g,c} \wedge c \in [[\gamma]]^{g,c} \wedge a = c(b))\}$$

This gives rise to the following alternative set, whose members are ordered along two dimensions: the degree that the door was closed and the speed of John's action: {John quickly made the door 100% closed; John quickly made the door 90%-closed, John made the door 100%-closed with medium speed; John made the door 90% closed with medium speed;...John slowly made the door 100%-closed; John slowly made the door 90%-closed}. The limit point provided

by the predicate *slowly close the door* is not fixed on the scale either. Therefore it is not well-formed.

Before we move on to predictions of this analysis of the intervention effect, I have a few remarks about the counterfactual reading of (92)a. In the previous subsection, I discussed two possible approaches to account for the counterfactual reading, without committing to any of them. Intuitively, we want the counterfactual reading of (92)a to indicate roughly the following: John did not close the door slowly in the world of evaluation, yet he could have done it in some close worlds. Such a truth condition renders the sentence true in many different contexts: we can imagine the sentence being true in a scenario where John planned to slowly close the door but never initiated the action because he got interrupted before he started the action. This is our familiar “counterfactual” interpretation. We can also imagine the sentence being true in a context where John did not slowly close the door simply because he was not careful enough and slammed the door instead. This corresponds to the “adverb-associated” interpretation we discussed in Section 4. In other words, the adverb-associated reading can also be subsumed under the counterfactual reading.

The analysis of the intervention effect crucially relies on the assumption that *almost* requires a fixed limit point on the scale. A prediction that fall from this analysis is that once the scale that *almost* accesses has a fixed limit point, the originally missing scalar reading should become available. If the intervening adverb goes well with *almost per se*, then we predict that it should not give rise to an intervention effect. This is borne out in for *perfectly*, which goes well with *almost* (thanks Magdalena Kaufmann for providing the example). Example (96) allows the meaning that John was in the process of closing the door in a perfect manner, but that he didn't

complete his action and only got close to it (Emma Nguyen, p.c.). This is because the scale has a fixed limit point *almost* associates with the adverb or both scalar items.

(96) John almost perfectly closed the door.

As proposed by Rotstein and Winter (2004) and Winter (2006), when the context explicitly specify a standard, *almost* can modify a relative gradable adjective. We can also provide a context which fixes a standard of comparison such that *almost slowly* becomes felicitous (see footnote 21 which provides possible examples like this). Under such a context, we expect that the originally absent scalar reading for *John almost closed the door* can be recovered and we examine this prediction in the example below. This seems to be born out for some speakers.²⁷

(97) Context: [The speaker is talking about how important it is to keep the door completely closed.]

Since the door slams so easily, I consider any closing that does not cause it to slam as 'slowly'.

I think the most important thing is to keep the door completely shut so that the wind doesn't blow it open. Look at what John did just now! Clearly he didn't slam it, but he didn't close the door completely, there was still a little gap there.

?John almost slowly closed the door.

²⁷ Some speakers find this test sentence more acceptable under this context. However, some speakers still find it unacceptable. I suspect there are two sources for the infelicity of the test sentence in (97): one is that probably these speakers do not even accept *almost slowly*. Another possible source comes from the fact that heavy adverbs prefer to be extraposed (Jonathan Bobaljik, p.c., see footnote 21).

To sum up this section, I provided an analysis of the intervention effect. To do that I first discussed the semantics of *almost* that I assume at least for the scalar reading. To be more specific, *almost* is a polymorphic operator that operates on a scale, which can be grammatically encoded, focus-induced or contextually provided. The scalar reading for an example like *John almost closed the door* is derived when *almost* associates with the decomposed gradable adjective *closed*. To account for the intervention effect, I assumed the following: (a) a posited minimality constraint such that *almost* cannot skip potential targets; and (b) an assumption that the scale associated with *almost* needs to have a fixed limit point. I derived the intervention effect by examining each logical possible LFs in which *almost* associates with one or two scalar items in its scope. As we have seen, all of them lead to ill-formedness.

6. Extension: Converging evidence from other languages

As we have seen in Section 0, in some languages the counterfactual and scalar interpretation of *almost* correspond to two distinct lexical items. For example, in Serbo-Croatian *skoro* gives rise to a scalar reading (98) and *zamalo* gives rise to a counterfactual reading (99).²⁸

(98) Context: As the last person who left the classroom, Ivan was supposed to close the door, but he didn't close it fully. There was still a small gap left.

Ivan je skoro/#zamalo zatvorio vrata.

Ivan.nom is almost closed door.

Ivan almost closed the door. [Aida Talić & Neda Todorović, p.c.]

²⁸ If in a scalar context the counterfactual reading makes sense, *zamalo* can also be used, as indicated in (xvii) below.

(xvii) Context: Ivan started closing the door. He was about to fully close it when he got a phone call and stopped there.

Ivan je zamalo /skoro zatvorio vrata.

Ivan.nom is almost closed door

Ivan almost closed the door.

(99) Context: Ivan thought of closing the door, but he got an emergency phone call before he started closing the door and didn't even touch the door.

Ivan je zamalo/#skoro zatvorio vrata.

