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You 'again': an acquisition study on its restitutive reading with goal-PPs

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Availability of restitutive 'again' varies both cross-linguistically and language-internally. This creates an acquisition puzzle: For each change-of-state predicate, how do children know if a restitutive reading is possible? In child-directed English, unambiguously restitutive uses of 'again' with a "goal-PP" structure (e.g., 'walk to the village') are exceedingly rare. Nonetheless, comprehension tasks with goal-PPs show that preschoolers already know the reading is available. Here we show that the same pattern holds for Mandarin *you* (roughly, 'again'): extremely little direct, unambiguous evidence for the restitutive reading with goal-PPs, but preschoolers already know it is possible. This pattern is all the more remarkable for Mandarin because *you* is both preverbal and polysemous, making it less transparent how the restitutive reading is obtained. We propose that our findings fit neatly in a structural approach, where restitutive readings involve attaching 'again' to a VP-internal result phrase: The child can deduce the availability of restitutive *you* if they have acquired both the property allowing repetition-denoting *you* to semantically compose with a sub-constituent of the VP, and the structural properties of Mandarin goal-PPs that make a restitutive reading possible.

1 Introduction

Among the most remarkable aspects of language acquisition is the child's ability to master, for any of the world's languages, the rich subtleties of linguistic meaning. A striking case is knowledge of presuppositions: Beyond the asserted meanings of linguistic expressions, the child somehow grasps the prior conditions that had to be satisfied in order for those expressions to have a truth-conditional meaning in the first place. Presuppositional meaning that shows cross-linguistic variation is especially challenging, because the target knowledge cannot simply be built-in. Children must make correct choices for their own target language. Here we investigate one such case.

The domain will be adverbs like English *again* and (in particular) Mandarin *you*, which has repetition as one of its readings. These adverbs trigger a presupposition of the form 'another eventuality of the same type occurred at an earlier point in time'. Our focus will be what happens when an 'again' adverb occurs with what we term a 'goal-PP': a phrase combining a manner-of-motion verb (like English *walk*) with a PP indicating the spatial extent of motion, as in *walk to the village*.

Beck & Snyder (2001) and Beck (2005) report that in some languages (e.g., English), 'again' modifying a goal-PP exhibits a repetitive/restitutive ambiguity, as in (1): the repetitive reading presupposes the subject has carried out the action denoted by the predicate before, whereas the restitutive reading only presupposes that the event's result state held before.

(1)   English *again* with goal-PP
       John walked to the village again.
       a.   *repetitive*: John had walked to the village before.
       b.   *restitutive*: John had been in the village before (e.g., he was born in the village).

In languages like French, however, modifying a goal-PP with 'again' (*de nouveau*) as in (2) yields only the repetitive reading.

(2)   Jean a   marché de nouveau au   village
       Jean has walked of new   to-the village
       'Jean walked to the village again.'   (✓repetitive, *restitutive)
                                                              (Beck 2005: 47, ex. 17)

This raises an acquisition puzzle: how do children determine if 'again' can be restitutive with a goal-PP? To investigate, Xu & Snyder (2017) examined restitutive *again* with goal-PPs in children's English. They found an extreme scarcity of direct evidence in children's input: In a sample of more than 100,000 child-directed utterances, unambiguously restitutive uses of *again* were entirely absent. Yet by age 4–5, children clearly understood restitutive *again* with English goal-PPs. Xu & Snyder propose children deduce the availability of restitutive 'again' from information about the syntax of English goal-PPs (and a basic, repetitive meaning for *again*).

Here we examine children's acquisition of *you* (very roughly, 'again') in Mandarin Chinese, which poses an even harder learnability problem. Similar to English *again*, Mandarin *you* permits both repetitive and restitutive readings when modifying a change-of-state predicate like a goal-PP (3).[1]

(3) Zhangsan you zou-dao-le   na-ge cunzi.
     Zhangsan YOU walk-reach-PERF that-CL village
     'Zhangsan walked to the village again.'   (✓repetitive, ✓restitutive)

Yet unlike English *again*, *you* always precedes the predicate. From this position, it cannot scope over the result phrase alone. For a restitutive reading, preverbal *you* somehow needs to associate with a constituent denoting the result state. As we will discuss in Section 2.2.2, this is less straightforward for *you* than for English postverbal *again*.

Moreover, *you* has multiple meanings: alongside repetition and restitution it permits other readings, such as temporal-continuation (4a), addition (4b), and rhetorical readings (4c).

(4) a. Ta xi-wan   yifu   you qu zuo fan.
         He wash-finish clothes YOU go cook meal
         'He did the laundry, and then cooked meals.'

     b. Ta congming you qinfen.
         He clever   YOU hard-working
         'He's clever and hard-working.'

     c. Ta you bu shi laohu, bu yong pa   ta.
         He YOU not be tiger not need afraid him
         'He's not a tiger. You need not be afraid of him.'

This means learners must navigate a broader range of potential meanings for *you* when acquiring its restitutive interpretation.

Here we address three overarching questions, discussed in Sections 2–4 respectively. In Section 2, we examine what the contemporary literature on 'again' adverbs in general, and Mandarin you in particular, entails for a child acquiring Mandarin: What types of cross-linguistic variation exist, and how does Mandarin fit into the picture?

In Section 3, we examine how much Mandarin-acquiring children already know as preschoolers. In particular, to what extent are they aware that in Mandarin (unlike English or French), 'again' with a goal-PP can be understood as restitutive even when it is preverbal? To foreshadow, our findings from an experimental study with 3- to 5-year-olds indicate that many children already know quite a bit.

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[1] Some speakers report difficulty accessing the restitutive reading in (3), and express a preference for using the predicate *hui* 'return'. Yet in Section 3 we will present evidence that adults do accept the reading, if an appropriate context is provided.

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Finally, in Section 4, we examine how children can possibly know as much as they do: In principle, what types of adult utterances could children be using; and in practice (based on estimates from corpora of child-parent interactions), which of the potentially useful utterance-types actually occur the most frequently in child-directed Mandarin? We will propose that children need evidence about the ability of repetition-denoting *you* to compose semantically with a sub-constituent of the VP, and about the structural properties of Mandarin goal-PPs that make a restitutive reading possible.

Although our study focuses on Mandarin, the motivation is broader. We aim to account for Mandarin as one of the various language types that might confront any child. In addition to helping us understand the acquisition of restitutive 'again', we hope this study will help us understand acquisition of the structures underlying change-of-state predicates across languages. Furthermore, we hope it will shed new light on theoretical debates surrounding the repetitive/restitutive ambiguity.

2 Background

2.1 Background on restitutive 'again'

2.1.1 Previous analyses on the derivation of restitutive 'again'

Restitutive 'again' is regarded as a secondary interpretation, separate from the repetitive reading, that is found (primarily) with accomplishment and achievement predicates denoting a change of state. In the literature there are two major approaches to deriving it: structural and lexical. We begin with the structural approach, the dominant view in the literature.[2] The basic idea is that in languages like English and German, a single 'again' adjoins to different structural positions, leading to distinct readings (von Stechow 1995; 1996; Beck & Johnson 2004, among others). Specifically, 'again' denotes repetition, and has (roughly) the semantics in (5): it takes a predicate of events and an event, and asserts that the predicate is true of the event. Crucially, it triggers a presupposition that there was a preceding event for which the same predicate is also true.[3]

(5)   Let P be a property of eventualities and let e be an eventuality.
        $[[again]](P)(e)$ is defined only if $\exists e'[P(e') = 1 \ \& \ e' < e]$.
        Where defined, $[[again]](P)(e) = 1$ iff $P(e) = 1$.

                                        (adapted from von Stechow (1996))

The repetitive/restitutive readings arise from the different scopes of 'again' in syntax. Consider the English goal-PP in (6). Following Beck & Snyder (2001); Beck (2005), we treat the PP as a small clause with a PRO subject. If *again* scopes over the entire proposition, representing the

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[2] We will return to the lexical approach in Section 5.

[3] Kripke (2009) argues that the plain existential presupposition in (5) is too easy to accommodate. Yet, for present purposes, (5) will suffice.

whole change-of-state event (both the process and the result state), a repetitive interpretation is obtained (see (6b)). If *again* scopes over the result state alone (e.g., by attaching to the small clause representing the result state), a restitutive reading is obtained (see (6c)).[4]

(6)   a.   John walked to the village again.
      b.   [[John$_1$ [walked [PRO$_1$ to the village]]] again]   repetitive
      c.   [John$_1$ [walked [[PRO$_1$ to the village] again]]]   restitutive

This analysis is supported by evidence from word order: when English *again* is preverbal, there is only a repetitive reading (7). This is easily captured under a structural analysis, because *again* cannot scope over the result state alone if it is preverbal. We will revisit the effect of word order, however, when we discuss Mandarin *you*.

(7)   John again walked to the village.   (✓repetitive, *restitutive)

2.1.2 Restitutive 'again' across languages

While 'again' modifying a change-of-state predicate sometimes exhibits a repetitive/restitutive ambiguity, availability of the restitutive reading varies both cross-linguistically and language internally. Beck (2005) investigated its availability with goal-PP constructions (e.g., 'walk to the village') and with lexical accomplishments (e.g., 'open') in 18 languages. She found that availability of a restitutive reading in one construction does not entail its availability in the other (see **Table 1**).

Language	Restitutive reading with lexical accomplishment	Restitutive reading with goal-PP construction
ASL, English, German, Khmer, Korean	ok	ok
Bahasa Indonesia, French, Hebrew, Kannada, Spanish, Tagalog	ok	*
Mandarin	%	ok
Hindi/Urdu, Serbian/Croatian	%	*
Japanese	%	%
Hungarian	*	%
Inuttut, Lingala	*	*

Table 1: Results adapted from Beck (2005): (59). 'ok' indicates acceptance, '*' indicates rejection, and '%' indicates genuinely mixed judgments. Majority judgment is reported if there was only one dissenting opinion among informants.

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[4] Beck & Snyder (2001), Beck (2005) treat *to* as synonymous with *at*.

Moreover, the study unveiled systematic cross-linguistic variation with goal-PPs: a language allows a restitutive reading of 'again' with goal-PPs only if the language has (productive) adjectival resultative constructions, such as 'hammer the metal flat'. Conversely, restitutive 'again' with lexical accomplishments is unrelated to availability of resultatives. In some languages there is also variability in judgments for restitutive 'again' across different speakers and different lexical-accomplishments verbs: Not only can there be substantial differences in judgment between speakers, but a single speaker may accept a restitutive reading with one verb and reject it with another.

