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On Realizing External Arguments: A Syntactic and Implicature Theory of the Disjointness Effect for Passives in Adult and Child Grammar

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We present an account of why disjoint reference effects obtain in verbal but not in adjectival passives. Passives in child language are independently argued to always be adjectival, which allows us to use a natural experiment in child grammar that is not available in the adult grammar: predicting the lack of a disjoint reference effect in even those passives that prima facie seem verbal. We conduct our discussion against the background of the difference between adjectival and verbal passives in general. Our account is based on (grammatical) Implicature Theory. Since the initiator in the semantic representation of adjectival passives stays at a kind level, it cannot introduce a discourse referent, hence cannot trigger a disjointness implicature, unlike the initiator in verbal passives (Gehrke 2013, 2015). We show in two experiments that children's passives do not exhibit disjoint reference, unlike adults' verbal passives, even though children have no trouble computing disjointness implicatures elsewhere. Our contribution thus confirms with a novel kind of evidence the syntactic nature of young children's difficulty with verbal passives. It offers a new perspective on the external argument difference between verbal and adjectival passives based on Reinhart's (2016) Theta System, while also offering additional evidence for a grammatical, rather than general pragmatic, theory of implicatures.

Keywords: argument structure, passive acquisition, adjectival passives, disjoint reference, implicatures

1 Introduction

It has long been observed that passives come in different types; most broadly, there is a distinction between verbal and adjectival passives (e.g., Wasow 1977, Levin and Rappaport 1986, Emonds

For inspiring us to study disjointness in Dutch-acquiring children's passives, we are indebted to Coppe van Urk. We thank him for starting us off on the theoretical and experimental adventure that resulted in this article. We are grateful to Jay Keyser and two anonymous reviewers for their stimulating comments. For their generous discussion of experimental results and/or theoretical implications with us, we thank Athulya Aravind, Noam Chomsky, Chris Collins, Stephen Crain, Katherine Demuth, Martin Everaert, Danny Fox, Anna Gavarró, Martin Hackl, Iris Mulders, Despina Oikonomou, David

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2006, Bruening 2014).[1] One of the reported differences between the two types of passives relates to the presence vs. absence of an implicit agent argument. The difference becomes clear in the examples in (1).

(1) a. The climbers are secured with a rope.
b. The climbers are being secured with a rope.
(Kratzer 2002:17)

Native speakers have a strong intuition that there is an agent in (1b), with a verbal passive, even though unexpressed. On the contrary, they do not feel that there is an agent in (1a), with an adjectival passive; here, we appear to have lost the agent argument that is typically expressed with the verb *secure.*

The presence vs. absence of an agent leads to a further important difference: if we consider these examples again, we can observe that the adjectival passive in (2a) permits a reflexive event reading in which the climbers secured themselves, whereas the verbal passive in (2b) does not.

(2) a. The climbers are secured with a rope. (compatible with self-action)
b. The climbers are being secured with a rope. (not compatible with self-action)

A simple story could be that adjectival passives are really what the name suggests, adjectives, which have a simpler structure than verbal passives, and where no agent is present at any level and hence no disjointness effect arises. However, as will become apparent, the differences are not always so clear-cut. This is where acquisition comes in. It has been established, as first proposed by Borer and Wexler (1987), using evidence from Horgan 1978, that the passives to emerge first in development are adjectival passives (also see Israel, Johnson, and Brooks 2000). In fact, it has been shown that verbal passive syntax is not available to young children and that children therefore initially analyze *all* passive participles as adjectival (Borer and Wexler 1987, Gavarró and Parramon 2017). This makes the study of passives in young children perfectly suited to avoid the effects from the interaction with the verbal passive strategy that may occur with adults.

The problem with the simple story is that in the absence of an external argument, adjectival passives are expected not to allow *by*-phrases. Yet, as discussed by Bruening (2014), they do allow *by*-phrases, as illustrated in (3).

Pesetsky, Norvin Richards, Elaine Schmidt, Rosalind Thornton, members of Macquarie University's Language Acquisition Lab, and audiences at the 48th meeting of the Societas Linguistica Europaea (SLE), the 12th Generative Approaches to Language Acquisition (GALA 12), a 2018 language acquisition workshop (LAW18) at Macquarie University, and talks at Leiden University (Comparative Syntax Lecture Series, LUCL) and the University of Amsterdam (Grammar and Cognition seminar). We are also very grateful to the teachers and children at the Gummarus School and the daycare O-die Kids in Brabant, The Netherlands, as well as at Gumnut and Banksia Cottages at Macquarie University.

[1] The class of adjectival passives can be further divided into subclasses; see, for instance, Embick 2004. We are concerned here with what Embick (2004) calls resultative passives and what Meltzer-Asscher (2011) calls true adjectival passives.

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(3) a. The island was uninhabited by humans.
(Wasow 1977:339)
b. Steve Jobs' birthday doesn't go unnoticed by spammers.
(Bruening 2014:380)

However, looking at these nominals in *by*-phrases and instruments more carefully, we can see that they exhibit an interesting restriction: they are all of a generic character. Moreover, these nominals do not introduce a discourse referent that can be referred to, as the ungrammaticality of the continuation in (4a) illustrates. Finally, as (4b) shows, these nominals obligatorily take narrow scope.

(4) a. They seem taught by the Master. *He's got grey hair.
b. No birthdays go unnoticed by a spammer.
i. 'No birthdays go unnoticed by a spammer.' (possibly more than one spammer)
ii. #'There is a specific spammer that no birthdays go unnoticed by.'

Note, though, that in English adjectival and verbal passives are not formally distinct, allowing possible confounds.

In German, however, adjectival and verbal passives are clearly distinguishable, since verbal passives are formed with the auxiliary *werden* 'become' and adjectival passives are formed with the auxiliary *sein* 'be'. Gehrke (2015) shows that instruments are possible with adjectival *be*-passives, but only if the nominal in the instrument is indefinite or a bare noun. *By*-phrases with adjectival passives have indefinite DPs or bare nouns, as in (5). With a definite DP, they are unacceptable.

(5) Die Zeichnung ist von einem Kind/*dem Kind angefertigt.
the drawing is by a child/ the child produced
'The drawing is produced by a child.'
(adapted from Gehrke 2015:898, (3a), taken from Rapp 1996)

Moreover, as in English, the DP introduced in the *by*-phrase cannot be referred to with a pronominal (see (6b)), even though this is perfectly fine for the DP introduced in the *by*-phrase of a verbal passive (see (6a)) (Gehrke 2013, 2015). Gehrke also shows that these nominals obligatorily take narrow scope.

(6) a. Die Zeichnung wird von [einem Kind]$_1$ angefertigt. Es$_1$ hat rote Haare.
the drawing becomes by a child produced it has red hairs
'The drawing is being produced by a child. He/She has red hair.'
b. Die Zeichnung ist von [einem Kind]$_1$ angefertigt. *Es$_1$ hat rote Haare.
the drawing is by a child produced it has red hairs
'The drawing is produced by a child. #He/She has red hair.'
(Gehrke 2015:904, (16a), (17a))

The important takeaway here is that the DP complements to *by*-phrases and in instrument phrases in adjectival passives are weakly or nonreferential; that is to say, they do not introduce

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a discourse referent (Gehrke 2013, 2015). The question, then, is how to account for this and what it tells us. We will present the necessary theoretical background in sections 2–4, and then turn to what the acquisition data show.