Ivan.nom is almost closed door

Ivan almost closed the door.

[Aida Talić & Neda Todorović, p.c.]

I have argued that no matter what analysis of the counterfactual 'almost' we adopt, when the counterfactual reading is intended, *almost* must take propositional scope. This explains why *zamalo* is odd in (100)b and (101)b, because it cannot directly modify the scalar item 'ten books'.²⁹

(100) Context: The library has a book reading context in the summer time. Each participant needs to read ten books to win a prize. John goes to the library and picks up ten books. Unfortunately his books are so long that by the time the summer ends, he has only finished nine of them.

a. Ivan je skoro/#zamalo procitao deset knjiga.

Ivan is almost read ten books

²⁹ Although almost all examples I checked with native speakers go along with this generalization, the informants provided a counterexample (v). Unexpectedly, *skoro* is possible in the (b) example below.

(xviii) Context: Bill signed up for a swimming competition in the summer. To win the prize, he needed to swim three laps. He had prepared everything before the game when he was told the last minute that the competition was cancelled.

a. Ivan je zamalo/*skoro preplivao bazen tri puta.
Ivan is almost swam.across pool three times
Ivan almost swam three laps.

b. Ivan je preplivao bazen *zamalo/skoro tri puta.
Ivan is swam.across pool almost three times
Ivan swam almost three laps.

- b. Ivan je procitao skoro/#zamalo deset knjiga.
 Ivan is read almost ten books
 John read almost 10 books.

[Aida Talić & Neda Todorović, p.c.]

(101) The library has a book reading context in the summer time. Each participant needs to read ten books to win a prize. Bill goes to the library and picks up ten books. However, there are a lot of book thieves in the country, and he had all his books stolen on the way home.

- a. Ivan je #skoro/zamalo procitao deset knjiga.
 Ivan is almost read ten books
 John almost read 10 books.
- b. Ivan je procitao #zamalo/#skoro deset knjiga.
 Ivan is read almost ten books
 John read almost 10 books.

[Aida Talić & Neda Todorović, p.c.]

(102) is another example which indicates that *skoro* can access a non-propositional scalar items whereas *zamalo* can only operate on a proposition. As the copula *su* ‘are’ needs to occupy the second position, ‘almost all my friends’ forms a constituent. This explains why the sentence with *zamolo* is ill-formed.

(102) Context: All my friends came to my wedding, except Ena.

Skoro/#Zamolo svi moji prijatelji su dosli.

Almost all my friends are come

Almost all my friends came. [Aida Talić & Neda Todorović, p.c.]

(103) shows that *zamalo* but not *skoro* can modify the predicate ‘meet’, for which only the counterfactual reading makes sense.

(103) Context: I was supposed to meet Ivan this afternoon, but our meeting got cancelled the last minute.

a. Zamalo/??Skoro sam upoznao Ivana.

Almost am met Ivan.acc

I almost met Ivan.

b. Danas sam zamalo/??skoro upoznao Ivana.

Today am almost met Ivan.acc

I almost met Ivan.

[Aida Talić & Neda Todorović, p.c.]

As we have seen in Section 1, Korean is another language where the counterfactual and scalar readings are distinguished morphologically. *Keuy* ‘almost’ in Korean only gives rise to the scalar interpretations of ‘almost’, indicating closeness to completion of the event expressed by the clause (104)(105).

- | | | | | | |
|-------|--|------------|---------|-----------------|----------------------|
| (104) | John-i | mwun-ul | keuy | tat-ass-ta | |
| | John-nom | door-acc | almost | close-perf-decl | |
| | John almost closed the door. (scalar, *counterfactual) | | | | [Jungmin Kang, p.c.] |
| (105) | John-i | keuy yel | kwen-uy | chayk-ul | ilk-ess-ta |
| | John-nom | almost ten | cl-gen | book-acc | read-perf-decl |
| | John almost read ten books. (scalar, *counterfactual) | | | | [Jungmin Kang, p.c.] |

As expected, *keuy* cannot be used with predicates for which only the counterfactual reading makes sense, such as ‘hit’ (106)a. Another variant of ‘almost’, *ppen ha-ta*, needs to be used here (106)b.³⁰

- (106) Context: Mina almost hit Jinhee (but she changed her mind, and did not).
- a. *mina-nun cinhi-lul keuy ttayli-ess-ta
- Mina-TOP Jinhee-ACC almost hit-PAST-DECL
- b. mina-nun cinhi-lul ttayli-l ppen hay-ss-ta
- Mina-TOP Jinhee-ACC hit-MOD ANA-PAST-DECL
- Mina almost hit Jinhee. [Kim 2007, (13)]

³⁰ At first glance, *ppe ha-ta* ‘almost’ seems to correspond to counterfactual *almost*. However, some informants indicated that *ppe ha-ta* cannot be used in a counterfactual context as in the example below.

- (xix) Context: John planned to close the door but forget to do it the last minute because of an emergency phone call. He didn't even start closing the door.
- | | | | |
|------------------------------|----------|--------------|--------------|
| #John-i | mwun-ul | tat-ul ppen | ha-yss-ta |
| John-nom | door-acc | close-1 PPEN | do-perf-decl |
| John almost closed the door. | | | |
- [Jungmin Kang, p.c.]