Below we summarize Beck's account of these patterns, which is couched in a structural analysis.[5]

For the correlation between restititutive 'again' with goal-PPs and resultative constructions, she suggested, with Beck & Snyder (2001), that the formation of both resultative and goal-PP constructions requires a special semantic composition rule, termed Principle (R) by von Stechow (1995) and reformulated as Generalized Modification by Snyder (2012). Setting aside many details, this semantic composition rule involves combining a verb with a result phrase, and obtaining an accomplishment event. To illustrate, consider the resultative *wipe the table clean*. The rule allows the combination of *clean* as a secondary predicate, transforming an activity into an accomplishment event with "wiping" as the development and "clean" as the culmination. Similarly, the rule permits a manner-of-motion verb (e.g., *walk*) to combine with a locative PP (e.g., *to the village*) and form a goal-PP, whose interpretation unfolds in a manner akin to a resultative: *walk to the village* denotes an accomplishment event with "walking" as its development and "arriving at the village" as its culmination. Consequently, when modified by *again*, the PP (with a PRO subject), functioning as a result phrase, allows attachment of *again*, yielding a restitutive reading as in (6c).

Crucially, availability of this semantic composition rule varies across languages. This is called the (R) parameter in Beck (2005) and the Compounding Parameter (TCP) in Snyder (2012). In languages like English, where it is available, a manner-of-motion verb denoting an activity can combine with a PP to form a complex predicate denoting an accomplishment; the PP, serving as a result phrase, can be modified by 'again' to yield a restitutive reading. In languages like Spanish and French, however, where the rule is unavailable, goal-PPs are restricted. As shown in (8), a pure manner-of-motion verb (such as 'float'), denoting an activity with no particular path, cannot combine with a spatial PP to yield a directed-motion event. Spanish (9) and French (10), where a manner-of-motion verb does combine with a directional PP, are said to be structurally different from their English counterparts. Thus Beck (2005) proposes that the PP in (9) is simply an event modifier (i.e., an adjunct without a PRO). Xu & Snyder (2017) tentatively suggest that the French

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[5] We use Beck's analysis for illustration purposes. Readers interested in further refinements may refer to Gehrke (2008).

manner-of-motion verb *marché* in (10) has become semantically "bleached", allowing it to select a goal as one of its arguments (similar to English *go to the village*). Importantly, because the PPs are non-propositional and hence unsuitable as attachment sites for 'again', there is no restitutive reading.

(8)   Spanish: (Gehrke 2008: 192, ex. 2)
     *La   botella flotó   a   la   cueva.
     the   bottle   floated to   the   cave
     intended meaning: 'The bottle floated to the cave.'

(9)   Spanish: (adapted from Beck 2005: 48, ex. 43)
     Suresh anduvo hasta la   aldea.
     Suresh walked until the village
     'Suresh walked to the village.'

(10)   French: (adapted from Beck 2005: 47, ex. 17)
     Jean a   marché au   village
     Jean has walked to-the village
     'Jean walked to the village.'

Unlike goal-PPs, lexical accomplishments do not depend on the special composition rule for restitutive 'again'. Hence there is no correlation with resultatives. Instead, the restitutive reading is tied to the decomposition property of the verb itself. For example, the transitive verb *open* in English can be decomposed into the adjective *open* and a phonologically empty verbal element denoting CAUSE BECOME, as in (11c). The small clause in (11c) represents the result state of Sally opening the door, namely the state of the door being open. Adjoining *again* to this constituent yields a restitutive reading. Verbs that cannot be decomposed in syntax disallow the restitutive reading. Additionally, Beck (2005) proposes that the decomposition property may vary across speakers and across verbs, yielding inconsistent judgments for lexical-accomplishment verbs.

(11)   a.   Sally opened the door.
     b. open_{TV} = open_{Adj} + BECOME + CAUSE
     c. $[_{VP}$ Sally $[\emptyset_V$ $[_{SC}$ open_{Adj} [the door]]]]   (Beck 2005: (18))

2.2 Background on Mandarin *you*

2.2.1 Various uses of Mandarin *you*

As shown in Section 1, Mandarin *you* is polysemous. According to Lü (1999), it has three primary uses: (i) expressing successive actions, which includes its repetitive use (e.g., *ta you lai-le* 'he came again', with *you* connecting two identical events) and temporal-continuation use (e.g., (4a),

with *you* connecting two different events); (ii) indicating the addition/accumulation of actions, states, or situations (e.g., (4b)), and (iii) conveying certain speaker attitudes (e.g., (4c)).[6]

Due to similarities between some of the uses, scholars have attempted to simplify them. For instance, Lü (1999) combined the meanings of repetition and temporal continuation; Shao & Rao (1985); Biq (1988); Shi (1990) suggested that these uses can be reduced to a core additive/ accumulative meaning. To our knowledge, it remains unclear how many distinct *you*s exist in Mandarin, and we will not try to answer the question here. Instead, we focus on the restitutive reading, which is less often discussed.

According to the cross-linguistic survey in Beck (2005), Mandarin goal-PP constructions modified by *you* allow the restitutive interpretation, as in (3). However, judgments regarding lexical-accomplishment verbs are somewhat mixed: while several speakers accepted the restitutive reading with *hui* 'return', they rejected it with *kai* 'open' (see Beck 2005: p.30 and p.48, ex(38)). However, this pattern is based on data from three speakers. Other literature, such as Xu (2012) and Liu (to appear), used the disyllabic resultative verb compound *da-kai* 'hit-open' to illustrate the availability of restitutive readings in Mandarin. To further investigate, we consulted with 17 native speakers to see if the patterns reported above hold for a larger sample size. All 17 speakers accepted the restitutive reading with *hui* 'return', while 12 (70.59%) accepted it with *kai* 'open'. Fourteen speakers (82.35%) accepted it with *da-kai* 'open', and nine (52.94%) found the restitutive reading more acceptable with *da-kai* than *kai* in the same context.[7] These results, consistent with Beck's, suggest the restitutive reading is widely available in Mandarin, albeit with some degree of variation across speakers and lexical items.

2.2.2 A previous analysis of restitutive *you*

As noted, structural accounts of English and German 'again' (e.g., von Stechow 1996; Beck & Johnson 2004) attribute different readings to the different attachment sites available to 'again' in predicates that can be syntactically decomposed into a higher causing subevent and a lower result state. The restitutive reading is derived when repetition-denoting 'again' scopes over the lower result-state constituent, but not the higher causing event. In Mandarin, since *you* always precedes the predicate, this analysis predicts it should only have a repetitive reading, but the prediction is not borne out (see (3), repeated as (12a)). Yet, some researchers propose that a structural analysis can be maintained (Xu 2012; 2016; Liu 2021; to appear): adopting the inverted Y model of grammar from Chomsky & Lasnik (1977), they propose that repetition-denoting *you*, having the semantics in (5), can be generated low, move to a pre-verbal surface position, and later reconstruct.

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[6] Details about these readings are summarized in Appendix A (§1.1).

[7] We speculate, in line with Beck (2005), that the result state of the disyllabic resultative verb compound *da-kai* is more morphologically transparent than that of the monosyllabic lexical-accomplishment verb *kai*, making the restitutive reading of the former more accessible to speakers.

Consider (12a). Following the view of Beck (2005) and Snyder (2012) that Mandarin, like English, provides the special semantic composition rule discussed in Section 2.1.2, we assume the manner verb 'walk' combines with a small-clause PP.[8] This means the PP is a possible adjunction site for 'again'. Thus (12a) allows both repetitive and restitutive readings (12b)–(12c).

(12)   a.   Zhangsan you zou-dao-le   na-ge   cunzi.
                Zhangsan YOU walk-reach-PERF that-CL village
                'Zhangsan walked to the village again.'   (✓repetitive, ✓restitutive)

         b.   [*you* [Zhangsan$_1$ ['walk' [PRO$_1$ 'reach that village']]]]   repetitive

         c.   [*you*$_2$ [Zhangsan$_1$ ['walk' [t$_2$ [PRO$_1$ 'reach that village']]]]]   restitutive

Unlike English *again, you* moves before the verb and later reconstructs. What motivates this movement? According to Liu (2021), *you* has an unvalued aspect feature that needs to be valued by the closest Asp probe through specifier-head agreement. To fulfill this requirement, it moves to the specifier position of the closest AspP (which is between vP and TP).

The movement-plus-reconstruction operation allows *you* to be interpreted as modifying a sub-constituent of the predicate. To our knowledge, this is the only proposal in the literature for the derivation of restitutive *you*. For illustrative purposes, we adopt this structural analysis. However, one should note that our proposal regarding how Mandarin-learning children acquire the restitutive reading with goal-PPs does not hinge on specific operations such as movement and reconstruction. Other ways of allowing *you* to semantically modify a sub-constituent of VP might include treating *you* as a focus-sensitive operator and deriving its restitutive reading through focus association.[9] (While this strikes us as an interesting possibility, we will not pursue it further here.)

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[8] While we adopt this analysis here, we would like to note that an alternative analysis of goal-PPs, such as the one proposed by Hu (2022), could be adopted instead, as long as the result-state-denoting constituent is modifiable by *you*.

[9] This is inspired by Liu (2009; 2015), who observes that *you* exhibits focus-sensitivity when it denotes temporal continuation of a salient preceding event that has been established in prior discourse. This is exemplified in (i), with uppercase indicating stress.

(i)   a.   Zhangsan mai-le   yi-zhi bi,   you mai-le   YI-BEN SHU.
              Zhangsan buy-PERF one-CL pencil YOU buy-PERF one-CL book
              'Zhangsan bought a pencil, and then bought a book.'

         b.   Zhangsan mai-le   yi-zhi bi,   you XIAO-le   yi-zhi bi.
              Zhangsan buy-PERF one-CL pencil YOU sharpen-PERF one-CL pencil
              'Zhangsan bought a pencil, and then sharpened a pencil.'

         c.   Zhangsan mai-le   yi-zhi bi,   you KAN-le   YI-CHANG DIANYING.
              Zhangsan buy-PERF one-CL pencil YOU watch-PERF one-CL   movie
              'Zhangsan bought a pencil, and then saw a movie.'