2 Kinds and Functional Structure

Verbs, denoting events, encode a Davidsonian event argument (Davidson 1967). Those events, however, are not event particulars with a location in time and space; rather, they are event *kinds* (also called event *types* in the literature; for empirical and theoretical motivation for the existence of event kinds, see Carlson 2003, Gehrke and McNally 2011, Gehrke 2013, 2015, and references therein). In order for event kinds to be mapped to event tokens (and for them to be located in time and space), functional structure is required (Carlson 2003, Gehrke 2013, 2015). That is, following ideas by Gehrke (2013, 2015) and Carlson (2003), and by Zamparelli (1995) for the nominal domain, VPs are taken to be predicates of kinds that get instantiated by merging functional structure (Asp). The fact that adjectival passives allow *by*-phrases like verbal passives then follows if the lexical heads in both cases share the same conceptual structure. The restriction on nominals in *by*-phrases in adjectival passives indicates that the initiator, though present in the conceptual structure of the head of the passive, is not instantiated and stays at the kind level. More specifically, we take this as evidence that due to the adjectival character of the head, this role is not syntactically projected, consistent with the initial intuition. In our overall discussion in section 6, we will come back to this issue and argue that more can be said.

3 Implicature Theory

We will now consider the disjoint reference effect in verbal passives in more detail. Is it the result of a syntactic violation, for instance, a violation of Condition B, or an illicit structural representation (Baker, Johnson, and Roberts 1989)? The answer is no, since the effect can be canceled as in (7a) (see also McIntyre 2013),[2] just like the implicature triggered by overt *someone* as in (7b).

(7) a. Mary is being dressed, namely, by Mary herself.
b. Someone is dressing Mary, namely, Mary herself.

Let us explore in more detail how this effect comes about, framing our discussion in Fox and Katzir's (2011) grammatical theory of implicatures. We start with implicatures involving overt *someone* or *somebody*, as in (8).

(8) Someone is washing Mary.

Here, the implicature is that *someone* is not *Mary*; somebody other than Mary herself is washing Mary. The question is, then, why isn't (9) a possible entailment of (8)?

(9) Mary is washing Mary.

[2] McIntyre (2013) accounts for disjoint reference effects in terms of an implicature as well, though it is different from the one proposed here.

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We argue that this is the result of an inference essentially resulting from Heim's (1982) Novelty Condition. The Novelty Condition on indefinites asserts that *someone* introduces a new referent, even though logically, *someone* simply asserts the existence of a human. It does not assert (or presuppose) that *someone* is disjoint in reference from some other DP. The Novelty Condition follows from the modern (grammatical) theory of implicatures, as in Fox and Katzir 2011 where the relation between (8) and (9) is analyzed in terms of the grammatically defined alternatives as substitutions of constituents within focused phrases. Possible substitutions are defined in terms of structural complexity. In this theory, there are three sources of substitutions.

(10) *Substitution sources for constituent X* (Fox and Katzir 2011)
   a. The lexicon (i.e., Horn scales, drawn from the lexicon; see Horn 1972, 1989)
   b. The subconstituents of X
   c. The set of salient constituents in the context

Sentences to be tested as potential implicatures are those that can be derived from the original sentence by successive substitutions from the possible substitution sources in (10).

Consider (8) again. There is a contextually salient constituent of the same complexity in the context, namely, *Mary.* We can then derive (9) by replacing *someone* in (8) with *Mary.*

(11) Mary is washing Mary.[3]

(11) is stronger than (8). That is, (11) asymmetrically entails (8): (11) entails (8), but (8) does not entail (11). Therefore, just as in the theory of scalar implicatures, we negate (11) to derive the implicature (12).

(12) It is not the case that Mary is washing Mary.

We have derived the appropriate implicature by substituting a contextually salient constituent for *someone.* Later we will discuss acquisition evidence that suggests this is indeed the correct approach to the implicature. But let us now return to (short) verbal passives, as in (13).

(13) Mary is being washed.

The implicature of (13) is that Mary is not being washed by Mary. That is, (13) displays obligatory disjoint reference between the implicit initiator argument and the subject *Mary.* We can derive the implicature as follows: there is no overt argument to be substituted for, but we can substitute the contextually salient constituent *Mary* for the phonetically empty initiator argument in (13), deriving (14). Fox and Katzir's (2011) grammatically defined set of alternatives is thus crucial here.

[3] We will have to assume that any ungrammaticality of (11) or other examples that derives from the binding theory (Condition C in this case) is irrelevant at the level where implicatures are computed. This assumption will have to be made whether we use the theory of Horn scales or the theory that substitutes a contextually salient constituent.

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(14) Mary is being washed by Mary.

Upon negation, (14) will yield (15) as an implicature of (13).

(15) It is not the case that Mary is being washed by Mary.

This is the correct implicature. It has come for free, given the grammatical theory of implicatures (with contextually salient constituents as a substitution possibility) and the standard theory that includes the existence of the initiator argument in short verbal passives.

We now turn to adjectival passives. As noted earlier, disjoint reference is not obligatory with adjectival passives; see (16). Instead, (16) is ambiguous between a disjoint and a reflexive reading.

(16) Mary looks (freshly) washed. (compatible with self-action)

This difference results from the fact that the initiator in adjectival passives is not projected as a syntactic argument at all, not even as a phonetically empty argument. Consequently, it is not visible to the operations that derive disjoint reference in Fox and Katzir's (2011) approach. Thus, the absence of disjoint reference effects in adjectival passives comes for free under Fox and Katzir's (2011) approach just as their presence in verbal passives does.

4 A Complication: Apparent Violation of Typical Disjoint Reference Effects

This neat picture is complicated by the fact that typical disjoint reference effects can be obscured both in short verbal passives and in adjectival passives, albeit in different ways. In adjectival passives, disjoint reference might *seem* required when using verbs with a pragmatic bias toward nonreflexivity. The difficulty in retrieving a particular reading could for instance be the result of a verb-argument combination that makes one reading much easier to retrieve than another. We noted with regard to (1) that the verb *secure* easily gives rise to reflexive readings in adjectival passives. However, if we combine *secure* with *the baby* as in (17b) or *the dog* as in (18), the reflexive reading becomes much harder to retrieve, given that it is unlikely that the baby secured herself with a seatbelt or the dog secured itself with a leash. Examples like these show that the difficulty is not so much one of grammatical unavailability as one of retrieving a grammatically available reading due to real-world knowledge. We would not want to claim that there is a difference in the grammatically available readings for (17a) on the one hand and (17b)/(18) on the other.