As shown in Section 1, the usage of *ppen ha-ta* ‘almost’ is complicated and goes beyond the scope of this study (see Kim 2002, Kim 2007 for more details).

A manner adverb such as ‘slowly’ or ‘quickly’ induces an intervention effect for both Serbo-Croatian *skoro* and Korean *keuy*: When it occurs between ‘almost’ and the complex predicate, the sentence is ungrammatical, as shown in (107)a, (108)a and (109)a. Notice that these examples are ill-formed not because ‘almost’ in these languages cannot co-occur with a manner adverb. For instance, when a manner adverb like ‘quickly’ precedes Serbo-Croatian *skoro* ‘almost’ (107)b, the sentence has the same interpretation as its English counterpart, i.e. John almost completely closed the door in a quick manner. Similarly Korean *keuy* can also co-occur with a manner adverb, as long as it does not intervene between *keuy* and the predicate (108)b, (109)b. As we have seen in the previous section, all the possible structures that associate an English sentence *John almost slowly closed the door* are ill-formed, except when *almost* takes propositional scope and gives rise to a counterfactual reading. However, this option is not available for Serbo-Croatian *skoro* or Korean *keuy*. This leads to the ungrammaticality of (107)a, (108)a and (109)a.

(107) a. *Ivan je skoro brzo zatvorio vrata.

Ivan.nom is almost quickly closed door

Ivan almost closed the door in a quick manner.

b. Ivan je brzo skoro zatvorio vrata.

Ivan.nom is quickly almost closed door

Ivan almost closed the door in a quick manner. [Aida Talić & Neda Todorović, p.c.]

(108) a. ??John-i mwun-ul keuy ppalli tat-ass-ta

John-nom door-acc almost quickly close-perf-decl

John almost quickly closed the door.

- b. ?John-i mwun-ul ppalli keuy tat-ass-ta
 John-nom door-acc quickly almost close-perf-decl
 John quickly almost closed the door. [Jungmin Kang, p.c.]
- (109) a. *John-i keuy chenchhenhi yel kwen-uy chayk-ul ilk-ess-ta
 John-nom almost slowly ten cl-gen book-acc read-perf-decl
 John almost slowly read ten books.
- b. John-i chenchhenhi keuy yel kwen-uy chayk-ul ilk-ess-ta
 John-nom slowly almost ten cl-gen book-acc read-perf-decl
 John slowly read almost ten books. [Jungmin Kang, p.c.]

7. Chapter conclusion

In this chapter I examined an intervention effect with *almost*: when a manner adverb intervenes between *almost* and a complex predicate (e.g. *John almost slowly closed the door*), the scalar reading of *almost* is unavailable. Building on previous scalar analyses of *almost*, I derive the intervention effect by examining the consequences when *almost* associates with one or two scalar items in its scope, which leads to ill-formedness. My analysis relies on (a) a posited minimality constraint such that *almost* cannot skip potential targets; and (b) an assumption that the scale associated with *almost* needs to have a fixed limit point.

To be more specific, I assume that *almost* is a polymorphic operator that operates on a scale, which can be grammatically encoded, focus-induced or contextually provided. When an additional manner adverb intervenes between *almost* and the complex predicate, there are two scalar items under the scope of *almost* whose alternatives may be active or not: the manner adverb and the scalar item provided by the complex predicate. Associating with one or both of

the scalar items lead to ill-formedness: If *almost* associates with the manner adverb, the sentence becomes uninterpretable because the scale associated with the manner adverb does not provide a fixed limit point and thus does not go well with *almost*. If *almost* associates with the scale provided by the predicate, a posited minimality constraint is violated. If *almost* associates with both scalar items, the associated scale does not have a fixed limit point either. These together leads to an intervention effect on the absence of a scalar reading.

Chapter 5

Conclusion

In this dissertation I investigate the adverbs ‘again’ and ‘almost’, which are known as decomposition adverbs, as they can “look inside” a predicate and modify just the result state. For example, when sentence-final *again* modifies an accomplishment predicate (e.g. *John walked to the village again*), the sentence is ambiguous between a repetitive and a restitutive reading: the former presupposes that the agent has performed the action before (John has walked to the village before), while the latter presupposes only that the result has held before (John had been at the village before). Like sentence-final *again*, preverbal *almost* modifying a complex predicate (e.g. *John almost closed the door*) is ambiguous: First, it has a “counterfactual” reading, where the agent had the intention of performing the action represented by the predicate, but did not implement it. (John had the intention of closing the door, but did not actually do so.) Another interpretation, called the “scalar” reading, indicates that the agent initiated the action but the result state was not achieved. (John started closing the door, but did not close it fully.) This dissertation revolves around how these readings are derived from a cross-linguistic perspective and how children acquire the ambiguity of English *again* when it modifies a goal-PP construction.