                                                    (Liu 2015: (80))

2.3 Acquisition questions and prior acquisition research

Given cross-linguistic and language-internal variation in the availability of restitutive 'again', a child acquiring French, Mandarin, or any other language must determine where the language does, and does not, permit it. This is extremely challenging because children cannot depend on receiving clear corrective feedback when they make an error (see e.g., Marcus 1993 on the lack of reliable negative evidence in children's input). If a child erroneously decided to permit restitutive 'again' where the target language did not permit it, the error would probably persist into adulthood. Yet, even without reliable correction, children succeed at the task.

Here we examine how Mandarin-acquiring children accomplish this. More specifically, we examine how they determine that preverbal *you* allows the restitutive interpretation with goal-PPs. We will follow a standard assumption in the acquisition literature, namely that children use a "subset" strategy: to avoid errors of overgeneralization, the child always adopts the most restrictive grammatical option that is compatible with the linguistic input encountered so far. (For discussion, see e.g., Wexler & Manzini 1987; Crain et al. 1994.) Thus we expect the child acquiring Mandarin to initially assume her target language permits restitutive *you* in only a subset of the environments where Mandarin actually permits it.

Note that a child using this strategy will succeed at acquiring French (where a restitutive reading is simply unavailable with goal-PPs, no matter where one places 'again'). This is because the child starts with a maximally restrictive hypothesis, and the linguistic input in French will never contradict it.

Similarly, a child will succeed with English because her initial hypothesis will be too restrictive, but sooner or later she will receive linguistic input telling her (either directly or indirectly) that adult English allows VP-final *again* with a goal-PP to receive a restitutive interpretation. Yet, the child will (correctly) disallow the restitutive interpretation if *again* is in VP-initial position.

Finally, the child acquiring Mandarin will also succeed, because the linguistic input will, sooner or later, inform the child (either directly or indirectly) that Mandarin *you* allows all the options: restitutive-again readings are fine with goal-PPs, even though *you* (like other adverbs in Mandarin) necessarily appears in VP-initial position. Below we will examine Mandarin-acquiring children's knowledge of the restitutive interpretation, but first we review prior acquisition research.

2.3.1 Prior research: Acquisition of restitutive 'again' across languages

Prior research is limited and focuses on English or German. Studies using story-telling or elicited-production tasks have shown that English- and German-learning preschoolers correctly produce 'again' with change-of-state predicates to express either the restitution of a state or the reversal of an action (Bamberg 1994; Clark et al. 1995). Xu & Snyder's (2017) study used a Truth-Value Judgment task (TVJT) to show that English-learning preschoolers correctly allow a restitutive

interpretation of *again* with goal-PPs. Using corpus analyses, they also showed that parental uses are infrequent and almost always ambiguous. To explain children's success they adopt a structural approach, and propose that once children grasp both the repetitive meaning of *again* and the syntactic structure of English goal-PPs, the availability of restitutive *again* follows deductively. Moreover, the syntactic structure of English goal-PPs, they suggest, is predictable from the occurrence in English of resultatives and related constructions.

This proposal extends readily to other languages, if it is combined with a subset strategy. For example, children acquiring French will initially assume (correctly) that there is no restitutive 'again' with goal-PPs, and they will persist in this belief because they will never receive input (e.g., a resultative construction) that would contradict it.

2.3.2 Open questions for restitutive *you*

Liu (2009; 2015) and Liu et al. (2011) have investigated children's knowledge of repetition and temporal-continuation *you*.[10] Yet, we are unaware of any research on restitutive *you*. Can young children discern that *you*, despite its preverbal position, allows a restitutive reading with change-of-state predicates like goal-PPs? The next section addresses this question experimentally. To facilitate comparison with Xu & Snyder's (2017) findings for English, testing of Mandarin preschoolers will involve children in roughly the same age range, and will use very similar methods and materials.

3 Experiment

3.1 Methods

3.1.1 Participants

Participants included 65 Mandarin-learning children from age 3;05 to 5;11 (12 3-year-olds, 38 4-year-olds and 15 5-year-olds, mean age: 4;07, *SD* = 0.65 years) in Beijing, China, who were brought to the lab by their parents. In addition, 32 native-speaker adults (mean age: 26;09, range: 19;0–45;11, *SD* = 8.19 years) participated as controls; they were tested online (via Tencent Meeting) due to COVID19.

3.1.2 Methodology

Our methodology was based on the TVJT (see Crain & Thornton 1998): Participants watched a series of stories alongside a puppet who sometimes did not pay attention. An experimenter narrated the stories using cartoon pictures presented in PowerPoint on a laptop. At the end of each story, a video of a puppet named Parrot appeared on the screen, and Parrot uttered a sentence describing the story. The participant was asked whether Parrot 'got it right'. If so, the


[10] Details of these studies are provided in Appendix A (§1.2).

child rewarded him with a smiley stamp. If Parrot got it wrong, the child gave him a banana stamp (since banana is Parrot's least favorite food). If a child participant rejected the test sentence, he/she was asked to explain why. While child participants were tested individually, adults were tested in groups and were simply asked to mark whether they accepted or rejected Parrot's utterance. To avoid overanalysis of the test sentences, we did not ask them to explain why Parrot "got it wrong".

English translations of sample repetitive and restitutive items are provided in (13) and (14), respectively.

(13) *Experimenter*: This is a story about a baby lizard and a baby snail. The lizard hatches under a rock, and the snail is born by a river. The lizard stays under the rock for a while. 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 comes out. Feeling hot, the lizard wants to go back under the rock to enjoy the cool shade. He asks his new friend to join him. The snail is sleepy, but decides to follow the lizard and crawls under the rock. Both of them like the cool shade very much, and decide to stay under the rock for a long rest.
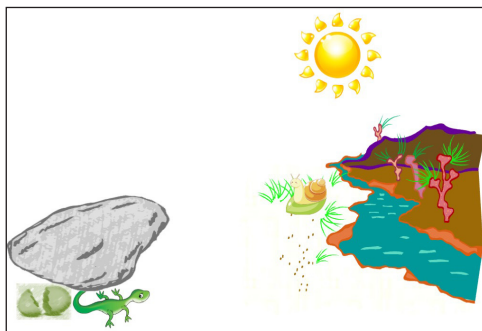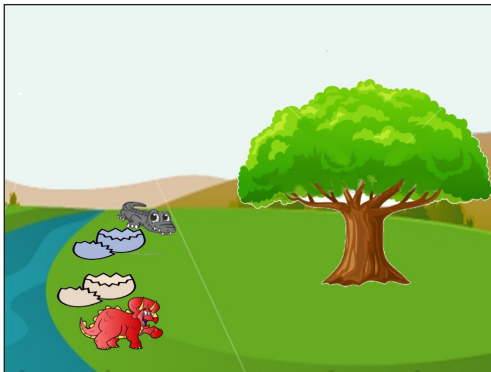

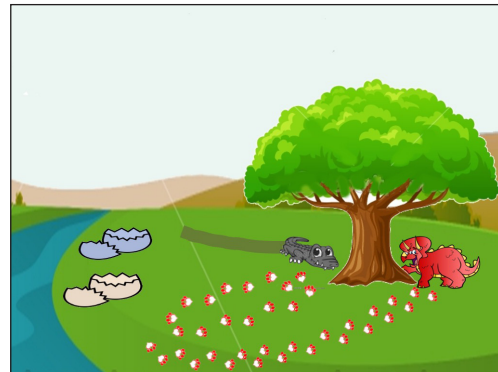First slide of the story   Last slide of the story
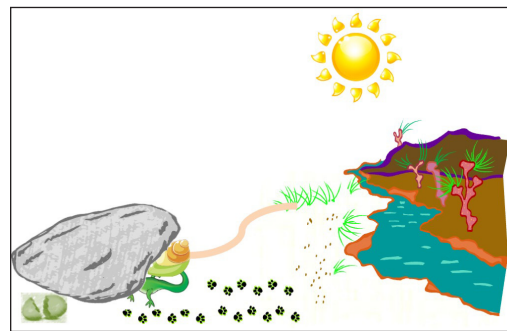
Puppet: I know what happened in the story…

a. Xiyi   you pa-dao-le   shitou-xia.   (Match)
    lizard YOU crawl-reach-PERF stone-under
    'The lizard crawled under the rock again.'

b. Woniu you pa-dao-le   shitou-xia.   (Mismatch)
    snail   YOU crawl-reach-PERF stone-under
    'The snail crawled under the rock again.'

(14) *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. While playing by the river, they notice that there's a tree not far away. The dinosaur wants to play under the tree, but the crocodile feels too sleepy to crawl. So the dinosaur crawls to the tree by himself, and plays there for a while. Later when he crawls back to the riverbank, he starts missing the tree. He asks the crocodile to come with him. Though still sleepy, the crocodile wants to be good company this time. They both crawl under the tree, and have a great time there!

First slide of the story	Last slide of the story

Puppet: I know what happened in the story…

a.   Konglong you pa-dao-le   shu-xia.   (Match)
     dinosaur   YOU crawl-reach-PERF tree-under
     'The dinosaur crawled under the tree again.'

b.   Eyu   you pa-dao-le   shu-xia.   (Mismatch)
     crocodile YOU crawl-reach-PERF tree-under
     'The crocodile crawled under the tree again.'

Note that in each story there were two characters. Both satisfied the assertion, but only one satisfied *you*'s presupposition. In (13), the lizard, born under the rock, satisfied the presupposition of restitutive *you* (i.e., the lizard had been under the rock before). The snail, born near the river, did not satisfy this presupposition. In (14), the dinosaur satisfied the presupposition of repetitive *you* by having crawled under the tree before. The crocodile did not, as it had not crawled under the tree previously. Each story had two possible test sentences: one match (see (13a) and (14a)) and one mismatch (see (13b) and (14b)). Each participant heard only one sentence per story.

As will be discussed in Section 4.4, prosody influences the interpretation of 'again'. Stressing *you* tends to block the restitutive reading, yielding only the repetitive reading, while stressing the predicate favors the restitutive interpretation in an out-of-the-blue context. In our experiment, stress was placed on *you* in the repetitive *'again'*-sentences (e.g., (14a) and (14b)), and on the verb in the restitutive 'again'-sentences (e.g., (13a) and (13b)). This prosodic manipulation was implemented to make the test sentences sound natural under the intended readings, allowing us to assess children's understanding to the fullest extent possible.