(17) In a context in which we're on a plane, and someone is checking whether we're all tightly secured with a seatbelt:
   a. Yup, I'm secured. (ambiguous, but preference for self-action)
   b. Yup, the baby is secured. (very difficult if not impossible to get a reflexive interpretation)

(18) In a context in which we brought our dog to a supermarket it's not allowed to enter, so it remains outside, tied to a pole:

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The dog is tightly secured. (very difficult if not impossible to get a reflexive interpretation)

Our claim is thus that adjectival passives make two interpretations grammatically available, but one might be difficult to retrieve if it conflicts with world knowledge, much as *Time flies like an arrow* has at least 11 available interpretations, easily detected by a computer but typically not by humans.

In verbal passives, the disjoint reference effect can disappear if the disjointness implicature is canceled overtly, like the classic instance of canceling the "some but not all" implicature for "some" in (19) vs. (20).

(19) In a context where students are supposed to choose some of the four assignments to read and B has read three of them:
A: Did you read some of the assignments?
B: Yes, I did.

(20) In a context where B has read all four of the four assignments:
A: Did you read some of the assignments?
B: Yes, I did. In fact, I read all of them.

In (20), B answers "yes" to the question about whether she has read some of the assignments, and chooses to make it clear that the implicature is violated, that she has indeed read all of them. The disjointness implicature behaves the same way, as implicatures are expected to behave, and it can thus be canceled as shown in (21).

(21) Mary is being dressed, namely, by Mary herself.

Nevertheless, we distinguish between these cases empirically. Context can never make a verbal passive acceptable in a context that pushes a reflexive interpretation. The only way to cancel the implicature is to state that it does not hold, as an afterthought.

However, an even clearer picture emerges when we consider language acquisition. As noted in section 1, given that young children only have adjectival passives, studying passives in young children offers the perfect way to avoid the effects from interaction with the verbal passive strategy that may occur with adults. In fact, the possibility of using natural experiments based on child grammar to provide evidence for linguistic theory is well-known (see, e.g., Wexler 1992, 1994). Child grammar is in fact most important for linguistic theory when it differs from adult grammar (Rizzi 1993/1994).

After presenting some background on the acquisition of passives, we will show in two experiments that children's passives do not exhibit obligatory disjoint reference at all, in contrast to adults' verbal passives. For children aged 3–4, short passives like *The woman is being dressed* appear to be ambiguous between self-action and a disjoint reference reading. These experiments establish two things: (a) young children's passives are indeed adjectival, and not some verbal passive in disguise, (b) the initiator in adjectival passives has a different status than the initiator in verbal passives.

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5 Children's Passives

5.1 Some Background Issues

There is considerable evidence that unambiguously verbal passives appear relatively late in acquisition, only around or after age 4 (e.g., Bever 1970, de Villiers and de Villiers 1985, Borer and Wexler 1987). Verbal passives (e.g., *Did you see how that airport was made?*) emerge in children's spontaneous speech well after their adjectival counterparts; for example, the children studied by Israel, Johnson, and Brooks (2000) first produced typically verbal passives between 2;9 and 4;11. In addition, experiments testing children's comprehension of role assignment in long (with a *by*-phrase) and short (without a *by*-phrase) passives formed with actional verbs (e.g., *kick*, *kiss*, *push*) show that children start scoring around 90% correct on short passives that for an adult would be verbal only from the age of 5 (Hirsch and Wexler 2006). The verbs in these studies were transitive activity verbs, which Kratzer (2000) shows to always have a grammatical resultant-state adjectival passive (in English and German, the languages she studied), although without the appropriate context this meaning may be hard to access. Performance on role assignment in passives from nonactional verbs (e.g., *love*, *remember*) is even further delayed (e.g., Maratsos et al. 1985, Sudhalter and Braine 1985, Gordon and Chafetz 1990, Hirsch and Wexler 2006).[4]

Such data, in combination with data showing delays with other structures that involve promoting an argument, are strong evidence that some aspect of (passive) syntax becomes available late in acquisition (Borer and Wexler 1987, Wexler 2004, Orfitelli 2012, Snyder and Hyams 2015). Different proposals amalgamate disparate-looking phenomena in different ways, accounting for delays in acquisition of various syntactic structures in addition to verbal passives (e.g., subject-to-subject raising). They differ, however, in the source of the difficulty with passive syntax, varying from difficulties with A-movement, to replacing a defective little vP with a fully phasal one, to intervention effects resulting from the (hypothesized syntactic) presence of an implicit initiator argument. They share the conjecture that young children do not have the syntactic means to represent verbal passives—the child needs to mature in order for the syntactic means to become available.

The question is what happens before (verbal) passive syntax is available. In our view, it has been convincingly established that, before this age, young children analyze *all* passive participles as adjectival, even prima facie unambiguously verbal ones—so long as the passive and adjectival forms have similar participial structure (e.g., Borer and Wexler 1987, Babyonyshev and Brun 2003, Wexler 2004, Gavarró and Parramon 2017, Oliva and Wexler 2018). As mentioned before, there is direct evidence for this claim from production data, which show children's earliest productions are stative, adjectival passives (Horgan 1978, Israel, Johnson, and Brooks 2000). Babyonyshev and Brun (2003) provide further evidence from spontaneous production. In Russian, perfective

[4] Subject experiencer verbs do *not* have grammatical resultant-state adjectival passives. Thus, the use of the adjectival passive as a young child's means for understanding role assignment in verbal passives cannot apply to subject experiencer verbs as Borer and Wexler (1987) argue, resulting in the very late development of good performance on subject experiencer passives in experiments.

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and imperfective aspect are marked by different verb forms. Children's passives overwhelmingly display the perfective form (91%), even though perfective passives make up a minority of the input to the child. Perfective passives are homophonous with adjectival passives in Russian, which leads the authors to conclude that children's seemingly perfective verbal passives are in fact adjectival.

Gavarró and Parramon (2017) (for Catalan) as well as Oliva and Wexler (2018) (replicating the result for Spanish) offer further experimental evidence for the adjectival nature of children's passives. Their experiments investigated children's interpretation of passives as stative or eventive in Catalan and Spanish. In both languages, there is a difference in auxiliary selection between adjectival and verbal passives. Verbal passives are formed with the auxiliary *ser* 'to be' and adjectival passives are formed with *estar* 'to be'.[5]

In the experiments, children were presented with a (verbal or adjectival) passive and asked to choose which one of two pictures best matched the passive sentence. The choice was between a picture of an ongoing action and a picture of the resultant state (Homer in the bathtub being washed by Marge vs. a clean Homer next to the bathtub wrapped in a towel with Marge standing next to him). The results showed that children up till the age of 6 selected the picture of the resultant state in a majority of the cases for both *estar* (adjectival) passives and—for an adult—unambiguously verbal passives formed with *ser*. That is, even such unambiguously verbal passives often received a stative interpretation.