Chapter 2 examines the decomposition adverbs ‘again’ from the perspective of cross-linguistic variation, with an emphasis on Mandarin Chinese. Many researchers have argued that the repetitive vs. restitutive ambiguity is derived structurally, with a single word for ‘again’ that can be attached to different structural positions. This account is difficult to maintain in a

language like Mandarin, however. The adverb *you* ‘again’ can only occur preverbally, which suggests that it is always adjoined at the vP level or higher, leading to a prediction that only the repetitive reading will be available. Mandarin nonetheless allows a restitutive reading. This would seem to rule out a syntactic analysis involving multiple attachment sites within the VP, but I argue that there is indeed a structural ambiguity even in Mandarin. The evidence comes from scope interactions between ‘again’ and an indefinite object.

Interestingly, languages vary in whether their counterpart to English *again* permits a restitutive reading with goal-PPs such as *walk to the village* (Beck 2005; Beck & Snyder 2001). The restitutive reading is usually available only in languages that, like English, permit resultative constructions (Beck & Snyder 2001, Beck 2004). This cross-linguistic variation raises a broader question: How do children decide whether a restitutive reading is available in their target language? What kind of evidence can they rely on? In Chapter 3 I address these questions. I first examine the parental input, which indicates that truth-conditional evidence for the availability of a restitutive reading of *again* in English goal-PP constructions is infrequent and (usually) ambiguous. However, as I show through my experimental work, many children nonetheless achieve a surprising degree of facility with these restitutive readings by a fairly young age. To account for this learning conundrum, I propose that children rely on more general evidence about the syntax of English, namely the English setting of Snyder’s compounding parameter, in combination with knowledge of a basic, repetitive semantics for *again*. From this information the child can deduce that both readings of *again* are available with English goal-PPs.

In Chapter 4, I examine another decomposition adverb English *almost*, whose ambiguity is not well-understood. I focus on an intervention effect, which as far as I am aware of, has never been reported before: an intervening manner adverb blocks the scalar reading of *almost*. For

example, *John almost slowly closed the door* cannot mean that John performed a slow action of closing the door, but did not close it fully. I develop in this chapter an account of the intervention effect, which bears on the semantics of *almost* and the source of its ambiguity. My semantics of *almost* is inspired and based on a scalar analysis, which argues that *almost* associates with scalar alternatives (e.g. Hitzeman 1992; Penka 2006; Amaral & Del Prete 2010). I also follow Eckardt (2007) in that *almost* is a polymorphic operator which can combine with properties of various semantic types. The account of the intervention effect crucially relies on two assumptions: (a) a posited minimality constraint such that *almost* cannot skip potential targets; (b) an assumption that the scale associated with *almost* needs to have a fixed limit point. To be more specific, I derive the intervention effect by examining the consequences when *almost* associates with one or both scalar items in its scope. If *almost* associates with the manner adverb, the sentence becomes uninterpretable because the scale associated with the manner adverb does not provide a fixed limit point and thus does not go well with *almost*. If *almost* associates with the scale provided by the predicate, a posited minimality constraint is violated. If *almost* associates with both scalar items, the derived scale does not have a fixed limit either, which again yields an interpretation failure.

Appendix I: Can restitutive *you* be subsumed under additive *you* in Chinese?

In Mandarin different interpretations seem to cluster in the lexical item *you*. For example, *you* also has an additive meaning (1) (glossed as ADD), which English *again* does not have.

- (1) Zhangsan xi le yifu, you zuo le fan.
Zhangsan wash Asp clothes, ADD make Asp meal.
Zhangsan did the laundry, and cooked the meal.

In this section, I explore the question whether the restitutive reading of *you* can be subsumed under the additive interpretation by examining the semantics of additive *you*. I am going to show that *you* triggers a presupposition: The presupposed eventuality cannot follow the asserted eventuality and the sum of the two eventualities is more developed than the presupposed event. Based on this semantics, I draw a tentative conclusion that it is not obvious how the low restitutive reading can be subsumed under the repetitive reading.

Let me start by examining the distribution and interpretation of additive *you*. To start with, additive *you* implies some presupposed content. For instance, the second sentence in (2) has the presupposition that there exists another occasion where Zhangsan interviewed someone. Therefore it can naturally follow the first sentence in (2). (2) is a case where the verbs in the two conjuncts are the same, but the objects are different. As a matter of fact, the predicates in the assertion and the presupposition can differ, as illustrated in (1). Furthermore, additive *you* can connect two completely different eventualities. For example, in (3) the subjects and predicates in the two conjuncts are not identical.

(2) Zuotian Zhangsan caifang le san-ge xuesheng,
 Yesterday Zhangsan interview Asp three-CL student,
 jintian ta you caifang le liang-ge laoshi.
 today he ADD interview Asp two-CL teacher

Yesterday Zhangsan interviewed three students, and today he interviewed two teachers.

(3) Baba yao qu kai hui, Mama you yao qu shangban.
 Dad need go have meeting, Mom ADD need go work.
 Shui lai zhaogu haizi ne?
 Who come take-care-of child SFP?

Dad needs to be away for a meeting; mom needs to work. Who's going to take care of the child?

