

## Lack of access to alternatives can feed distributive inferences: The view from q-spreading in children<sup>1</sup>

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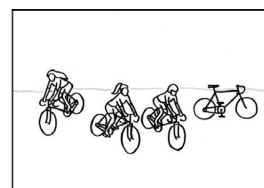
**Abstract.** This paper engages with a recent analysis by Denić and Chemla (2020) who argue that what appears to be quantifier spreading in child language is in fact the result of children deriving the distributive inference. While such an analysis straightforwardly accounts for the child data involving q-spreading, they claim that a certain aspect of the adult data is left unexplained. The authors suggest a number of possible reasons for this divergence and in this paper I lay out yet another possible solution to this problem. This solution is in line with recent literature arguing that children have difficulties deriving inferences which involve alternatives obtained by lexical replacement.

**Keywords:** q-spreading, acquisition, distributive readings, embedded implicatures.

### 1. Introduction

There is a longstanding observation (Inhelder and Piaget 1964) that children and adults differ in their interpretation of universally quantified sentences. Given a sentence such as (1), involving a universal quantifier in subject position and an existential one in object position, children's judgements point to a symmetrical interpretation, namely one where both (1a) and (1b) need to be satisfied in order for the sentence to be judged as true. Specifically, in the scenario depicted by the picture below, children tend to judge the sentence as false, given that the condition in (1b) is not satisfied. Adults, on the other hand, judge it as true given that the only condition they take into account when evaluating its truth is in (1a). This apparent tendency to interpret both the subject and object as universally quantified has been dubbed a "q(auntifier)-spreading" effect (Roeper and de Villiers 1991).

- (1) Every girl is riding a bicycle.  
a. Every girl is riding a bicycle.  
b. Every bicycle was ridden by some girl.



As with all cases where children differ from adults in their linguistic behavior, the question that arises is the following: is this difference due to an issue with the experimental design, and if so, what is the issue and how do children reinterpret the sentence so as to accommodate said issue. To this end, there has been a recent surge in experimental work aimed at showing precisely that, namely that children are heavily influenced by the experimental design and that provided with the right conditions, children's judgements become (almost) adult-like. Most work on this comes from the domain of pragmatic enrichment, specifically scalar implicatures of weak quantifiers and disjunctions (Katsos and Bishop 2011 and Skordos and Papagragou 2016 to name only a few). More recently, however, a number of studies have also shown this to be the case in the domain of universally quantified sentences: provided that certain experimental

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factors are controlled for, children start to behave more adult-like (Crain et al. 1996; É. Kiss and Zétényi 2017; Skordos et al. 2022).

This paper begins with one of the questions mentioned above: how do children end up with a symmetrical interpretation for universally quantified sentences like (1)? Here I will follow a recent proposal by Denić and Chemla (2020) who assume that the relevant q-spreading interpretation children obtain for (1) is similar in nature to the distributive inference obtained for sentences involving a disjunction in the scope of a universal quantifier. The main contribution of this paper, however, will be to provide a(nother) possible explanation for the difference between children and adults' interpretation of such sentences in light of this account. The proposal put forward here will also take into account the aforementioned studies discussing how the choice of experimental task impacts children's behavior and I will discuss how Denić and Chemla's proposal can be understood in light of these results. The remainder of the paper is organized as follows. In Section 2 I introduce the proposal in Denić and Chemla 2020 as well as some relevant background on children's acquisition of different types of inferences. In Section 3 I put forward my proposal for the difference between children and adults and in Section 4 I discuss how this fits in with more recent development data. This section also puts forth some predictions and ideas for future research in this area. Finally, Section 5 briefly concludes.

## 2. Background

### 2.1. Distributive inferences

On its literal interpretation, a sentence like (2) is compatible with situations where every child had one and the same dessert; for example, (2) should be felicitously uttered in a situation where only muffins were eaten. It has been noted, however, that such sentences often give rise to the distributivity inferences in (3) that all disjuncts were acted upon, namely that each of the desserts was eaten by some child (Spector 2006; Fox 2007; Crnič et al. 2015; Denić and Chemla 2020; Ramotowska et al. 2022).<sup>2</sup>

- (2) Every child had a cookie, a muffin, an ice-cream cone or a piece of cake.
- (3) Distributive inferences of (2):
- a. Some child(ren) had a cookie.
  - b. Some child(ren) had a muffin.
  - c. Some child(ren) had an ice-cream cone.
  - d. Some child(ren) had a piece of cake.