Oliva and Wexler (2018) show that the model that posits that children use the adjectival interpretation because the syntax for the verbal interpretation is not available to them predicts that children's performance on the interpretation of an ostensibly verbal passive (stative or eventive) will correlate negatively with their performance on the standard task in acquisition studies of selecting the correct thematic roles (who did what to whom?) for the verbal passive. Strikingly, this negative correlation is shown to be true.[6]

The adjectival nature of children's passives gives rise to an important prediction regarding disjoint reference effects. In particular, if all children's early passives are adjectival, then their passives should permit a reflexive reading. That is, even if we present young children with a passive that is unambiguously verbal for an adult, they will analyze it as an adjectival passive. The initiator participant in adjectival passives is unable to introduce a discourse referent. Hence, there is nothing to trigger a disjointness implicature, and an obligatory disjoint reference requirement should therefore not exist for young children's passives. This is the prediction we tested in two experiments, one in Dutch and one in English.[7]

[5] Some adjectival passives (the adjectival decausatives in Meltzer-Asscher's (2011) terms) can be combined with both *ser* and *estar* (Gavarró and Parramon 2017).

[6] This is in fact a quite remarkable result since good performance on one piece of cognitive development almost always either correlates positively with performance on another property or does not correlate at all. Almost never is there a negative correlation, and this is especially true for properties of grammatical development. Yet this nonintuitive result is predicted by the model and confirmed.

[7] The ethical aspects of the experiments reported here have been approved by the Macquarie University Human Research Ethics Committee (#5201400961).

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5.2 Experiment 1: Disjoint Reference in Dutch

5.2.1 Method Thirty-eight monolingual Dutch-acquiring children (eighteen girls) participated in this study, ranging in age from 3;0 to 5;1: nine 3-year-olds (3;0–3;11, mean: 3;5), fourteen 4-year-olds (4;4–4;10, mean: 4;7), and fifteen 5-year-olds (5;1–5;11, mean: 5;6). Four- and 5-year-old children were recruited from and tested at the Gummarus School in Steenbergen (Brabant, The Netherlands). The 3-year-olds were recruited from the daycare O-die Kids in Rijen (Brabant, The Netherlands). A control group consisting of eight adults participated as well.

Children's interpretation of short passives was assessed using a two-choice picture selection task. The pictures in the experiment involved *The Simpsons* characters who participated in either a reflexive or a nonreflexive event. Eight verbs were used to create eight reflexive-nonreflexive pairs of events (e.g., Bart washing Homer and Homer washing himself with Bart standing next to the bathtub). The child's task was to point to the picture that best matched the experimenter's description.

The 8 picture pairs were combined with two sentences: a reflexive sentence (*Het meisje schildert zichzelf* 'The girl is painting herself') and a short verbal passive (*Het meisje wordt geschilderd* 'The girl is being painted'), for a total of 16 experimental items (see online appendix A for the full list of experimental items; https://doi.org/10.1162/ling_a_00520). In Dutch, passive participles that combine with the auxiliary *worden* 'become' are necessarily verbal (even though Dutch *worden* does take (stative) adjectives as its complement). Each child was presented with each picture pair in both conditions and thus saw each picture pair twice. Pictures were presented on either an iPad or a laptop (MacBook Air). In addition, the experiment included 4 filler items. Each child therefore saw a total of 20 picture pairs in combination with a sentence. Two orders of pseudorandomized items were created: order 1 and its reverse, order 2. Eighteen children were tested on order 1 and 20 children on order 2. The position of the target picture was pseudorandomized. Each experimental session started with a warm-up phase in which the child was familiarized with all the pictures, the characters, and the verbs used. The entire experimental session lasted about 10 minutes per child.

What specific predictions can be made regarding children's behavior in this task? Which picture will children choose when they are presented with a reflexive action (Homer washing himself) and a nonreflexive action (Bart washing Homer) and are asked to point to the picture in which *Homer wordt gewassen* 'Homer is being washed'? If children's semantic representation of the passive is a verbal passive, they will have to choose the nonreflexive action, as this is the only interpretation compatible with the verbal passive (and this is the picture the adult controls chose in 100% of the cases). However, if children's representation is instead an adjectival passive, the sentence is ambiguous between a reflexive and a nonreflexive interpretation—the (adjectival) passive does not *enforce* disjointness, yet is compatible with it. Therefore, both pictures match the sentence. The question is how children will respond in a situation in which both pictures match their semantic representation of the sentence. A picture selection task measures participants' preference for one picture over the other. Since in this case the semantic representation does not lead to a preference for one picture over the other, one could expect children to choose randomly between the two pictures, leading to a 50% score.

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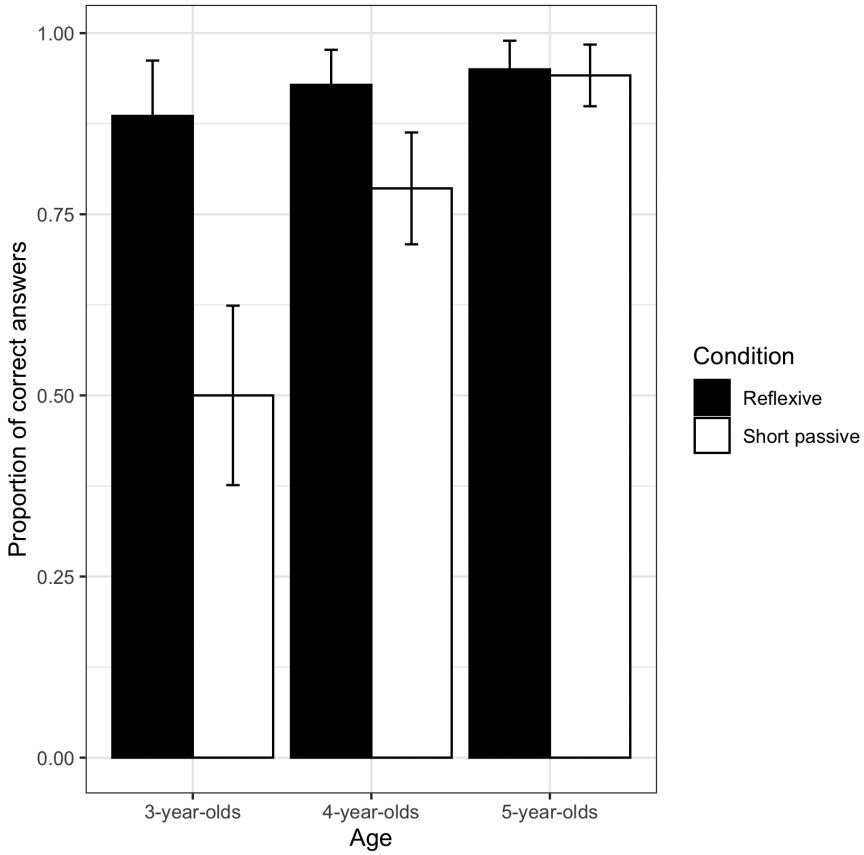

Figure 1
Proportion of correct answers on short passive and reflexive conditions per age group. Correct for passives is the picture displaying disjoint reference, and for reflexives it is the picture displaying a reflexive event. Error bars indicate 95% confidence intervals. (Figure produced using the R package ggplot2; Wickham 2009.)

Alternatively, the child participants might adopt some strategy for choosing one picture over the other, leading to a 100% score in either direction, depending on what the strategy is. This expectation is reinforced by the way in which children have been shown to deal with syntactic ambiguities (e.g., Trueswell et al. 1999, Syrett and Lidz 2005, Orfitelli and Hyams 2008). In particular, in the face of syntactic ambiguity, children (and adults) typically display a preference for one syntactic parse over the other, leading to consistency in their response behavior.