Crucially there is a restriction with respect to how different the presupposed and asserted events can be. Not any two unrelated events can be added together. It has been observed that the eventualities in the presupposition and in the assertion should share some relevant property. To be more specific, they should fall under “a common ‘superset’ eventuality” (Greenberg, 2009b, p3). In (1), the superset eventuality is doing housework; in (2) interviewing people; in (3) parents not at home.

However, the “superset eventuality” is not sufficient to make the additive *you* felicitous. For instance, in (4) the two events can in principle fall under a common eventuality: people having children. However, the sentence sounds awkward. Therefore, we need a more accurate generalization of where additive *you* is felicitous. Greenberg (2009a, 2009b) observe that English additive *more* observe the same constraint (5). She proposed that additive *more* leads to a more

developed eventuality e3, which is the sum of the asserted event e1 and the presupposed event e2.

- (4) #Zhangsan you liang-ge xiaohai, Lisi you you san-ge xiaohai.
Zhangsan have two-CL children, Lisi ADD have three-CL children.
Zhangsan has two children, and Lisi has three children.

- (5) #John has three children. Mary has more. (under additive reading)

This “more developed” constraint can be extended to Chinese additive *you*. In (1) for instance, adding Zhangsan’s cooking the dinner and doing the laundry leads to a more developed event: “he finished more housework than before”. In (2), we can easily come up with a scenario in which Zhangsan’s interviewing more students advances an event. In (3), mom’s going to work plus dad’s being away strengthens the insecurity to leave the child alone at home. (4) is odd because it fails to meet the “more developed” restriction. However, if we create a context where the summed eventualities are considered more developed (e.g. the more children we have, the easier we can rent a shuttle), the same sentence sounds better (6).

- (6) [Scenario: We need some number of children to rent a shuttle.]

Zhangsan you liang-ge xiaohai, Lisi you you san-ge xiaohai,
Zhangsan has two-CL child, Lisi ADD has three-CL child.
Jiaqilai ganghao zu yi-liang che.
Add just rent one-CL car.
Zhangsan has two children, and Lisi has three. Five is just enough to rent a car.

How do we formally capture the notion of “development”? Greenberg (2009a, 2009b) offered two suggestions. One proposal is to employ Landman’s (1992) notion of “stage-of” in the sense that the presupposed eventuality is required to be a stage of e_3 , the sum of the asserted and presupposed eventuality. An alternative solution is to borrow Beck’s (1997) modalized approach to conditional comparatives, and characterized “development” in the sense of (7).

(7) An event e is 'more developed' than an event e' ($e >_{\text{developed}} e'$), iff e leads to or correlates with a higher degree measuring an eventuality on another scale.¹

Here I adopt the second approach, because Chinese additive *you* can also connect two stative predicates (8)-(9). Since stative predicates do not develop over time and thus do not have stages (Rothstein 2004), it is hard to capture (8)-(9) under Landman’s “stage-of” approach. On the other hand, the definition in (7) is compatible with sentences like (8) and (9): The sum of two events correlates to a higher degree which measures an eventuality on another scale--for instance, the degree of being a good employer in (8); and the degree of being the speaker’s Mr. Right in (9).

(8) Ta zuo shi mali you zixi.
 She do thing quickly ADD careful.
 She does things quickly and carefully.

¹ The definition in (7) is slightly different from Greenberg’s (2009b), which includes an additional condition that “In w_0 e has a higher number of participants than e' ”. This is not necessarily the case. For instance, (8)-(9) does not involve an increase of the number of participants.

- (9) Ta name yingjun, you hen jiantan.
 He so handsome, ADD very talkative.
 He is handsome and talkative.

In addition to the development constraint, *you* also observes a temporal restriction: The presupposed event should not occur later than the asserted one. This explains the contrast between the two sentences in (10).

- (10) a. Ta zuotian caifang le san-ge xuesheng,
 He yesterday interview Asp three-CL student,
 jintian you caifang le liang-ge.
 today ADD interview Asp two-CL.
 Yesterday he interviewed three students, and today he interviewed two more.
- b. #Ta jintian caifang le san-ge xuesheng,
 He today interview Asp three-CL student,
 Zuotian you caifang le liang-ge.
 yesterday ADD interview Asp two-CL.
 Today he interviewed three students, yesterday he interviewed two students.

Notice that the eventuality in the presupposition does not have to occur prior to the eventuality in the assertion. They can hold at the same time, as demonstrated in (11). Sentences with additive *you* connecting two properties/states (8)-(9) also illustrate this point.

- (11) Zhangsan zaoshang zai tushuguan caifang le san-ge xuesheng,
 Zhangsan morning in library interview Asp three-CL student,
 yucitongshi, Lisi you zai bangongshi caifang le liang-ge xuesheng.
 Meanwhile Lisi ADD in office interview Asp two-CL student.

This morning Zhangsan interviewed three students in the library. Meanwhile Lisi interviewed two students in the office.

To sum up our observation, additive *you* triggers a presupposition that an event occurs no later than the asserted event. It is felicitous when the sum of the presupposed and asserted events brings a more developed event.