3.1.3 Design

To investigate children's comprehension of repetitive and restitutive *you*, we manipulated the story context (repetitive versus restitutive) and the target response for the puppet's utterance (match versus mismatch), creating four trial types: repetitive-match, restitutive-match, repetitive-

mismatch, and restitutive-mismatch. Participants completed 4 trials of each type, plus 2 training items, 8 plain goal-PP items (without *you*), and 8 filler items, totaling 34 items.

Because the repetitive reading asymmetrically entails the restitutive reading, the mismatch items for restitutive stories can be rejected under either reading. Therefore, for data analysis, repetitive- and restitutive-mismatch items were grouped into a single condition. As summarized in **Table 2**, this yielded three conditions: repetitive-match (e.g., (14a)), restitutive-match (e.g., (13a)), and mismatch (e.g., (14b) and (13b)).

Condition	Repetitive	Restitutive	No. of items	Example
repetitive-match	true	true	4	(14a)
restitutive-match	presupposition failure	true	4	(13a)
mismatch	presupposition failure	presupposition failure	8	(14b), (13b))

Table 2: Conditions for test trials with *you.*

Both the test items (with *you*) and the plain goal-PP items (without *you*) involved a combination of a manner-of-motion verb and a directional item. The two directional items we used were *jin* 'enter' and *dao* 'reach', which roughly correspond to English *in* and *to*. Materials contained the following 8 combinations of manner-of-motion verb and *jin/dao*: *zou-jin* 'walk into', *fei-jin* 'fly into', *tiao-jin* 'jump into', *pao-jin* 'run into', *you-dao* 'swim to', *hua-dao* 'slide to', *piao-dao* 'float to', *pa-dao* 'crawl under'.

Similar to the test items and the plain goal-PP items, stories for the fillers involved two characters: one making the puppet's utterance true and the other false. Each story had two possible filler sentences, both of which were simple declarative sentences with transitive verbs (e.g., *Xiaoyang mai-le yi-jia gangqin* 'Sheep bought a piano'). Participants heard one test sentence per filler story. Filler items served to filter out participants who were not complying with the task and balance match and mismatch items. In Xu & Snyder (2017), about 1/3 of the participants consistently accepted the 'again'-sentences, as if ignoring *again*. Some Mandarin-acquiring children might do the same with *you*. Filler items allowed opportunities to reject the puppet's utterances. We will elaborate on how filler items were interspersed among the 'again'-items in Section 3.1.4.

3.1.4 Procedure

Participants first received 2 training items irrelevant to goal-PPs and *you* (e.g., 'Smurf didn't move his bed.') to get familiarized with the task. Feedback was provided if they did not perform

correctly. They then received two blocks of 16 trials each. Test sentences with *you* and plain goal-PP items without *you* in the same block involved the same combinations of manner-of-motion verb and *jin/dao*-NP. (The two directional items *jin* and *dao*, translated as 'enter' and 'reach', roughly correspond to English *in* and *to*).

Each block started with 4 plain goal-PP trials, followed by 12 other trials: 4 repetitive trials (e.g., (14)), 4 restitutive trials (e.g., (13)), and 4 filler trials. Each type included an equal number of match and mismatch trials. These 12 trials always began with a repetitive one, with *you* stressed in the puppet's utterance. This arrangement was designed to draw participants' attention to *you* as they transitioned from judging the assertion of a plain goal-PP to judging the presupposition of *you*. In the subsequent trials, no more than two trials of the same category or of the same target response were presented consecutively.

As mentioned earlier, participants might ignore *you* and accept all *you*-items. To address this, we adjusted the target response of filler items accordingly: if a participant gave the same type of response for two consecutive trials, the next filler item would have the opposite target response.

We created four different versions to control for the order of presentation: Two versions were identical except for the puppet's utterance. For instance, in (13), one version used (13a) as the test sentence, and the other used (13b). To cancel out item-specific effects due to fatigue or practice, we counterbalanced the two test blocks, resulting in two additional versions. An approximately equal number of participants, both adults and children, received each of these four versions.

The experiment took about 30 minutes for adults and 45 minutes for children. To keep the child participants motivated, we designed the experiment as a game of four levels, each consisting of 8 or 9 items. As children advanced through each level, they were rewarded with an increasing number of stickers (1 for Level 1, 2 for Level 2, 3 for Level 3, and 6 for Level 4). Additionally, they were given breaks between levels to ensure their comfort.

3.2 Results

3.2.1 Data coding

Responses from the child and adult participants were recorded offline on an answer sheet and double-checked against a video recording for accuracy. Experimental data and analysis scripts can be accessed via https://osf.io/m6epk/. Three children gave unexpected answers: They neither accepted nor rejected the puppet's utterance in some trials. These unexpected answers included "the puppet was half right half wrong" (child #07 for one trial), and "I don't know" (child #37 for 5 trials, child #47 for 3 trials). These were coded as wrong answers.

3.2.2 Data exclusion

Of the 65 child participants, 7 children were first excluded from data analysis for low performance ($<75\%$ accuracy) on goal-PP items ($n = 1$) or filler items ($n = 6$). We then excluded data from 23 children who constantly accepted all the *you*-sentences (acceptance rate $\geq$ 14/16), as if they were ignoring *you*. Finally, we excluded data from one child who consistently rejected test sentences (rejection rate $\geq$ 14/16) and gave anomalous explanations (e.g., 'because the lizard wasn't the only one who crawled under the rock'). The explanations suggested the child was both ignoring *you* and calculating an *ad-hoc* implicature of uniqueness. We will discuss possible reasons why some children ignored *you* in Section 5.2. Our current analysis focused on the remaining 34 children (5 3-year-olds, 22 4-year-olds, 7 5-year-olds, age range: 3;08–5;08; mean: 4;07). Our main objective is to address: Among the children who demonstrated sensitivity to *you*, how well did they comprehend restitutive *you* in comparison to repetitive *you*?

3.2.3 Group results

Adults' and children's acceptance rates are shown in **Figure 1**. As expected, adults tended to accept both repetitive- and restitutive-match items, while rejecting mismatch items. Children mirrored the adults, indicating that they understood both the repetitive and restitutive readings of *you*.
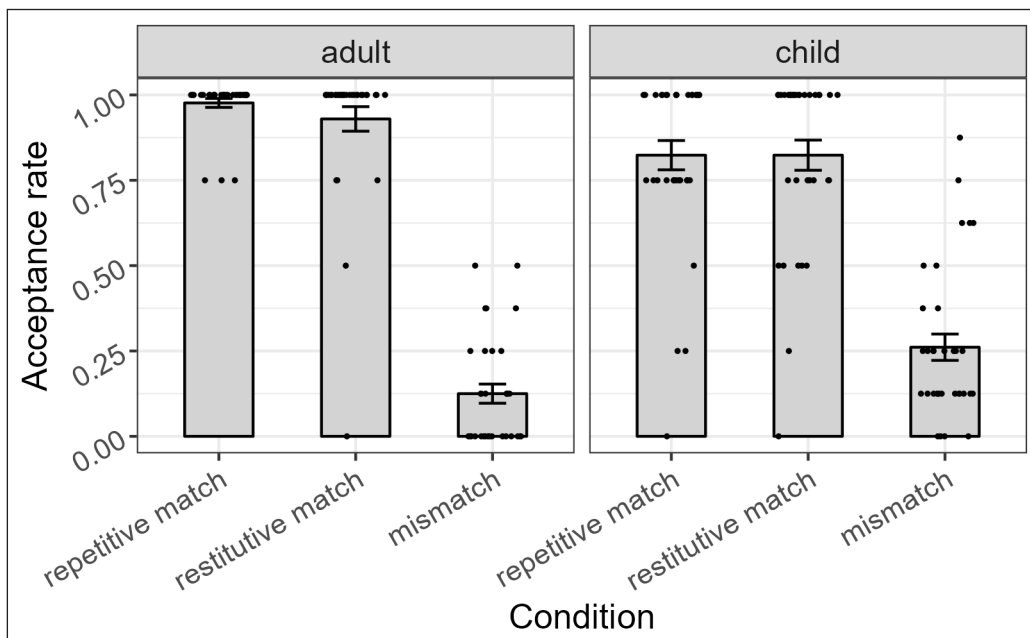
Figure 1: Acceptance rates of adult ($N = 32$) and child ($N = 34$) participants. (Error bars indicate standard error. Dots represent individual participants' mean acceptance rates.)

Children's justifications were as expected, although not all children were willing to provide justifications, and those who did were not always consistent across trials. These inconsistencies made it difficult to conduct quantitative analysis. As anticipated, a child could reject a mismatch item for a restitutive story based on either a repetitive interpretation (i.e., which character had performed the action before), as in (15) and (16), or a restitutive interpretation (i.e., which character had been in the location before), as in (17) and (18).

(15)   *Puppet*: 'The rabbit walked to the doghouse again'.   (restitutive mismatch)
        …yinwei   tuzi   yiqian   mei   qu-guo   gou jia.
        …because rabbit past   NEG   go-PERF dog home.
        '…because the rabbit hadn't gone to the dog's home before.'
                                                    (repetitive response, Child #7041: 04;01;18)

(16)   *Puppet*: 'The zebra ran into the forest again'.   (restitutive mismatch)
        …ganggang   banma   meiyou   pao-jin   senlin a.
        …just-now   zebra   NEG   run-enter   forest SFP.
        'just now the zebra didn't run into the forest.'
                                                    (repetitive response, Child #6613: 04;07;07)

(17)   *Puppet*: 'The fisherman swam to the island again'.   (restitutive mismatch)
        yufu   gangcai   mei   zai dao-shang.
        fisherman   just-now NEG   at   island-up.
        'The fisherman wasn't on the island just now.'
                                                    (restitutive response, Child #6580: 04;02;01)

(18)   [same item as in (15)]   (restitutive mismatch)
        …yinggai shi XIAO-GOU you zou-jin-le   xiao-wu.
        …should   be   little-dog YOU walk-enter-PERF   little-house.
        'It should be THE LITTLE DOG who walked to the doghouse again.'
                                                    (restitutive response, Child #6929: 03;11;06)

We fitted Generalized Linear Mixed Models (GLMMs) to the adult data, the child data, and the combined data using the *lme4* package (Bates et al. 2015b) in R version 4.2.1 (R Core Team 2021). In all models, a participant's response (1 = accept, 0 = reject) was the dependent variable. Following Barr et al. (2013), we started with maximal models including all possible random-effect components – random slopes and intercepts by Subject and Item. We then reduced the model's complexity stepwise until it converged to a non-singular fit. We double checked the simplification of random effects using the *buildmer* package (Voeten 2020), which automates the process, and obtained consistent results. Following Bates et al. (2015a), we also checked the convergent models for overparameterization by comparing the goodness-of-fit of nested models with likelihood-ratio tests.