5.2.2 Results Figure 1 displays the results per age group on the two experimental conditions. As expected, all age groups performed at ceiling (89% or higher) on the reflexive condition. Crucially, however, not all age groups performed at ceiling on the passive condition.

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We analyzed the data using logistic mixed-effects models (Baayen, Davidson, and Bates 2008, Quené and van den Bergh 2008), using R (R Core Team 2020) with lme4 (Bates et al. 2015). The binomial dependent variable was the child's score (i.e., 1 or 0 depending on whether the child chose the correct or incorrect picture in a pair). The fixed effects included in the model were age, condition (reflexive vs. passive), and their interaction. We included random intercepts for participants and items.[8] The model that included the interaction term was a better-fitting model than the one with only main effects ($\chi^2(2) = 7.99$, $p < .05$ (see online appendix B for the full model output)). Planned comparisons showed that there was a significant effect of condition for 3- and 4-year-olds, such that, as a group, they performed worse on the passive condition than on the reflexive condition (3-year-olds: $b = -2.20$ (0.48), $p < .0001$; 4-year-olds: $b = -1.46$ (0.53), $p < .01$). No such effect was attested in 5-year-olds ($b = -0.34$ (0.85), $p = .69$).

Potentially more interesting than the group patterns, however, are the scores of the individual children. As discussed earlier, the prediction is that, if the initiator argument cannot introduce a discourse referent, there is nothing to trigger a disjointness implicature, and so both a reflexive and a disjoint interpretation are available. We may therefore expect to find that the group score is composed of children who individually score at chance in a task that forces a choice between two interpretations. We calculated how children performed individually, where at chance means 2–6 out of 8 correct, and above chance means 7–8 out of 8 correct. In the passive condition, of the nine 3-year-olds, six performed at chance, and only one performed above chance (age 3_2). The two remaining children scored below chance. Furthermore, of the fourteen 4-year-olds, six scored at chance and the remaining eight above chance. Two 5-year-olds scored at chance, and the remaining thirteen above.

5.2.3 Discussion of Experiment 1 In short, most 3-year-olds, some of the 4-year-olds, and two 5-year-olds scored at chance on the picture selection task.[9] We interpret this to mean that, for children until around age 4, the passive is ambiguous between a disjoint reference and a coreference reading. We will address children's at-chance response behavior in more detail in section 5.4.

There is one further question, though. At what point do we expect children to be able to derive the disjointness implicature? One might think that the answer should be given by the empirical answer concerning scalar implicatures, a well-tested phenomenon in children. Many experiments show good behavior on scalar implicatures only at around age 5. However, this is not in fact correct. A more detailed look at the experimental literature shows that the implicatures that are delayed involve memorized scales, like ⟨some, all⟩. Singh et al. (2016) have argued, on the basis of experimental evidence, that of the three types of substitution sources in Fox and Katzir's (2011) theory of implicatures, the one that is particularly delayed is the one involving

[8] We initially also included a parameter for by-subject random slopes for condition, but we removed this parameter because the model that included it (which did not converge) was not significantly better than the one without ($\chi^2(2) = 4.38$, $p = .11$) (see Baayen, Davidson, and Bates 2008).

[9] Tom Roeper informs us that he has unpublished results similar to ours.

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memorized Horn scales, like ⟨some, all⟩ or ⟨or, and⟩. Children have been shown to have difficulties with implicatures following from various memorized scales (e.g., Chierchia et al. 2001, Gualmini et al. 2001, Noveck 2001, Papafragou and Musolino 2003). The difficulty with Horn scales is that they must be memorized, and possibly children cannot recall them easily. Moreover, the scales, to some degree, might have to be learned, which takes time.

However, the implicature that is relevant for the one we are testing involves not a memorized scale but a contextually salient constituent. The experimental literature shows that when a salient constituent or subconstituent is involved, children show good performance on the disjointness implicature from an earlier age. For instance, Chen et al. (2020) report that children performed at ceiling from the age of 3 on sentences such as (22).

(22) Somebody has a car and somebody has a helicopter.

Sentence (22) involves the same implicature to derive that the two instances of *somebody* cannot refer to the same individual. Three-year-olds had no difficulty rejecting interpretations in which the two instances of *somebody* referred to the same individual or accepting interpretations in which the two instances of *somebody* referred to distinct individuals. In addition, Barner, Brooks, and Bale (2011) found that 4-year-olds performed significantly better on implicatures (and not significantly differently from the way they performed on control sentences) when the alternatives were contextually available than when the alternatives were based on a memorized scale (not present in the context). Given this evidence, Singh et al. (2016) suggest that children can use only two of the three ways to generate the set of alternatives necessary to compute implicatures, namely, the ways in (23a), but not those in (23b).

(23) *Generating alternatives in the child*
   a. Replace nodes with their sub-constituents or other salient constituents
   b. ~~Replace terminals with other lexical items~~
   (Singh et al. 2016:330, (16))

Additional support for Fox and Katzir's theory of alternatives together with the assumption in (23) comes from experimental evidence (including Singh et al.'s experiment, and see their article for a summary of earlier studies) that young children may misunderstand disjunction as conjunction, which follows by a detailed theoretical derivation from Fox and Katzir's theory of implicatures.

Following Singh et al. (2016), Barner, Brooks, and Bale (2011), and Chen et al. (2020), and adopting the premise that implicit existentially quantified arguments behave the same as overt arguments like *someone* in terms of the implicatures they trigger, children would be predicted to be able to derive the disjointness implicature in passives at a younger age than 5, if they construe these as verbal (contrary to previous results in acquisition), but not if they construe them as adjectival, since in the latter case there is no initiator argument slot. We tested this hypothesis more directly in our second experiment by adding a condition that includes an overt existential quantifier.

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5.3 Experiment 2: Disjoint Reference in English

This experiment set out to test the same prediction as Experiment 1, namely, that children will allow coreference in cases in which it is disallowed for adults. We used progressive passives in English (e.g., *Mary is being washed*), which are unambiguously verbal for adults. In this experiment, we added one condition, namely, a condition in which there is an overt existentially quantified subject (e.g., *Someone is washing the man*). This contains the same disjointness implicature as in verbal passives.

5.3.1 Method Forty-four monolingual English-acquiring children (twenty girls) participated in the experiment (3;2–5;10): fourteen 3-year-olds (3;2–3;11, mean: 3;7), twenty-one 4-year-olds (4;0–4;11, mean: 4;7), and nine 5-year-olds (5;0–5;10, mean: 5;5). Children were tested either in the Language Acquisition Lab at Macquarie University or at their daycare, Gumnut and Banksia Cottages at the university. In addition, a control group of eleven adults participated in the experiment.

This experiment used the same procedure as Experiment 1 with the addition of one condition: a sentence with an overt existential quantifier, such as *Someone is washing the man.* Each child thus saw each picture pair three times, with three different sentences (reflexive, short passive, overt existential quantifier). As no filler items were included, the total number of experimental items was 24.