The source of the distributive inference is, unsurprisingly, the disjunction, and it can be derived similarly to other implicatures that arise from the use of disjunction, namely via exclusion of stronger alternatives (Sauerland 2004; Fox 2007; Chierchia et al. 2012; Chierchia 2013). Observe that (2) has as possible alternatives the subdomain alternatives in (4), obtained by replacing the disjunction in (2) with all the possible three-way disjunctions. In conjunction with the utterance in (2), the entailments in (3) follow straightforwardly once the alternatives in (4a-d) are negated: if every child had one of the desserts but not every child had a cookie, a

<sup>2</sup>Most (if not all) experimental work investigating distributive inferences have tested only two-membered disjunctions (e.g., *Every child had a cookie or a muffin*), unlike the example discussed here. Theoretically, however, the same argument should go through for multiple disjunctions, so we would predict that adults would derive distributive inferences at a similar rate regardless of the size of the disjunction.

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muffin or an ice-cream cone, it follows that some child had a piece of cake, and so on.<sup>3</sup>

- (4) Excludable sub-domain alternatives to (2):
- a. Every child had a cookie, a muffin or an ice-cream cone.
  - b. Every child had a cookie, a muffin or a piece of cake.
  - c. Every child had a cookie, an ice-cream cone or a piece of cake.
  - d. Every child had a muffin, an ice-cream cone or a piece of cake.

### 2.2. Symmetrical readings as distributive inferences

Existential quantifiers, indefinite noun phrases and disjunctions are all taken to express, at their core, a disjunction, or existential quantification, over the members of a particular domain. Given this assumption, Denić and Chemla put forward the proposal that the symmetrical interpretation of universally quantified sentences involving an indefinite in the scope of a universal is nothing more than a distributive inference over the domain of the indefinite. Crucial to their argument is the observation above, namely that an indefinite like *a dessert* denotes a disjunction over possible desserts and that the relevant alternatives considered when evaluating the strengthened meaning of the sentence are those involving these disjuncts. Specifically, in the case of a sentence like (5), assuming the possible desserts are those listed above, the relevant alternatives would be the same as for (2), namely (4). The corresponding distributive inferences would be the same as in (3), repeated below in (6).

- (5) Every child had a dessert.
- (6) Distributive inferences of (5):
- a. Some child(ren) had a cookie.
  - b. Some child(ren) had a muffin.
  - c. Some child(ren) had an ice-cream cone.
  - d. Some child(ren) had a piece of cake.

To reiterate, the prediction is that a sentence like (5) should be able to give rise to distributive inferences similarly to the corresponding EVERY[OR] sentence, namely (2). In combination with the utterance, these inferences amount to the symmetrical interpretation: every child had some dessert and every dessert was had by some child. In a scenario with leftover desserts then, children would correctly reject a sentence like (5) given that the distributive inferences are not all satisfied.

Interestingly, however, children and adults behave differently when it comes to evaluating the truth of a sentence like (5) in a context with leftover desserts. Since Denić and Chemla were interested in this specific question, they tested adults with EVERY[AN] sentences like (5) and found no evidence of q-spreading, contrary to what had been shown to be the case for children;

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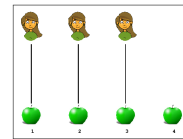
<sup>3</sup>Another option for deriving the distributive inference is via innocent inclusion of the alternatives in (i), which are obtained via double-replacement of the universal quantifier with an existential and the disjunction with each of its singleton subdomain alternatives (Bar-Lev and Fox 2017; Bar-Lev and Fox 2020):

- (i) Includable sub-domain alternatives to (2):
- a. Some child(ren) had a cookie.
  - b. Some child(ren) had a muffin.
  - c. Some child(ren) had an ice-cream cone.
  - d. Some child(ren) had a piece of cake.

adults were accepting such sentences in scenarios with leftover objects almost at the same rate as they accepted the true controls.<sup>4</sup>

They furthermore went on to show that adults differ in their interpretation of EVERY[AN] and EVERY[OR] sentences in contexts where one of the disjuncts was not acted upon, as per the image below, by testing sentences like (7a) and (7b). In a between-subject experiment, they found that in these cases adults were more likely to judge the disjunctive sentence in (7b) as false than its indefinite counterpart (7a). In other words, with disjunctions, but not indefinites, adults were less likely to accept leftover objects, similarly to children's behavior with indefinites.