Here we focus on models based on the child and combined data.[11] For the children, we compared models with and without the fixed factors of (i) Age (in years as a continuous variable) and (ii) the interactions of Age with Condition. Model comparison revealed no significant improvement in fit when we included Age (likelihood-ratio test: $\chi^2(1) = 2.238, p = .135$) or the interactions of Age with Condition (likelihood-ratio test: $\chi^2(2) = 1.904, p = .386$); therefore, we report here the model with Age excluded.[12] Setting the reference-level to mismatch (**Table 3**), children accepted both repetitive- and restitutive-match items significantly more often than mismatch items. Furthermore, setting the reference-level to repetitive-match (**Table 4**), there was no significant difference between restitutive-match and repetitive-match items. These results indicate that children distinguished match from mismatch, and accepted restitutive-match items at approximately the same rate as repetitive-match.

	β	*SE*	*z*	*p*-value
repetitive-match	2.849	0.341	8.361	<.001 ***
restitutive-match	2.858	0.343	8.331	<.001 ***

Table 3: GLMM results on the child data: Acceptance (0/1) ~ 1 + Condition + (1|id) + (1|item). Mismatch sentences are the reference-level for Condition.

	β	*SE*	*z*	*p*-value
restitutive-match	0.009	0.385	0.022	.982
mismatch	−2.849	0.341	−8.361	<.001 ***

Table 4: GLMM results on the child data: Acceptance (0/1) ~ 1 + Condition + (1|id) + (1|item). Repetitive-match sentences are the reference-level for Condition.

To examine potential differences in behavior between children and adults, we analyzed the combined data. Predictors were Condition (repetitive-match, restitutive-match, mismatch), ParticipantGroup (adult, child), and their interactions. We first set the reference-level to mismatch (**Table 5**). Participants accepted both repetitive- and restitutive-match items significantly more often than mismatch. There was a significant effect of ParticipantGroup, and there were two significant interactions: ParticipantGroup interacted with both (i) the contrast between mismatch and repetitive-match items, and (ii) the contrast between mismatch and restitutive-match items. This suggests that both groups made a distinction between match and mismatch items, but adults distinguished them to a greater extent. Finally, we set the reference-level to repetitive-match

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[11] Results for the adult models are reported in Appendix B (§2.1).

[12] We conducted additional analyses including Age as a predictor. The GLMM results also revealed a significant effect of Condition but no significant effect of Age. Details are reported in Appendix B (§2.2).

(**Table 6**). There was no significant difference between participants' acceptance of restitutive-match versus repetitive-match items. Furthermore, there were no significant interactions with ParticipantGroup. This suggests that neither group performed differently on repetitive-match versus restitutive-match items.[13]

	β	*SE*	*z*	*p*-value
repetitive-match	6.564	0.724	9.062	<.001 ***
restitutive-match	5.353	0.531	10.073	<.001 ***
child	−0.860	0.343	−2.512	.012 *
repetitive-match:participant group	−3.567	0.730	−4.885	<.001 ***
restitutive-match:participant group	−2.348	0.543	−4.324	<.001 ***

Table 5: GLMM results on the combined data: Acceptance (0/1) ~ 1 + Condition * ParticipantGroup + (1|id) + (1|item). Mismatch sentences are the reference-level for Condition and Adults are the reference-level for ParticipantGroup.

	β	*SE*	*z*	*p*-value
restitutive-match	−1.211	0.740	−1.637	.102
mismatch	−6.564	0.724	−9.062	<.001 ***
child	−0.860	0.343	−2.511	.012 *
restitutive-match:participant group	1.219	0.779	1.564	.118
mismatch:participant group	3.567	0.730	4.885	<.001 ***

Table 6: GLMM results on the combined data: Acceptance (0/1) ~ 1 + Condition * ParticipantGroup + (1|id) + (1|item). Repetitive-match sentences are the reference-level for Condition and Adults are the reference-level for ParticipantGroup.

3.3 Summary and further questions

Our findings indicate that children (and adults) differentiated between match and mismatch *you*-items in both repetitive and restitutive contexts. This suggests that, like English-acquiring children, Mandarin-acquiring preschoolers who are sensitive to *you* show no delay in understanding restitutive *you* with goal-PPs.

This prompts us to ask: (a) Why did some children fail to show sensitivity to *you*? (b) How can Mandarin preschoolers possibly know as much as they do about restitutive *you* with goal-PPs? What kinds of evidence can they be using? Leaving question (a) for Section 5, we now investigate question (b) through a corpus study.

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[13] For performance of individual children, see Appendix B (§2.3).

4 Possible evidence

Here we examine the types of evidence that could tell a child restitutive *you* is allowed with goal-PPs. Section 4.1 considers direct evidence – parental uses of restitutive *you* with goal-PPs, and shows this is exceedingly rare. Section 4.2 considers evidence from restitutive *you* with other predicates, but argues against the idea. Section 4.3 considers indirect evidence, of the types that might be available under a structural approach to restitutive *you*, and shows that such evidence (namely evidence concerning repetitive *you*, and *you*'s general ability to compose with a VP sub-constituent) occurs more frequently than direct evidence. Finally, Section 4.4 discusses one more possible form of evidence, namely prosodic cues, but concludes that there is no clear way for prosodic cues to help learners determine where restitutive 'again' is allowed.

4.1 Direct evidence

Direct evidence would be parental use of *you* with a goal-PP to describe a situation where only the restitutive reading is true. The question is whether such uses actually occur in the input.

4.1.1 Method

Samples of child-directed speech came from the two longitudinal corpora for Mandarin in **Table 7** (Deng & Yip 2018; Zhang & Zhou 2009).

Child	Corpus	Age span	No. of transcripts	Total adult utterances
Tong (M)	Tong	01;07;18–03;04;09	22	21,709
Xuexue (F)	Zhou3	01;01;08–03;02;00	30	15,625

Table 7: Mandarin corpora from CHILDES (MacWhinney 2000).

We first located all adult utterances containing both *you* and a directional item (*shang* 'up', *xia* 'down', *jin* 'in', *chu* 'out', *guo* 'across', *lai* 'come', *qu* 'go', *cong* 'from', *dao* 'to', *wang* 'toward', *hui* 'return', or *qi* 'rise'). We then extracted sentences in which *you* modified a goal-PP, and annotated them as 'repetitive', 'restitutive', or 'other'. Two annotators independently coded all relevant utterances, considering the preceding text and up to 50 lines of subsequent text, plus linked audio/video files if available. Disagreements were discussed by the two coders and two additional research assistants until consensus was reached. Utterances for which consensus could not be reached were coded as ambiguous. Uses that were ungrammatical, weird, fragmentary, or incomplete were excluded.

4.1.2 Results

As summarized in **Table 8**, there were only two parental utterances where *you* modified a goal-PP (details in Appendix C (§3.1)).[14] One had a repetitive reading, while the other was ambiguous.

	meaning of *you*	Tong	Xuexue
unambiguous	repetitive	1	0
	restitutive	0	0
	other	0	0
ambiguous	repetitive/restitutive	1	0

Table 8: Goal-PP utterances with *you* in children's input.

4.1.3 Summary

Out of 37,334 utterances across our samples, there were no occurrences of *you* modifying a goal-PP where the restitutive reading was unambiguously intended. This suggests that direct evidence is extremely rare (if available at all). Consequently, it seems doubtful that children could rely on direct evidence alone to decide whether their target language allows restitutive 'again' with goal-PPs.

4.2 Other parental uses of restitutive *you*

One might think a child could learn that restitutive *you* is allowed with goal-PPs by hearing it with other change-of-state predicates, like lexical accomplishments. Such evidence could indeed tell the child that in Mandarin, restitutive *you* is (at least sometimes) possible in VP-initial position. Yet, it would not be a reliable indication that restitutive *you* is possible with goal-PPs. As shown in **Table 1** (Section 2.1.2), the availability of restitutive 'again' with a goal-PP is independent of its availability with a lexical-accomplishment verb. Thus, hearing restitutive 'again' with a verb like 'open' does not allow the child to conclude it will be possible with goal-PPs.

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[14] We also encountered the example in (i), which includes a PP and a manner-of-motion verb (*zou* 'walk'), but does not, in our view, qualify as a goal-PP.

(i) [Context: The mother and child left their home and went outside. The father stated that he would join them shortly.]

MOT: Ta yao   deng baba, suoyi wo you wang   hui   zou.

mother: he want wait dad   so   I   YOU toward back walk

'Mother: He(=The child) wanted to wait for his dad, so I walked back(ward) (i.e., in the direction of their home) again.'

(Tong Corpus, File 010919, Line 1705)

We excluded this example from our count because it is distinct from a goal-PP in at least two respects: First, the PP *wang hui* 'backward' is exceptional in that it precedes the verb, suggesting it is an adjunct (as proposed by Lamarre 2013) rather than a complement to the verb. Second, it only encoded directional information, without specifying a terminus.

Similarly, children cannot rely on restitutive uses of 'again' with other directed-motion predicates (e.g., directed-motion verbs like 'return' that select for a locative argument). This is because the availability of restitutive 'again' with goal-PPs is independent of its availability with such predicates. In some languages (e.g., French), the restitutive reading is allowed with such predicates (19) but not with goal-PPs. In others (e.g., Mandarin), it is allowed for both (for the predicate 'return', see example (20)). Hence, hearing restitutive 'again' with a directed-motion predicate like 'return' does not allow the child to conclude it will be possible with goal-PPs.