5.3.2 Results Adults performed as expected on the experimental items; that is, they chose the reflexive action in the reflexive condition and the nonreflexive action in both the short passive and overt existential quantifier conditions. As figure 2 shows, English-acquiring children performed at ceiling (90% or higher) on the reflexive and the overt existential quantifier conditions. Not all of the children, however, performed at ceiling on the short passive condition.

Data were analyzed in the same way as in Experiment 1. Random intercepts were included for participants and items, and age, condition, and their interaction as fixed effects.[10] The model that included the interaction term was not significantly better than the model with only main effects ($\chi^2(4) = 1.68$, $p = .79$). Therefore, the results of the model with only main effects are reported here (see online appendix B for the full model outputs). The model showed that there were significant effects of both age and condition such that, overall, 5-year-olds performed significantly better than 3-year-olds ($b = -1.90$ (0.66), $p < .005$), and better than 4-year-olds ($b = -1.09$ (0.63), $p = .09$ (one-tailed)). Furthermore, the children scored significantly better on the reflexive and overt existential quantifier conditions than on the short passive condition, and significantly better on the reflexive condition than on the overt existential quantifier condition (see table 1 for the corresponding estimates and *p*-values).

Again, it is interesting to look at the pattern at the individual level. Children mostly scored either at chance or above chance on the short passive condition: of the 3-year-olds, 1 scored below chance, 10 at chance, and 3 above chance. By contrast, only 1 of the 3-year-olds scored

[10] We initially also included a parameter for by-subject random slopes, but we removed this parameter because the model that included it was not significantly better than the one without ($\chi^2(5) = 7.14$, $p = .21$).

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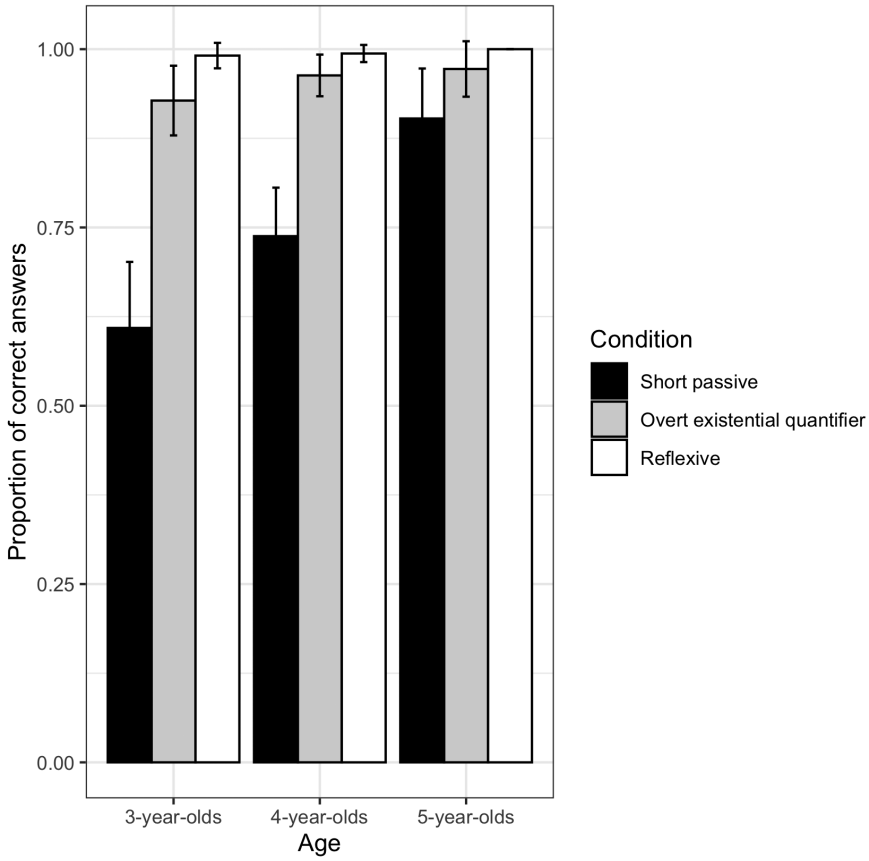

Figure 2
Proportion of correct answers on short passive, reflexive, and overt existential quantifier conditions per age group. Correct for passives and overt existential quantifiers is the picture displaying disjoint reference, and for reflexives it is the picture displaying coreference. Error bars indicate 95% confidence intervals. (Figure produced using the R package ggplot2; Wickham 2009.)

Table 1
Estimates of the differences between conditions, Experiment 2

	Reflexive vs. passive	Existential vs. passive	Reflexive vs. existential
Estimate	−4.59	−2.398	−2.19
p-value	<.0001	<.0001	<.005

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at chance on the overt existential quantifier condition. Furthermore, of the 4-year-olds, 6 scored at chance on the short passive condition (and 13 above chance) vs. 1 who scored at chance on the overt existential quantifier condition. Finally, of the 5-year-olds, 1 (5;0) scored at chance on the short passive condition and the other 8 all scored above chance.

5.4 General Discussion of Experiments 1 and 2

The results of the two disjoint reference experiments are highly comparable. For children up to around age 4, passives do not require disjoint reference. They are compatible with both a disjoint and a reflexive reading. This held not only for verbs like *wash*, *shave*, *dress*, and *comb*, but also for verbs like *touch*, *paint*, *point at*, and *spray.*

A crucial result in Experiment 2 was that the absence of a disjointness requirement in children's passives cannot be attributed to a difficulty with the disjointness inference, as children performed significantly better on the overt existential quantifier condition, which required the same inference. These findings are in line with those of Chen et al. (2020) and set disjointness inferences apart from scalar inferences (which require the child to consult the lexicon to determine the set of alternatives), which children younger than 5 or 6 years old are not sensitive to (e.g., Chierchia et al. 2001, Gualmini et al. 2001, Noveck 2001, Barner, Brooks, and Bale 2011, Singh et al. 2016).[11] As Barner, Brooks, and Bale (2011) and Singh et al. (2016) predict, children younger than 5 do not have any trouble computing inferences based on contextually salient alternatives.

The internal inconsistency (at-chance performance) in children's responses in our experiment is different from results in experiments testing syntactic ambiguities where children typically show a preference for one reading over the other. We suggest that the reason for this difference lies in the different nature of the ambiguity children were presented with in our experiment. There are no two syntactic parses or semantic representations to choose from. Instead, there is only one available parse, which leads to a single semantic representation that does not provide sufficient information to make a choice between the two pictures presented. This is different from a situation in which two distinct but individually unambiguous representations are compatible with the input. As an illustration, consider sentence (24).