- (7) a. Every girl took an apple.  
b. Every girl took Apple 1, Apple 2, Apple 3 or Apple 4.



These contrasts are not expected if, like Denić and Chemla (2020) claim, symmetrical interpretations are nothing more than just distributive inferences over the domain of the indefinite quantifier. In the following subsection I will briefly outline one of their suggestions for overcoming these problems: (i) why adults and children differ in their responses to EVERY[AN] sentences in contexts with leftover objects, and (ii) why adults differ in their responses to EVERY[AN] on the one hand and EVERY[OR] sentences on the other hand in contexts with leftover objects.

### 2.3. Children's variable ability to enrich meaning

Before introducing my proposal in the following section, it will be helpful to introduce some background on children's ability to derive the type of enrichment necessary for deriving distributive inferences. Developmental work on children's ability to derive pragmatic inferences involving scalar items like quantifiers and disjunctions shows, broadly, two different patterns of behavior. For scalar implicatures of the *some*  $\rightsquigarrow$  *not all* and *or*  $\rightsquigarrow$  *not both* kind, children lag behind adults in terms of their propensity to derive such inferences (cf., Smith 1980; Braine and Rumain 1981; Noveck 2001; Chierchia et al. 2001; Papagragou and Musolino 2003). On the other hand, these same 4- and 5-year olds pattern with adults in their ability to derive free-choice inferences for both disjunctions and free-choice quantifiers (Tieu et al. 2016). On the view that both inferences can be derived via the same enrichment mechanism (for example

<sup>4</sup>Chen et al. (2021) found that children and adults also differ when it comes to evaluating the truth of the negative version of (5), namely sentences like *Not every child had a dessert*. They found that the same kids who judged sentences like (5) false in the presence of a leftover object, judged the negation of these sentences as true in the presence of a leftover object. In other words, kids were sensitive to the presence of a leftover object in both cases, in contrast with adults. Chen et al. (2021) take these data to argue that symmetrical interpretations cannot be viewed as implicatures since implicatures are known not to be generated in the context of negation, given that the corresponding alternatives are weaker than the assertion and thus no strengthening can occur. One could still maintain Denić and Chemla's (2020) analysis in light of these results if one were to assume that children always strengthen universally quantified sentences very locally; in the case of the negation, that strengthening would be happening below it, so the resulting interpretation would be the negation of the conjunction of two propositions  $\neg(p \wedge q)$ , where  $p = \textit{Every child had a dessert}$  is the assertion and  $q = \textit{Every dessert was had by some child}$  corresponds to the conjunction of the relevant alternatives to be included (see fn. 3). Note that this is equivalent to the disjunction of the two negated propositions, meaning that it suffices for one of the disjuncts to be true in order for the sentence as a whole to be true. In a context with leftover objects,  $\neg q$  would be satisfied, hence children's acceptance of these sentences.

via application of an exhaustification operator in the grammar, in the spirit of Chierchia et al. (2012), the one main difference between scalar inferences (SIs) on the one hand and free choice (FC) inferences on the other hand is the nature of the alternatives involved in deriving them: whereas SIs appeal to lexical alternatives obtained by replacement (*some* with *all* and *or* with *and*), FC inferences involve appeal to sub-domain alternatives, which have either been explicitly provided as sub-strings of the assertion or were made (visually) salient in the discourse context. These results thus suggest that children have difficulties accessing alternatives that involve lexical replacement but no problems with inferences involving sub-domain alternatives. That children are proficient at deriving FC inferences suggests that they should be similarly good at deriving other inferences involving domain alternatives. In work aimed at testing precisely this, Pagliarini et al. (2018) showed that children were in fact adult-like in their ability to derive distributive inferences for EVERY[OR] sentences such as *Every elephant caught a big butterfly or a small butterfly*.