Let us go back to the question we asked at the beginning of the section: Can the restitutive reading of *you*, in particular the low restitutive reading, be subsumed under its additive meaning? (12) is an example of the low restitutive reading of *you* ‘again’.

- (12) *Context: Zhangsan built a wardrobe. He set the door on its hinges and it looked fine. But when he closed the door, it was too small. So...*

Zhangsan you da-kai le men, ba men na le xialai.

Zhangsan again hit-open Asp door, BA door take Asp off.

He opened the door again and took it off.

Based on the semantics of additive *you*, it seems awkward to implement this idea out of the following reason: The presupposition of *you_{add}* requires that $e1+e2 >_{\text{developed}} e2$ (with $e2$ being the presupposed event and $e1$ the asserted event). In the case of (12), $e1$ is an event of the door

being open, and e_2 is an event of John cause the door to be open. It is not obvious how the sum of two events is more developed than the presupposed event. A possible answer is that the summed event increased the duration of the door being open. However, this is not explicitly offered in the context.

Appendix II: Test for the scope interaction between *you* and an indefinite object

Set 1: *tu-hong* ‘paint-red’

Test sentences:

- (1) ta you tu-hong le liang-ge beike.
she again paint-red Asp two-CL shell.

She painted two shells red again.

- (2) ta you tu-hong le qizhong liang-ge beike.
she again paint-red Asp among two-CL shell.

She painted two of the shells red again.

- (3) ta you ba liang-ge beike tu-hong le.
she again BA two-CL shell paint-red Asp .

She painted two shells red again.

- (4) ta you ba qizhong liang-ge beike tu-hong le.
she again BA among two-CL shell paint-red Asp .

She painted two of the shells red again.

Scenarios:

A. low restitutive reading, *again*>existential quantifier

Zhangsan went to the beach and collected a lot of white shells and two red shells. When his wife cleaned the house, she accidentally broke the two red shells. Worried that Zhangsan would notice the mishap, ...

B. Low restitutive reading, existential quantifier>*again*

Lisa had a bunch of red shells. Unfortunately after a while they all got very dusty and the redness faded. In need of two red shells to decorate her Christmas tree, ...

C. High restitutive reading, *again* > existential quantifier

John and Jane had some white shells. Since they needed two red shells to decorate their Christmas tree, John painted two shells red. Unfortunately, Jane accidentally broke the two red shells that John just painted. Therefore, ...

D. High restitutive reading, existential quantifier > *again*

John and Jane had some white shells. Last month John painted all the white shells red and used them to decorate their closet. This month, when Jane was in need of two red shells, she found that all of them got dusty and the color faded. Therefore, ...

E. Repetitive reading, *again* > existential quantifier

Jane had a bunch of white shells. She first painted two shell reds. A minute later, she accidentally dropped the red shell on the floor and the red shell was broken. So...

F. Repetitive reading, existential quantifier >*again*

Jane painted all her white shells red. Unfortunately after a while they all got very dusty and the redness faded. In need of two red shells to decorate his Christmas tree,...

Set 2: da-kai 'hit-open'

Test sentences:

(5) Ta you da-kai le yi-kuai huaibiao.

Heagain hit-open Asp one-CL pocket-watch.

He opened a pocket watches again.

(6) Ta you da-kai le qizhong yi-kuai huaibiao.

He again hit-open Asp among one-CL pocket-watch.

He opened one of his pocket watches again.

(7) Ta you ba yi-kuai huaibiao da-kai le.

He again BA one-CL pocket-watch hit-open Asp.

He opened a pocket watches again.

(8) Ta you ba qizhong yi-kuai huaibiao da-kai le.

He again BA among one-CL pocket-watch hit-open Asp.

He opened one of his pocket watches again.

Scenarios:

A. low restitutive reading, *again* > existential quantifier

John ordered many pocket watches. Unfortunately, two of them had always been open due to some manufacturing error. Yesterday he got them fixed and they closed for the first time. Today...

B. Low restitutive reading, existential quantifier > *again*

John ordered ten pocket watches. Unfortunately, all of them had always been open due to some manufacturing error. Yesterday he got all his watches fixed and closed them for the first time. Today, ...

C. High restitutive reading, *again* > existential quantifier

Jane and John bought five pocket watch together. Jane picked one pocket watch, opened it and closed it. Later John needed to check the time. He wanted to open the watch that John opened just now, but he couldn't find it. Therefore,...

D. High restitutive reading, existential quantifier > *again*

Yesterday Jane and John bought five pocket watch together. To check whether there is any manufacturing errors, Jane first opened all of them and closed them. This morning John needed to check the time. Therefore,...

E. Repetitive reading, *again* > existential quantifier

John ordered ten pocket watches. He decided to check a different watch each day. Yesterday He opened one watch and closed it. Today, ...

F. Repetitive reading, existential quantifier > *again*

John ordered ten pocket watches. To check whether there is any manufacturing error, he opened all of them and then closed them. Today, he needs to check time ...

Appendix III: Stimuli

A. Goal-PP stories

- (1) *Experimenter*: This is a story about a girl named Daisy. One day Daisy decides to go shopping. She starts walking toward the store. She walks and she walks, but she still can't see the store. She says, "Should I keep walking? No, I'm just too tired. I can't walk any farther." So she decides to go home instead, and never makes it to the store.