[11] One question that might arise is whether the results we found could be attributable to a difficulty with Condition B of the binding theory. That is, children have been shown to allow coreference in cases where adults do not, which is sometimes accounted for by children's underdeveloped pragmatic or processing resources (Wexler and Chien 1985, Chien and Wexler 1990, Grodzinsky and Reinhart 1993, Thornton and Wexler 1999). The idea here would be that the implicit agent argument is a free variable and induces a Condition B violation (illicit coreference). There are (at least) two reasons why such an account seems unlikely. One is that the implicit argument in verbal passives behaves like an existentially bound variable instead of a free variable and, as such, should not allow coreference at all (it behaves like an R-expression in terms of binding; Bhatt and Pancheva 2006). For children to allow such a representation, it would then have to be the case that, for them, as opposed to adults, passivization does not involve existential quantification. Furthermore, the developmental pattern observed in our experiment differs from the developmental pattern observed in Condition B environments. Children allow illicit coreference up till the age of 6 (Chien and Wexler 1990), whereas in our experiment most 4- and 5-year-olds did not display any difficulties.

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(24) Homer is freshly washed.[12]

Imagine that you are asked to choose between two pictures for the sentence: one in which Homer is washing himself, and one in which someone else is washing Homer. The sentence is underinformative, and so it is unclear what to base your decision on. This is the situation in which the children taking part in our experiment found themselves, and this led them to choose randomly between the two pictures.[13]

Our results, in combination with results showing the stative nature of children's passives, further establish the adjectival nature of children's early passives—a verbal passive representation would give rise to a disjoint reading under any account. Thus, the child data promote the hypothesis that the status of the initiator argument in adjectival passives differs from that of the initiator argument in verbal ones. If the initiator argument had the same status in both types of structures, then adjectival passives would trigger disjointness inferences just like verbal ones, leaving the acquisition results unaccounted for.

Another argument that children's nonadult behavior is indeed due to the different nature of their passive representation is that our results on disjointness are strikingly similar to results on children's performance in comprehension experiments on role assignment in short passives based on actional verbs, where only 5-year-olds reliably score close to or over 90% in picture selection tasks (although exact numbers vary by method and experiment). What is perhaps different is that 3- and 4-year-olds perform somewhat worse in our experiments (although we did not test this directly). By age 5, children have acquired the syntactic means to represent verbal passives and therefore have no trouble with either role assignment or computing the disjointness implicature that follows. Younger children—that is, most 3-year-olds and some 4-year-olds—do not have the necessary syntactic means, however. Hence, they resort to an adjectival passive strategy. That strategy may allow them, to some extent, to get role assignment right (leading to above-chance performance), although performance may be unstable as some of the actional verbs (e.g., *kick*, *kiss*, *push*) do not make good adjectival passives out of the blue. However, the adjectival strategy does not help them figure out the correct answer in our disjointness experiments. In view of this, we suggest that children's performance in our disjointness experiments might well more accurately reflect the acquisition of passive syntax than their performance in experiments testing role assignment, and so this method could be used in the future to resolve the debate regarding children's command of passive syntax crosslinguistically (cf. Demuth 1989, Crawford 2005, 2012, Demuth, Moloi, and Machobane 2010).

[12] This sentence was not part of the input to children; *freshly* was added here to push an adjectival reading of the sentence. Note that *Homer is washed* is ambiguous between adjectival and verbal passive readings.

[13] Note that, given the nature of the task, below-chance performance does not necessarily mean that those children have a different semantic representation than children performing at chance. It may be that children who scored below chance did make use of some alternative, extragrammatical strategy to make a choice. Nor can we be absolutely sure that children who scored above chance did so for the right reason.

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One question that arises is why even 6-year-olds provide stative interpretations for verbal passives in Gavarró and Parramon's (2017) experiment. In that experiment, children acquiring Catalan scored over 80% on short actional passives from age 5, which is in line with the English data. However, children's comprehension of long verbal passives in Catalan seems to be delayed as compared to English, with 5-year-olds still scoring (well) below 50%. What causes later development of (some) passives in Catalan as compared to English (and Dutch) is a question we leave for future research.

6 Overall Discussion: A Challenge and a Possible Solution

We have shown that adjectival passives and verbal passives are more similar than would be expected in accounts that refer to a simple categorical distinction, yet more different than would be expected in accounts that take the two passives to project the same verbal functional structure (e.g., Alexiadou, Gehrke, and Schäfer 2014, Bruening 2014).

The syntactic limitations in child grammar on verbal passive syntax (e.g., Borer and Wexler 1987, Wexler 2004, Hyams and Snyder 2005, Orfitelli 2012, Snyder and Hyams 2015) account for the developmental precedence of adjectival passives, while the presence of the initiator at the kind level accounts for the restricted availability of *by*-phrases and instrument phrases.

Given that adjectival and verbal passives share the same conceptual structure, the challenge is to reconcile the structural simplicity of adjectival passives with the visibility—although limited—of the initiator argument.

We suggest that the simplest account meeting this challenge is based on the approach to the lexicon-syntax interface in Reinhart 2016—the Theta System—modulo a small modification.

Both verbal and adjectival passives result from the same operation: namely, from *closing* the concept's initiator role, where a closed role is mapped to an existentially closed variable (cf. Chierchia 2004, Reinhart and Siloni 2005, Horvath and Siloni 2008, Meltzer-Asscher 2011, Gehrke 2015, Reinhart 2016). The difference between verbal and adjectival passives results from the way in which closure interacts with the mapping principles as defined in Reinhart's (2002) system. The mapping principles determine the order of merging of arguments (or which syntactic position is associated with which thematic role) by marking a concept for syntactic merging if there is more than one role to assign. Reinhart stipulates that any operation, including closure (*saturation* in her terminology), applies *after* marking. We propose a minimal change to the effect that closure is free to apply either *before* or *after* marking. Depending on the timing of closure of the thematic role, the outcome of the operation is different.

Consider a concept, C $\langle \theta_1, \theta_2 \rangle$. In order to form a verbal passive, the concept is first marked for syntactic merging. Next, the initiator role θ_1 is closed. Given that it was marked prior to closure, Reinhart's (2002) merging instructions will see a 2-place relation and merge the concept as a verb. This requires the projection of verbal functional structure (transitive Voice), which, among other things, enables the instantiation (spatiotemporal location) of the event argument. Yet since the initiator role θ_1 was closed, it will not be associated with a DP; instead, it will be assigned to a variable that is existentially closed (Chierchia 2004, Horvath and Siloni 2008). As is standard, the theme argument will undergo A-movement to the canonical subject position.

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The second option is that the initiator role is closed *before* marking. The result is that at the stage where marking should apply, only one role is visible, the theme role (which means that no marking is necessary). Therefore, instead of merging the concept as a 2-place predicate, the merging instructions will merge it as a 1-place predicate, a property—that is, as an adjective. Only a theme argument will project, and if only one argument projects it will be merged externally in accordance with the merging instructions (the desired result; see, e.g., Levin and Rappaport 1986).

Crucially, if the initiator role is closed, and the concept is merged as an adjective (a 1-place property), no verbal functional structure will be projected that could instantiate the event argument of the predicate. The event argument will be existentially closed, but not instantiated. As Gehrke (2013, 2015) shows, the event is semantically still accessible to some extent, though it is not spatiotemporally located.

It is important to point out that under this view, neither verbs nor adjectives are taken to be marked as such in the conceptual system (see also Kratzer 2000, Meltzer-Asscher 2011). Instead, they are lexical entries (roots) associated with a number of thematic roles (encoded using two binary features). Operations can apply to those thematic roles, which means that those roots can be merged as (for instance) a 2-place relation or a 1-place property, with consequences for the functional structure that is projected syntactically. The similarity in morphology between adjectival and verbal passives results from making use of the same operation: closing the initiator role.