### 3. Intervening scalar implicature

Recall that the analysis of symmetric readings/q-spreading as distributive inferences (DIs) proposed by Denić and Chemla leaves open the following two questions:

1. Why do children, but not adults, derive DIs for EVERY[AN] sentences?
2. Why do adults derive DIs for EVERY[OR] sentences but not for EVERY[AN] sentences?

In this section I offer an answer to these two questions which relies on the aforementioned contrast, namely that children do not have access to or fail to invoke a particular alternative. Adults, on the other hand, do have access to this additional alternative and it is this alternative, I will show, which interferes with the derivation of the distributive inference for the indefinite quantifier in the scope of a universal. No such interference occurs in the case of the disjunction occurring in the scope of a universal, hence the higher rates of distributive inferences for EVERY[OR] sentences for adults.

#### 3.1. Why do children, but not adults, derive DIs for EVERY[AN] sentences?

Of importance is the observation noted above that while children are adult-like in their ability to derive FC inferences, they have difficulties deriving scalar implicatures which involve access to lexical alternatives. With that in mind, let's return to the task at hand. In order to test for the existence of q-spreading, the context must be such that there are more objects than agents acting on them.<sup>5</sup> Looking at the examples in (6), repeated below in (8), in order to get a distributive inference in a situation where there are more apples than there are girls, multiple apples would have to be taken by at least one of the girls.

- (8) a. Every girl took an apple.  
b. Every girl took Apple 1, Apple 2, Apple 3 or Apple 4.

The intuition I will pursue here is that adults, but not children, derive the inference that *Every girl took exactly one apple* for (8a), provided in (9a), which is at odds with the distributive inference, provided in (9b), in a situation where there are more apples than there are girls.

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<sup>5</sup>As M. Denić points out (pc), if the context is such that multiple agent can act on the same object, e.g., by reading a book, then this condition of #objects>#agents is not longer a requirement.

- (9) Possible inferences for (8a)
- a. Exactly inference: *Every girl took exactly one apple.*
  - b. Distributive inference: *Every apple was taken by some girl.*

The strengthened meaning that *Every girl took one and only one apple* is obtained by negating the stronger alternative obtained by replacing the indefinite *an apple* with the plural (*multiple apples*) in (10a); I remain agnostic here as to how the plural alternative is represented. It suffices to note that in the presence of this alternative, the domain alternatives in (10b) are no longer excludable (or includable, depending on what theory of *exh* one adopts).<sup>6,7</sup>

- (10) Every girl  $\lambda x$  [x took an apple].
- a. lex-alt: {x took multiple apples}
  - b. dom-alt: {x took A1, A2 or A3, x took A1, A2 or A4, x took A2, A3 or A4, ... }

Under this view, children's derivation of q-spreading is due to them not calculating this additional scalar inference, which I argue is due to them not having access to the lexical alternative in (10a); without this alternative they can rely only on the alternatives in (10b), allowing them to derive the distributive inference in (9b) and not the exclusive one in (9a). The solution to the contrast between adults and children thus appeals to the contrast discussed in the developmental literature, namely that children do not have access to or fail to invoke lexical alternatives obtained by replacement, such as the stronger scalar alternative in (10a), allowing the distributive inference to go through for EVERY[AN] sentences.

### 3.2. Why do adults derive DIs for EVERY[OR] sentences but not for EVERY[AN] sentences?

Let's turn now to the second question, namely why adults derive DIs for (11a) but not for (11b).

- (11) a. Every girl took Apple 1, Apple 2, Apple 3 or Apple 4.  
b. Every girl took an apple.

Observe the relevant lexical alternative to (11a) is one involving the conjunction, (12a). The corresponding scalar implicature that *Every girl took some but not all of the apples*, derived by negating the conjunctive alternative, is consistent with the distributive inference that each apple was taken by some girl, obtained by appealing to the alternatives in (12b).<sup>8</sup>

<sup>6</sup>For concreteness, I assume that the *exactly one* inference is obtained via local exhaustification and its derivation precludes any further global exhaustification which would have delivered the distributive inferences.