(19) Le   chiot   est revenu   de nouveau   à la maison.
      The puppy   is returned of new   to the house
      'The puppy returned to the house again.'   (✓repetitive, ✓restitutive)

(20) Zhangsan you hui-le   Beijing.
      Zhangsan YOU return-PERF Beijing
      'Zhangsan returned to Beijing again.'   (✓repetitive, ✓restitutive)

4.3 Indirect evidence available under a structural analysis

According to the structural analysis presented in Section 2.2.2, restitutive 'again' involves the same lexical item as repetitive 'again'. While Mandarin *you* is VP-initial, operations like movement and reconstruction enable it to semantically compose with the result state of a complex predicate, yielding the restitutive reading. Under this analysis, learners can deduce that restitutive *you* is possible with goal-PPs once they know three "prerequisites": (A) Mandarin *you* can denote repetition, (B) it can "look inside" a complex predicate to modify a non-adjacent sub-constituent (perhaps via movement-plus-reconstruction), and (C) Mandarin goal-PPs have the structural property that makes a restitutive reading possible.

Here we consider what types of adult utterances might enable children to acquire these prerequisites. Then we check whether such utterances are actually present in child-directed speech, especially for (A) and (B), using the same corpora as in Section 4.1.

4.3.1 Prerequisite A: repetitive *you*

Previous experiments (Liu 2009; 2015; Liu et al. 2011) and our own suggest that preschoolers already know repetitive *you*. However, the prior studies had small samples, and the high exclusion rate of our study, combined with the entailment relation between repetitive and restitutive readings, might conceivably raise doubts.[15] Therefore, we first re-examine this claim using spontaneous-speech corpora. Second, we propose that children acquire the repetitive meaning of

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[15] Because the repetitive reading of 'again' asymmetrically entails the restitutive reading, children's successes on repetitive *you* could in principle have resulted from their mastery of restitutive *you*. We acknowledge this as a limitation of our experiment (see Appendix D (§4.1)).

you from parental uses (regardless of predicate type),[16] and we assess this proposal by examining the frequency of repetitive *you* in child-directed speech.

4.3.1.1 Method

First, to re-assess whether preschoolers already know repetitive *you,* we searched the corpora of spontaneous speech for each child's FRU (the first clear use that was followed soon after by regular use; Snyder 2007). This speech-based measure of acquisition identifies a child's initial clear use of a construction and ensures subsequent uses with different lexical items occur shortly thereafter. If there was no consistent use of repetition-denoting *you* soon after the first use, we excluded it from our analysis.

Second, to assess if children can plausibly learn the repetitive meaning of *you* directly from parental uses, we tallied the frequency of different uses of *you* in child-directed speech, using the same coding schema from Section 4.1 and using the classification system of Lü (1999) (cf. Appendix A (§1.1)).

4.3.1.2 Results

Tong's FRU of repetition-denoting *you* occurred at 02;08, and Xuexue's at 03;03 (details in Appendix C (§3.2)). These results suggest that preschoolers have typically acquired the repetitive meaning of *you* by around age 3.

Table 9 summarizes the frequencies of various uses of *you* in parental input.[17] Out of 292 *you*-utterances, 159 (54.5%) were judged unambiguously repetitive (Tong: 94 out of 166 instances (56.6%); Xuexue: 65 out of 126 instances (51.6%)). This suggests children receive ample direct evidence for repetitive *you.*

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[16] As discussed in Section 4.2, children cannot infer that restitutive *you* is available with goal-PPs by observing its use with other change-of-state predicates. A reviewer asked why the same logic does not apply to acquiring its repetitive reading, given the rarity of repetitive *you* with goal-PPs in children's input. We clarify that the prerequisite here is knowing that *you* can denote repetition, rather than determining whether this reading is available with goal-PPs. Therefore, parental uses of repetitive *you* with any predicate are informative.

[17] The categories "high-restitutive" and "low-restitutive" will be defined in Subsection 4.3.2.1. The "contrast" category includes cases where *you* connects properties or situations in conflict, as in (i). The "rhetorical" category involves *you* in negative contexts or rhetorical questions for emphasis or strengthening (e.g., (4c)). The "other" category refers to cases where *you* conjoins two identical numeral-classifier/noun combinations (ii), emphasizing quantity.

    (i)   Gangcai dianchi hai you dian,   xianzai you mei dian   le.
             just-now battery still have electricity now   YOU NEG electricity SFP
             'The battery has worked just now, but now it died.'

    (ii)   Women deng-le   yi-tian you yi-tian
             we   wait-PERF one-day YOU one-day
             'We waited one day after another. (i.e., we waited for days.)'

	meaning of *you*	Tong	Xuexue
unambiguous	repetitive	94	65
	high-restitutive	0	4
	low-restitutive	9	4
	temporal-continuation	10	20
	addition	14	4
	contrast	10	6
	rhetorical	15	17
	other	0	1
ambiguous	repetitive/temporal-continuation	6	2
	repetitive/restitutive	2	1
	repetitive/contrast	1	1
	repetitive/rhetorical	1	1
	restitutive/contrast	1	0
	temporal-continuation/contrast	3	0
total		166	126

Table 9: All adult uses of *you* in child-directed speech.

4.3.2 Prerequisite B: *you* modifying a sub-constituent

Parental utterances with *you* may also show children that repetition-denoting *you* can modify a sub-constituent. We assess the availability of such evidence, which includes (i) utterances where the restitutive interpretation is unambiguously intended and (ii) utterances involving what is known as 'again'-skipping. We discuss these candidates in more detail before presenting our corpus analysis.

4.3.2.1 Two types of restitutive readings

Our discussion so far has revolved around a two-way ambiguity: repetitive and restitutive. Some researchers (e.g., Nissenbaum 2006) further delineate the restitutive reading into high- and low-restitutive interpretations, as illustrated in (21).

(21)   John opened the door again.
      a.   *High restitutive*: Someone other than John had opened the door before.
      b.   *Low restitutive*: The door had been open before (e.g., it was built open).

Our focus thus far has been the low-restitutive reading, which presupposes only that the result state held before. In contrast, the high-restitutive reading triggers an "agentless" presupposition (see Bale 2007; Smith & Yu 2022 for English examples and Zhang 2022 for Mandarin examples). Simply put, the action is repeated, but with a different agent. Under a structural analysis, this

reading is derived when 'again' takes scope over the predicate, but excludes the subject, at LF. Crucially, both high- and low-restitutive uses indicate that *you* (albeit pre-verbal) can semantically compose with a sub-constituent of the VP.

4.3.2.2 'Again' skipping

The ability of *you* to be syntactically separated from its semantically associated constituent is not restricted to restitutive interpretations. Consider (22), which has multiple interpretations: Besides the "matrix repetitive" reading, which presupposes that Xiaoming had previously wanted to close the door (22a), it can presuppose that Xiaoming had closed the door before (22b). This suggests that *you* can bypass the verb 'want' and be interpreted as directly modifying its complement. The "embedded restitutive" reading (22c) further underscores this "skipping" capacity. The ambiguity of examples like (22) was observed and termed "again-skipping" by Liu (2021; to appear).

(22)   Xiaoming you xiang guanshang na-shan men.
       Xiaoming YOU want close   that-CL door
       'Xiaoming wants to close that door again.'
       a.   Matrix repetitive: 'Xiaoming wanted to close that door before.'
       b.   Embedded repetitive: 'Xiaoming closed that door before.'
       c.   Embedded restitutive: 'The door was in a state of being closed before.'

<div align="right">(Liu to appear: ex. 5)</div>

In addition to (a subset of) restructuring verbs, Liu observes that *you* can also "skip" adjuncts. Consider (23) and (24). All three sentences in (24) are felicitous in all three contexts in (23). For (24a) this is expected as the sentence presupposes that Xiaoming had met Xiaohong before. In (24b), although *you* precedes 'at the park', the presupposed meeting location does not have to be in the park, indicating that *you* can modify a sub-constituent. (24c) illustrates the same point: as long as Xiaoming had met Xiaohong earlier, it does not matter whether the meeting happened on Tuesday or at the park.[18]

(23)   a.   Context 1: Park and Tuesday
            Last week, Xiaoming met Xiaohong at the park on a Tuesday. This week, …
       b.   Context 2: Park but not Tuesday
            Last week, Xiaoming met Xiaohong at the park on a Monday. This week, …

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[18] As shown in (24), *you* can precede or follow the adverbial adjuncts, indicating that its placement before or after the adverbial adjuncts is optional. As suggested by a reviewer, the fact that *you* can surface in a lower position indicates that the skipping effect cannot solely be due to the requirement of surfacing in a higher position, thereby lending greater plausibility to the movement analysis. We thank the reviewer for this suggestion.

As a sidenote, in (22) *you* cannot follow the matrix verb and modify the embedded verb. Instead, the repetition-denoting adverb *zai* can occur in this position. This may due to their distribution patterns: *you* typically appears in realis contexts, while *zai* appears in irrealis contexts (see Lü 1999 for the generalization and Lin & Liu 2009; Liu & Yip 2023 for alternative analyses).

   c. Context 3: Not park and not Tuesday
    Last week, Xiaoming met Xiaohong at school on a Monday. This week, …

<div align="right">(Liu to appear: ex.13)</div>

(24) 'Xiaoming met Xiaohong again at the park on a Tuesday.'

  a. Xiaoming zai Xingqi'er zai gongyuan you yudao-le Xiaohong.
    Xiaoming at Tuesday at park   YOU meet-PERF Xiaohong

  b. Xiaoming zai Xingqi'er you zai gongyuan yudao-le Xiaohong.
    Xiaoming at Tuesday YOU at park   meet-PERF Xiaohong

  c. Xiaoming you zai Xingqi'er zai gongyuan yudao-le Xiaohong.
    Xiaoming YOU at Tuesday at park   meet-PERF Xiaohong

<div align="right">(Liu to appear: ex.14)</div>

Liu (2021; to appear) proposes that the 'skipping' phenomenon, exemplified by (22b)/(22c) and (24b)/(24c), can also be explained by the movement-plus-reconstruction account for restitutive *you* discussed in Section 2.2.2. Therefore, we suggest that such examples, along with utterances denoting the (high or low) restitutive reading, can inform learners that *you* can semantically associate with a sub-constituent. Next, we examine whether these types of evidence are available in parental input.

4.3.2.3 Method

To determine the frequency of high- or low-restitutive *you* in parental input, we employed the same method as for repetitive *you*, tallying occurrences in child-directed speech (cf. Section 4.3.1).