Puppet: I know what Daisy did in the end: Daisy walked to the store.

- (2) *Experimenter*: This is a story about a turtle. She's out crawling one day, when it suddenly starts raining. Fortunately, she spots a bridge not far away. She thinks, "Maybe if I were under that bridge, I could avoid the cold rain." So she heads toward the bridge. She gets tired along the way, but she's a very strong turtle, and she doesn't give up easily. She keeps on crawling, and crawling, and finally she's under the bridge, which blocks the rain perfectly.

Puppet: I know what the turtle did in the end. The turtle crawled under the bridge.

- (3) *Experimenter*: This is a story about a bee. One day the bee's working in his garden. Suddenly it starts pouring rain. He thinks, "I'll go back to the hive to hide from the rain." So he starts flying there. He's halfway to his hive when the rain suddenly stops. The bee thinks, "Hmm... Now that the rain has stopped, I should go back to the garden and do some more work." So he turns around and goes back to work in the garden.

Puppet: I know what the bee did in the end. The bee flew into his hive.

- (4) *Experimenter*: This is a story about a mermaid named Ariel. She was born in the sea, but she isn't happy there. She wishes she had been born on land, where she would have learned how

to walk like a human! She begs her dad to let her go there. At first her dad won't let her go, because he thinks she won't really like it there. But she keeps on begging. "Please!" At last her father says O.K. She swims, and swims, and finally she gets to the land. She's so excited!

Puppet: I know what Ariel did in the end. Ariel swam to the land.

B. Repetitive stories

- (5) *Experimenter:* One day, Elmo and Cookie Monster come to the side of a river. They see a boat on the river, not too far away. Elmo says, "Let's go see what's in that boat!" Unfortunately, Cookie Monster isn't interested. He says, "Who knows what's in that boat. I'd rather stay here at the riverside and eat cookies." So Elmo swims to the boat, where he finds a beautiful cake! Elmo leaves the cake in the boat, and swims back to join Cookie Monster for a picnic by the river. But then Elmo starts to wonder if he should visit the boat a second time. He'd like to try the cake, but he also wants some company, so he asks Cookie Monster to join him. "Hmm, I don't know," says Cookie Monster. "I prefer cookies." But Elmo keeps begging, and finally the two of them swim out together. They climb onto the boat and enjoy the delicious cake.

Puppet: I know what Elmo/Cookie Monster did after he had a picnic, Elmo/Cookie Monster swam to the boat again.

- (6) *Experimenter:* This is a story about Aladdin and his friend Abu. One day they're walking around in the desert when they spot a castle not far away. Neither one has ever seen a castle before, and they're amazed! Aladdin wants to go inside, and tries to get Abu to come with him. But Abu is scared. So Aladdin leaves Abu behind and walks to the castle by himself. When he gets inside the castle, he is surprised to find lots of fancy clothes... After Aladdin gets back, he has dinner with Abu. But Aladdin keeps wondering if he should go to the castle

for a second time. He likes it there, but he also wants company, so he tries to persuade Abu to join him. At first Abu doesn't want to, because he's afraid that there might be guards watching the castle. But when he hears about the clothes, he happily follows Aladdin to the castle. The two of them have a great time inside!

Puppet: I know what Aladdin/Abu did after he had dinner, Aladdin/Abu walked to the castle again.

- (7) *Experimenter:* This is a story about a baby dinosaur and a baby crocodile. They're near a river, where they've just hatched from their eggs. They stay and play by the river for a while... Then they notice that there's a tree not far away. The dinosaur wants to play under the tree, and he asks the crocodile to join him. "No," says the crocodile. "I'm too sleepy to crawl right now." So the dinosaur crawls to the tree by himself, and plays there for a while. Later when he crawls back to the river, he starts missing the tree, and he wonders if he should go there for a second time. "It's a little bit far, but I think I'll crawl there anyway. It's a lot of fun to play under the tree!" He decides to ask the crocodile to come with him. The crocodile is still sleepy, but he feels bad saying no for a second time. So, the crocodile and the dinosaur both crawl under the tree, and they both have a great time there!

Puppet: I know what the dinosaur/the crocodile did in the end. The dinosaur/the crocodile crawled under the tree again.

- (8) *Experimenter:* This is a story about a woodpecker and a sparrow. One day the two of them are out flying, when they spot a lighthouse on an island not far away. Neither one of them has ever been to a lighthouse before. They're both curious about what's inside... The sparrow says, "Let's fly there and take a look." But the woodpecker answers, "No, I think it might be scary inside. I'd rather fly to a tree nearby." So the woodpecker flies to a tree, and the

sparrow flies toward the lighthouse on his own. When he gets there he enters the lighthouse and discovers that it's warm and cozy inside. Later, when he flies back to the woodpecker, the two of them take a nap in the tree. When the sparrow wakes up, he starts to think about going to the lighthouse for a second visit. He likes it there, but he also wants some company, so he tries to get the woodpecker to join him. At first, the woodpecker doesn't want to fly there, because he still thinks it could be scary. But once the sparrow tells him that it's warm and cozy there, the woodpecker decides to see it for himself. So the two of them fly into the lighthouse, and they both enjoy the beautiful view.