Our account distinguishes between adjectival and verbal passives in terms of movement of the theme argument to Spec,TP. Only verbal passives involve such movement. In adjectival passives, the theme is merged externally. This then supports the Universal Phase Requirement (UPR; Wexler 2004), which takes children's difficulty to reside in some aspect (in particular, the hypothesis that children take all instances of v to be fully phasal) of moving the internal argument to subject position, unrelated to the presence of an implicit initiator argument.[14] The derivation of adjectival passives is simpler than the derivation of verbal passives in terms of movement. In this, our account differs from proposals in which adjectival passives, like verbal passives, involve

[14] The UPR predicts unaccusatives to be acquired as late as verbal passives, as they also involve movement of the internal argument to subject position out of a defective phase, yet there is experimental controversy regarding when children have full command of unaccusative structures. Whereas there is evidence that unaccusatives are delayed structures (e.g., Babyonyshev et al. 2001), there are also experiments that seem to show that young children know the derivation of such structures (e.g., Friedmann 2007). There is processing evidence to show that children distinguish between unaccusatives and unergatives in online processing, yet children do not show adult-like behavior, which could indicate difficulties with the unaccusative structure (Koring et al. 2018). In particular, Borer and Wexler (1992) argue that children know the mapping between structural position and thematic role (Uniformity of Theta Assignment Hypothesis), which predicts that they should show differences in processing between unaccusatives and unergatives, as in Koring et al.'s results. If it ever becomes experimentally clear that children's acquisition of unaccusative structures is not delayed, however, under a slight modification (possibly a complication) of the UPR a developmental difference between unaccusatives and verbal passives is imaginable: perhaps structures that include transitive Voice (no overt specifier) count as phases for the child, but not (unaccusative) structures with unaccusative Voice. That is, structures that are the result of argument reduction (unaccusatives) might behave differently from structures that result from argument closure (verbal passives) in terms of the UPR. One would have to propose how to predict the delay of subject-to-subject raising and *tough*-movement given such a proposal. Most importantly, the delay of unaccusative syntax is a crucial topic for further empirical acquisition studies using a wider range of unaccusativity diagnostics to help settle the issue.

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movement of the internal argument (operator movement, to be more specific) (Bruening 2014) and/or may include as much functional structure as verbal passives (e.g., Alexiadou, Gehrke, and Schäfer 2014). Such accounts would predict adjectival and verbal passives to be equally delayed given the UPR. We therefore believe that our account offers a better fit to the observations from, and theory on, child grammar.

7 Conclusion

In this article, we offered an account of the differences between verbal and adjectival passives. A crucial aspect of the account is that for adjectival passives, both the event and its related initiator role remain in the kind domain in interpretation (Gehrke 2013, 2015). In adjectival passives, the initiator role is not syntactically projected, hence not syntactically an argument. The result is that the initiator cannot introduce a novel discourse referent and, according to the implicature theory of disjointness that we adopt, does not trigger disjointness implicatures. This is in contrast to the initiator argument in verbal passives, which is syntactically projected, does introduce a discourse referent, and does trigger a disjointness implicature (see Collins 2005 for additional arguments for the syntactic realization of the initiator argument in short verbal passives). It follows, then, that there is a difference between adjectival and verbal passives in terms of disjoint reference effects, contra claims by Bruening (2014) and Alexiadou, Gehrke, and Schäfer (2014). We presented two acquisition experiments providing evidence that young children's necessarily adjectival passives do not require disjointness, whereas adults' verbal passives do.

Our contribution has a wide variety of implications. On the one hand, we provide another, novel argument for the adjectival status of verbal passives in young children (before age 4–5). Namely, if children must analyze verbal passives as adjectival due to a syntactic limitation,[15] then they do not show the disjointness effect. This is because, as we argued, there is no referential initiator constituent in adjectival passives; thus, no implicature is derived. In addition, our results offer additional support for a *grammatical* theory of implicatures (Chierchia 2006, Fox and Katzir 2011, Chierchia, Fox, and Spector 2012), as compared to implicatures as a general pragmatic effect (Grice 1989). If we took the traditional Gricean (1989) view of implicatures, there would be no reason that adjectival passives (whether for children or adults) cannot have an implicature that some kind of initiator exists. The usual Gricean principles would imply that they can; verbal and adjectival passives without an explicit initiator phrase (usually a *by*-phrase in English) could be kept from coreferring with another argument by a Gricean principle. But in Gricean analysis there is no reason why a verbal passive without an initiator phrase *must* show the disjointness effect. It is the presence of the (phonetically empty) initiator for verbal passives that provides the (phonetically empty) argument (for verbal passives, since this argument is then referential) for the implicature to hold. Gricean analysis does not require such an argument; therefore, adjectival

[15] For instance, aspects of A-movement that need to develop (Borer and Wexler 1987), as a result of aspects of phasal computation that need to mature, as in Wexler 2004; a restriction against smuggling, as in Snyder and Hyams 2015; or a restriction against movement across another argument, as in Orfitelli 2012.

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and verbal passives would behave alike. Together with our other assumptions, the grammatical account covers the adult and child facts perfectly.

Moreover, while demonstrating that the disjointness effect in adults is due to an implicature that children cannot access because their adjectival analysis of verbal passives implies that they do not have an argument slot that is necessary for the disjointness implicature to hold, we also experimentally showed that the same children *can* successfully apply implicature theory when they *do* have the argument slot (in an active sentence). This supports the classic claim (Borer and Wexler 1987 and subsequent work) that the reason for the late development of verbal passives is syntactic, not pragmatic. Furthermore, the syntactic reason for late development must lie in the derivation of passive structures rather than in the development of the *by*-phrase, since disjointness is an effect that occurs in passives without a *by*-phrase. Note that our results also support the notion that for an argument slot to enter into an implicature analysis, the slot must be filled by a *referential* constituent. This is usually taken for granted, we believe, but here we have made it explicit.

We also suggested a simple account for the difference between verbal and adjectival passives based on Reinhart's (2002, 2016) Theta System, involving a timing difference in the closure of the initiator argument. This avoids the need to stipulate the existence of functional heads like $\text{Passive}_{\text{ADJ}}$ and $\text{Passive}_{\text{VERBAL}}$ (which come with their own selectional requirements) to perform functions related to the passive specifically, thereby reducing the inventory of Universal Grammar. It also avoids vocabulary items requiring specific licensing environments, which the language-acquiring child presumably needs to learn on an item-by-item basis.

Finally, the case presented in this article demonstrates yet again that results from language acquisition and the theory of child grammar can (and should) inform linguistic theory. Since child grammar is more restricted than adult grammar, a comparison between child and adult language may reveal contrasts that are masked when one looks at adult language only. In our case, a contrast between adult and child language unequivocally exposed a contrast in terms of the status of the initiator argument in adjectival vs. verbal passives that is much more difficult to discern in adult language.

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