 We also manually analyzed adult uses of *you* to search for evidence of *you*-skipping, particularly in utterances with restructuring verbs and adverbial adjuncts. For each adult utterance with repetitive *you*, we assessed if the sentence could be interpreted as *you* modifying a sub-constituent (excluding high- and low-restitutive cases). If such an interpretation was possible, we considered the utterance potentially informative. Later, we used a conservative coding schema, excluding cases where the context did not clearly indicate the embedded reading or where the embedded reading entailed the matrix reading, such as *you kaishi da-lei le* 'It started to thunder again'.

4.3.2.4 Results

The frequency of high- and low-restitutive *you* in child-directed speech is reported in Table 9 ("unambiguous high-restitutive" and "unambiguous low-restitutive", respectively). The results (Tong: 9 low-restitutive uses in 166 utterances; Xuexue: 4 low-restitutive and 4 high-restitutive uses in 126 utterances) indicate that instances of restitutive *you* were attested in both children's input.

For *you*-skipping, we found 1 clear instance for Tong and 2 for Xuexue, as exemplified in (25).

(25)   [Context: The child poked her mother's eye before.]
        MOT: You   chadian   chuo-dao   wo-de   yanjing
        mother: YOU   almost   poke-reach   I-POSS   eye
        'Mother: You almost poked my eyes again.'

                                              (Zhou3 corpus: File 000326, Line 1422)

Since both can inform learners of *you*'s ability to semantically compose with a sub-constituent, we combined them. In total we found 20 clear cases among 292 *you*-utterances in the two children's input, accounting for 6.85% of the total. For Tong, there were 10 informative utterances among 166 (6.02%), and for Xuexue, 10 among 126 (7.94%).

One may wonder if this evidence is sufficient. Low-frequency input may not be informative to a learner, as input typically contains noise, and learners should filter out noise when selecting the grammar that best fits the data (see Marcus 1993). To our knowledge, the precise threshold for sufficient input remains unclear. Rasin & Aravind (2021), building on Marcus's work, assume learners can safely disregard up to 2% of the relevant input as noise. We adopt this metric as their study also examined truth-conditional evidence. The evidence we considered informative constituted approximately 6–8% of parental uses of *you* for each child, surpassing the 2% threshold. This indicates that children should not disregard this evidence and should select a grammar consistent with it. While future research might identify a different metric and change our conclusion, the evidence here substantially outweighs the direct evidence of restitutive *you* with goal-PPs (0%).

4.3.3 Prerequisite C: the syntax of goal-PPs

Prerequisites A and B tell learners that Mandarin VP-initial *you* can be restitutive, but not that restitutive *you* is allowed with goal-PPs. The latter depends on structural properties of goal-PPs, which in turn depend on whether the target language features the special semantic composition rule allowing a manner-of-motion verb to combine with a propositional PP. If it does, proposition-selecting 'again' will be able to attach to a goal-PP's result state.

In our experiment, the children performed well on goal-PP items. Assuming that syntax provides the foundation for semantic interpretation, this suggests they have the syntax of goal-PPs in place. Specifically, they know the manner-of-motion verb in a goal-PP combines with a propositional PP expressing a result state, by means of the semantic composition rule.

How children acquired this information requires further research. Readers can refer to Xu & Snyder (2017) for a tentative proposal on how it might result from setting a macro-parameter (Principle (R) à la Beck (2005) or TCP à la Snyder (2012), cf. Section 2.1.2) based on related and

more frequent structures in child-directed speech, possibly including recursive compounding, separated verb-particle constructions, and resultatives, among others.

4.4 Prosodic cues

Before concluding this section, we consider another potential form of evidence: prosodic cues. In a plain context, a stressed predicate typically yields a restitutive reading, while a stressed 'again' seems to only allow the repetitive reading (for English and German, see von Stechow 1996; Fabricius-Hansen 2001; Jäger & Blutner 2000; 2003; Klein 2001; Pittner 2003; Beck 2006).

Conceivably, this prosodic pattern might help children distinguish between restitutive and repetitive uses of 'again'. However, the pattern is inconsistent (see Appendix D (§4.2)) and the scarcity of 'again' with goal-PPs argues against its usefulness. While attending to the stress pattern may signal that *you* can have a restitutive interpretation, it does not indicate that restitutive *you* is allowed with goal-PPs. The main problem is that relevant prosodic cues are absent from a child's input unless parents regularly use goal-PPs in their child-directed speech.

5 General discussion
5.1 Summary of major findings and proposal

Cross-linguistic variation in the availability of restitutive 'again' with goal-PPs led us to ask how children identify the correct choices for their target language. This study focused on Mandarin, where preverbal *you* with goal-PPs allows the restitutive reading. We found that Mandarin preschoolers exhibit no delay in comprehending restitutive *you* with goal-PPs, despite scarce direct evidence in child-directed speech.

We propose that the child can deduce the availability of restitutive *you* by acquiring the property allowing repetition-denoting *you* to semantically compose with a VP sub-constituent and the structural properties of Mandarin goal-PPs enabling a restitutive reading. Evidence supporting these aspects is available in the child's input, explaining the success of (many) preschoolers in our comprehension task.

Next, we will discuss remaining issues and suggest directions for future research.

5.2 On children's insensitivity to *you*

Despite the success of many children in our experiment (Section 3), some consistently accepted all stimulus items, behaving as if ignoring *you,* and were excluded from analysis. Note that exclusions were not limited to younger children; within each age group, some children were excluded (5 out of 10 3-year-olds, 12 out of 34 4-year-olds, and 7 out of 14 5-year-olds). Here we discuss factors that may have led to this high exclusion rate.

Note that this finding is not unique to our study on Mandarin *you*; similar results were reported for English *again* in Xu & Snyder (2017). Since 'again' is generally considered a presupposition trigger (see (5)), these findings suggest many children did not take the presupposition of 'again' into account. Similar findings (i.e., indications that a sizable number of children appear untroubled by presupposition failures) have been reported for the additive particle 'also' in various languages (e.g., German *auch*: Hüttner et al. 2004; Dutch *ook*: Bergsma 2002; 2006; Japanese *mo*: Matsuoka 2004; Matsuoka et al. 2006). Furthermore, these findings have been observed not only in TVJTs, but in picture selection tasks. According to Berger & Höhle (2012), these findings do not necessarily indicate a lack of knowledge of the presupposition trigger in children. Instead, children may regard the presupposition of 'also' as less important than the assertion in the experimental task. We suggest this proposal can be applied to our findings for *you*. In our TVJT experiment, the "mismatch" sentences containing *you* are not false but pragmatically infelicitous due to presupposition failure. The asserted content of these test sentences matched the given context, potentially leading children to downgrade the presupposition's relevance and prioritize the true assertion. This aligns with the Pragmatic Tolerance Hypothesis (see Katsos & Smith 2010; Davies & Katsos 2010), which posits that children are more tolerant of pragmatic oddities than adults. This hypothesis has been supported by previous studies on children's processing of scalar implicatures (e.g., Katsos & Bishop 2011). Our use of the TVJT was for direct comparison with Xu & Snyder's study on English *again*, but we recognize it may not be optimal for evaluating children's understanding of presuppositions. Future research will explore alternative methodologies to better assess children's knowledge of presupposition triggers like 'again'.

Another factor, suggested by a reviewer, concerns the experimental setup, specifically requiring child participants to explain their responses only in rejected cases. This may have inadvertently discouraged participants from rejecting the puppet's statements if they were unsure or reluctant to articulate their reasons, resulting in a tendency to accept everything. In the future, we will consider modifying the procedure to request explanations for both accepted and rejected items.

5.3 On an alternative lexical analysis of restitutive *you*

Our explanation for the acquisition findings is based on a structural analysis of restitutive *you*. However, other explanations based on alternative analyses of *you* may exist. In this section, we explore whether a lexical analysis can explain the acquisition findings and other empirical facts.

5.3.1 A Fabricius-Hansen-style lexical analysis

Contrary to the structural analysis, a lexical analysis attributes restitutive 'again' to a distinct denotation independent from repetitive 'again' (e.g., Jäger & Blutner 2003; Fabricius-Hansen 2001; Pedersen 2015; see Yu 2020: §3.4 and §3.6 for a more in-depth discussion of various

lexical analyses).[19] Here, we use the proposal of Fabricius-Hansen (2001) as a representative to illustrate analyses in this spirit.

Fabricius-Hansen proposes that, aside from its repetitive meaning, 'again' can have a "counterdirectional" meaning as shown in (26).

(26) $[[\text{again}_{\text{counterdirectional}}]] : \lambda P.\lambda e.P(e)$
        Presupposition: $\exists e'[e' < e \ \& \ P_c(e') \ \& \ res_{Pc}(e') = pre_P(e)]$

                              (adapted from Fabricius-Hansen 2001: (13))

P_c in (26) represents a counterdirectional predicate, which characterizes the reverse of P. In plain English, restitutive 'again' denotes a relationship between a predicate of events and an event, asserting that the predicate is true of the event. Additionally, it presupposes the existence of a preceding counterdirectional version of the event, e'. The result state of this counterdirectional event, $res_{Pc}(e')$, is identical to the prestate of e, $pre_P(e)$.

To see how (26) captures the restitutive interpretation, consider the English example *John walked to the village again*. The goal-PP predicate represents a walking event by John from an (unspecified) source to a goal (the village). Its counterdirectional predicate can be created by reversing the direction, leading to a motion event by John from the village to the source (see Patel-Grosz & Beck 2019; Iyer 2022; 2023 for more on conceptualizing a counterdirectional predicate). Thus, the sentence presupposes a preceding motion event of John from the village to the source, implying that John must have been at the village before, capturing the restitutive reading.

Given that the restitutive interpretation of 'again' is attested in a number of languages, we can hypothesize that a lexical analysis of this kind applies to Mandarin *you*. This would mean that *you* has a distinct counterdirectional denotation, as described in (26).

5.3.2 Accounting for the skipping phenomenon

Which analysis, structural or lexical, better explains the skipping phenomena discussed in Section 4.3.2? Consider examples like (22) and contrast them with examples like (27), noted by Liu (2021; to appear). In (22), *you* can be interpreted as skipping the restructuring verb, whereas in (27), it precedes a non-restructuring verb and loses its skipping ability, allowing only the matrix repetitive reading.