Puppet: I know what the sparrow/woodpecker did after he napped in the tree. The sparrow/woodpecker flew into the lighthouse again.

C. Restitutive stories

- (9) *Experimenter:* Look, here's a puppy dog! He was born in a doghouse. He's never left his doghouse, because he's still too young. But now he's getting bigger, and today is his very first day to go outside. He is really excited! He walks out to a tree, where he meets a bunny rabbit. The two of them have lots of fun talking to each other. But then the puppy starts to get worried, because he knows his family is waiting for him. Still, he doesn't want to say goodbye to his new friend... So, he decides to invite the bunny to go home with him. The bunny has never been to a doghouse before. He's very excited. The two of them walk back happily, and they have a great dinner with the puppy's family!

Puppet: I know what the puppy/bunny did after he met the puppy at the tree. The puppy/bunny walked to the doghouse again.

- (10) *Experimenter:* This is a story about a robin and a crow. The robin was born inside a birdcage. She loves her cozy home. People always provide plenty of food, so she never, ever

leaves her cage. One day, however, she somehow runs out of food. And you know what? Her cage door is open. So she flies out of the cage and goes to a tree to find some worms. There she meets a crow, who has never been in a birdcage... The robin likes the tree. It's warm and comfortable. But she likes her own place better. She wants to go home. So she flies back to her cozy birdcage. The crow, who has never even seen a birdcage before, follows the robin. When he arrives, he's amazed by how fancy it is. He decides to live there too!

Puppet: I know what the robin/ crow did in the end. The robin/crow flew into the birdcage again.

- (11) *Experimenter:* Look, here's a helicopter... and do you know who the pilot is? It's Woody!... One day Woody is out flying in his helicopter when suddenly, it stops working. He manages to land on an island, but he just can't get the helicopter to work. He's stranded! He walks all over the island but he can't find anyone. Then he sees a boat floating in the water. He swims to the boat and finds a fisherman there! The fisherman didn't even know there was an island nearby. Woody wants to stay with the fisherman, but he also needs to fix his helicopter. So he swims back to the island. The fisherman, who has never been to this island before, gets in the water and follows Woody. When he reaches the island he helps Woody fix his helicopter. Once it's working, Woody and the fisherman decide to stay on the island for a while.

Puppet: I know what Woody/the fisherman did after he met the fisherman/Woody on the boat. Woody/The fisherman swam to the island again.

- (12) *Experimenter:* This is a story about a baby lizard and a baby snail. Look! They're hatching from their eggs! The lizard is hatching under the rock, and the snail is hatching by the river... The lizard stays under the rock for a while, enjoying the cool shade and the breezy

air. Then he starts to feel thirsty. So he crawls away from the rock to the river, and gets some water... there he meets the snail. Soon the sun starts to make the lizard feel hot. The lizard thinks, "Should I go back? It's pretty out here, but I really liked the cool shade under the rock." He asks his new friend to join him. "Sure, I think it's just too hot here," says the snail. The lizard crawls under the rock and the snail goes there too. Both of them like it very much, and decide to stay under the rock for a long rest.

Puppet: I know what the lizard/snail did in the end. The lizard/snail crawled under the rock again.

- (13) *Experimenter:* This is a story about a bear and a zebra. The bear was born in a forest. He loves the forest because he has lots of friends there. For many, many years he stays in the forest and never leaves. The zebra, on the other hand, was born in a grassland, and she's never seen anything else. She's never, ever been to a forest. One day the bear comes out of the forest. He arrives at the grassland and introduces himself to the zebra, who is very excited that she's finally meeting somebody from the forest. After playing with the zebra for a while, the bear starts to miss home. He thinks, "I wonder if I should return to the forest. It's a lot of fun out here, but I miss my family. I'm going back!" So the bear runs back, and when he gets there he's very happy to be home! As it happens, the zebra has always wanted to see a forest for herself, so she decides to follow the bear. She runs after him into the forest. And you know what? She likes the forest so much that she decides to stay there forever!

Puppet: I know what the bear did in the end. The bear again ran into the forest.

- (14) *Experimenter:* Look! There's a pony! He was born on a farm. He's never been outside of the farm, because the fence has always been too high for him to jump over. But now he's growing up. One day he decides to see how strong he really is. So, he gathers up all his

strength and... whoosh he jumps over the fence. He is very excited! He's made it out of the farm! But then he sees a young boy, and he starts to feel scared. He doesn't want the boy to see him, so as fast as he can, he uses all of his might and jumps back into the farm. Unfortunately, he isn't fast enough. The boy has already spotted him, and follows him to the fence. The boy has never been to a farm before, and he thinks the fence looks pretty tall, but he decides to try his best and... he jumps over it! Now he's inside the farm, and he can meet the pony! The two become best friends.

Puppet: I know what the pony did after the boy saw him. The pony again jumped into the farm.

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