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[19] Pedersen's proposed denotation for restitutive *again* targets deadjectival verbs like *widen*, whose adjectival root denotes a property on an open scale. He argues that the restitutive reading of such adjectival verbs cannot be analyzed with a structural approach, as they do not syntactically embed stative properties. Notably, Pedersen acknowledges that more complex predicates with a small-clause structure may embed stative properties and thus allow a structural analysis, making his proposal a hybrid approach.

(27) Xiaoming you shuo ta guan-shang-le na-shan men.
      Xiaoming YOU say he close-up-PERF that-CL door
      'Xiaoming again said that he closed that door.'
      a. Matrix repetitive: 'Xiaoming had said before that he closed that door.'
      b. #Embedded repetitive: 'Xiaoming said that he had closed that door before.'
      c. #Embedded restitutive: 'The door was in a state of being closed before.'

Adopting a structural analysis, Liu (2021; to appear) explains the contrast between (22) and (27) as follows: He proposes that *you* moves to the specifier position of the closest AspP to check its unvalued aspect feature (cf. Section 2.2.2). In (22), the lower-generated *you* must move to the AspP in the matrix clause because the restructuring verb *xiang* 'want' does not embed an AspP. In contrast, the clausal complement of the non-restructuring verb *shuo* 'say' contains an AspP that can value *you*'s unvalued feature, so the lower-generated *you* does not need to move to the matrix AspP. This means *you* in (27) was not base-generated inside the embedded clause, which explains the absence of embedded readings.

Under a Fabricius-Hansen-style lexical analysis, why can *you* be interpreted as counterdirectional in (22), as shown in (22c), but not in (27)? A reviewer suggests this contrast can be explained if we assume that counterdirectional *you* can reconstruct (under restructuring verbs) in the same way as repetitive *you*. To elaborate, (22a) is generated by repetitive *you* taking matrix scope, (22b) by repetitive *you* taking scope in the embedded clause, and (22c) by counterdirectional *you* taking scope in the embedded clause. This narrow scope is forced for counterdirectional *you*, as there is no plausible counter-directional version of the predicate 'want to close that door', rendering the matrix scope uninterpretable. Conversely, in (27), all narrow scope readings (for both repetitive *you* and counterdirectional *you*) are blocked by the non-restructuring predicate.

Meanwhile, another reviewer suggests that although there is no direct counterargument against a lexical analysis, from an economic perspective, if both the lexical analysis and the structural analysis require a movement and reconstruction approach to cover the entire empirical ground, particularly the skipping effects, the structural account may be argued to be more economical as it requires only one lexical entry of 'again'.

5.3.3 Accounting for cross-linguistic variation

Beck (2005) argues that Fabricius-Hansen's lexical analysis fails to account for the cross-linguistic variation in the availability of restitutive 'again' with goal-PPs, because goal-PPs typically denote change-of-state events and should be reversible across languages. However, Gehrke (2008) questions the assumption of semantic equivalence of goal-PPs across languages. Building on her argument and a refined analysis of counterdirectional 'again' proposed by Iyer (2022), we reconsider its potential in explaining the cross-linguistic data.

To account for the patterns of cross-linguistic and language-internal variation across different types of change-of-state predicates, a lexical analysis will need to posit that the lexical entry for restitutive 'again' contains selectional restrictions of some kind. Moreover, these restrictions will need to be specific enough to distinguish between different types of change-of-state predicates, such as English vs. French/Spanish goal-PPs, and French/Spanish goal-PPs vs. lexical-accomplishment verbs. We consider Iyer (2022)'s refined formulation of counterdirectional 'again' as a viable candidate for specifying these selectional restrictions. Iyer proposes that counterdirectional 'again' requires events involving scalar changes, whether spatial (as in the case of English goal-PPs, where counterdirectional 'again' denotes a reversed path reading) or non-spatial (as in the case of a lexical-accomplishment verb, where counterdirectional 'again' indicates the reversal of a change).

As discussed in Section 2.1.2, English-type goal-PPs represent accomplishment events, with the manner-of-motion verb specifying the development and the PP specifying the culmination point. These goal-PPs satisfy the selectional restrictions imposed by counterdirectional *again* as they denote change along a path. Conversely, Spanish/French-type goal-PPs, as argued by Beck & Snyder (2001) and Beck (2005), do not denote accomplishment events, evidenced by their inability to be modified by in-adverbials such as 'in an hour'. This suggests that they may have a different scale structure from their English counterparts, failing to fulfill the presupposition of counterdirectional 'again'. This aligns with arguments regarding the Spanish preposition *hasta* 'until' in goal-PPs, which imposes a temporal boundary external to the event, leading to truth conditions similar to those of a spatial goal-PP (see Aske 1989; Beck 2005; Gehrke 2008).

To further examine this hypothesis, we need to delve deeper into the semantics of goal-PPs in individual languages. Additionally, it is necessary to compare the scale structures of goal-PPs with those of other change-of-state predicates (such as lexical-accomplishment verbs) in languages with internal variation. We leave these as directions for future research.

5.3.4 Accounting for the acquisition data

From an acquisition perspective, the lexical analysis by Fabricius-Hansen suggests that children must know the following to determine the availability of counterdirectional *you* with goal-PPs: (A) *you* can have a counterdirectional interpretation; and (B) the scale structure of goal-PPs satisfies the selectional requirement of counterdirectional *you*.

To acquire prerequisite (A), children need to encounter instances of counterdirectional *you* in contexts where there exists a prior event denoting the reverse of the relevant scalar change associated with the modified predicate. An example is given in (28). Note that this constitutes only a subset of the evidence available to children for acquiring *you*'s ability to modify a sub-constituent. This is because cases that do not satisfy the counterdirectional presupposition, such as the skipping and high-restitutive examples, would not be included in this subset.

(28)   [Context: Dad was talking about cooking eggplant. Initially, the eggplant absorbed oil, so a lot of oil was added. However, after adding water and letting it simmer, …]

FAT: na-ge   you quanbu you chu-lai-le.

father: that-CL oil   all   YOU exit-come-PERF

'Father: All the oil came out again.'

<div align="right">(Tong corpus: File 010822, Line 2152)</div>

This leaves us with 9 instances of low restitutive among 166 *you*-utterances (5.4%) in Tong's child-directed speech and 4 instances of low restitutive among 126 *you*-utterances (3.2%) in Xuexue's child-directed speech.

Regarding prerequisite (B), our experiment indicates that preschoolers have already grasped the semantics of goal-PPs, suggesting they know the associated scale structure. Regarding how children acquire this prerequisite, we can consider the tentative proposal on how they acquire the syntax of goal-PPs (cf. Section 4.3.3). Specifically, knowing that Mandarin allows the combination of PPs as secondary predication enables children to infer that Mandarin goal-PPs represent accomplishment events involving scalar changes along a path, which satisfies the selectional requirement of counterdirectional *you*.

The discussion indicates that a lexical analysis can also explain how Mandarin-speaking children discern the availability of counterdirectional *you* with goal-PPs. However, the structural approach allows for more general evidence and potential sources for children to rely on, giving it an advantage, especially in situations where the relevant input is of low frequency. Further empirical findings regarding children's knowledge of other types of change-of-state predicates (e.g., lexical-accomplishment verbs) and their comprehension of restitutive *you* with these predicates would help to assess which approach offers a better explanation.

5.4 Potential limitations and future directions

One limitation of our study concerns the experimental stimuli. A reviewer noted that, in addition to the result state of being in a particular location, the restitutive items in our experiment also involve the repetition of the activity represented by the manner-of-motion verb. For instance, in the story of (13), the lizard crawled twice: first to the river, then back under the rock. If children were to generalize the interpretation of 'again' by assuming the adverb is appropriate whenever there is some repetition–whether of the whole event, its process, or its resulting state–they could end up accepting the test sentence 'The lizard crawled under the rock again' (13a) simply on this basis. The reviewer suggested using a "pure" context to test participants' comprehension of the restitutive reading, as shown in (29).

(29)   Context: This is a story about a baby lizard and a baby dog. The lizard hatches under a rock, and the dog is born by a river. The lizard is thirsty but very tired, so the dog picks him up and carries him to the river to get some water. Soon, the sun comes out. Feeling hot, the lizard longs for some cool shade. Now stronger, the lizard crawls under the rock on his own to have a rest.

In this context, there is only one crawling activity by the lizard, but the result state is repeated, making the restitutive reading true. We appreciate the reviewer's suggestion and consider it an interesting direction for future research.

This is particularly relevant to Mandarin. While simply repeating the motion activity is insufficient to make English *again* modifying a goal-PP true, Mandarin *you* is more permissive. As shown in Section 1, *you* can conjoin two different predicates to denote temporal continuation (see (4a)). This usage allows (30) to be true in the provided context, where there is no repetition of the lizard being under the rock.

(30)   [Context: The lizard, born under the tree, wanted to explore.]
       Ta xian qu-le   he-bian, (ranhou) you pa-dao-le   shitou-xia.
       he first go-PERF   river-side (then)   YOU crawl-reach-PERF stone-under
       'He first went to the riverside and then crawled under the rock.'

To convey temporal continuation with *you*, the earlier event must be explicitly stated in the discourse. When a sentence with *you* stands alone, it is typically interpreted as repetition. In our TVJT experiment, we had the puppet present the test sentences with *you* in isolation to minimize the likelihood of implying temporal continuation. Future studies should likewise be careful to discourage alternative readings of *you*.

In addition, it is worthwhile for future research to investigate the frequency of 'again' modifying goal-PPs in other languages. Our corpus analysis revealed a lack of direct evidence in Mandarin-acquiring children's input that could inform them about the availability of restitutive reading, similar to findings by Xu & Snyder (2017) for English-acquiring children. A reviewer pointed out that German restitutive *wieder* 'again' with goal-PPs is abundant in German child-directed speech. Therefore, it would be particularly interesting to study languages like German and compare how German children comprehend restitutive 'again' with goal-PPs to children acquiring English or Mandarin.

Abbreviations

PERF = perfective, CL = classifier, SFP = sentence final particle, POSS = possessive, NEG = negation

Data availability/Supplementary files

Experiment data and analysis scripts can be accessed via https://osf.io/m6epk/. DOI: https://doi.org/10.17605/OSF.IO/M6EPK

Ethics and consent

This work has been approved by the ethics board at Tsinghua University. All consenting and assenting processes adhered to the university IRB protocol (approval ID: THU2021031).

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Competing interests

The authors have no competing interests to declare.

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