<sup>7</sup>Note that another possible inference for the EVERY[AN] sentence, besides EVERY¬[MULTIPLE], is the weaker, global ¬EVERY(MULTIPLE) inference, which crucially is compatible with the distributive inference. This would predict that for those adults who derive the weaker anti-plurality inference, q-spreading effects should arise, namely they should start rejecting the sentence in contexts involving leftover objects. This prediction, however, is not borne out by the adult data reported by Denić and Chemla. This contrast could, in principle, be accounted for by appealing to the Principle of Charity, which leads subjects to view a sentence as true as long as it is true on one of its readings. We return to a discussion of predictions of adult behavior in §3.4.

<sup>8</sup>The claim above is a simplification since the conjunctive alternative is not the only possibility, nor is the *not all* inference the only possibility. It's been long noted that even a disjunction consisting of more than two members, such as (i), gives rise to the inference that a single dessert was eaten by Jordan (cf. Simons 1998; Sauerland 2004).

(i) Jordan ate a cookie, a muffin or a croissant.  $\leadsto$  *John ate only one dessert.*

Note crucially that this inference is stronger than that obtained via the negation of the conjunctive alternative and in fact resembles the inference obtained from the use of a singular indefinite, as discussed. Interestingly, however, the alternative involved in deriving this inference involves not mere lexical replacement, but deletion as well, as the relevant alternatives are of the form *John ate a cookie and a muffin*. To what extent this inference is as readily

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- (12) Every girl  $\lambda x$  [x took A1, A2, A3, or A4].
- lex-alt: {x took A1, A2, A3, and A4}
  - dom-alt: {x took A1, A2 or A3, x took A1, A2 or A4, x took A2, A3 or A4, ... }

The crucial difference between the indefinite and the disjunction then is that for the disjunction, the corresponding scalar inference obtained by negating the alternative obtained via lexical replacement, (13a), does not interfere with the distributive inference in (13b) in a scenario where there are more apples than girls.

- (13) Possible inferences for (8b)
- Scalar inference: *No girl took all the apples.*
  - Distributive inference: *Every apple was taken by some girl.*

This contrast could then explain why adults derive different inferences for these two types of universally quantified sentences.<sup>9</sup>

### 4. Predictions of the SI account

#### 4.1. Predictions for child language

Let's turn first to what predictions such an account makes for child behavior. The analysis presented above relies on children's inability to access the relevant plural alternative; recall that this is similar to what has already been observed for children's limited access to the stronger scalar alternatives *all* for *some* of the conjunctive alternative *and* for *or*. There is a line of research which argues that access to alternatives is variable and appears to be dependent to a large extent on what "Question under Discussion" (henceforth QUD, see Roberts 2012) is made available in the experimental setup. For example, Skordos and Papagragou (2016) found that children's ability to draw the implicature *not all* in a particular experiment depended on what the implicit QUD was. If the QUD was about the quantity of the quantifier object, that is, if the quantity is what made a sentence false (e.g., presenting *all girls ate apples* in a scenario where only some girls ate apples), then children were much more likely to derive the relevant scalar implicature. If the QUD was about the type of object involved (e.g., presenting *all girls ate apples* in a scenario where all girls ate pears), then children were much less likely to derive the relevant scalar implicature. Their conclusion was that when the context makes a QUD along

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available for the disjunction as it is for the indefinite remains an open issue and one which should be investigated experimentally. I would like to thank P. Marty for extensive discussion on this point.

When this exclusivity inference is present, however, the distributive inference account predicts that it should interfere with the DI and thus that no q-spreading effect should be observed with disjunctions either. Note that Denić and Chemla conducted an experiment and showed that while adults are more likely to judge EVERY[OR] sentences as false in the presence of leftover objects, indicative of q-spreading, this still only happens about half of the time, which could be taken as an indication that the exclusive inference discussed above does play a role, at least some of the time.

<sup>9</sup>There is something more to be said, however, about the difference between indefinites and disjunctions with respect to their alternatives. While both of them can be argued to activate domain alternatives, only in the case of disjunctions are they spelled out. If we take this difference at face value, we could argue that with indefinites we have the option of ignoring the domain alternatives when computing strengthened meanings, the reasoning going as follows: if the domain alternatives were important enough to need to be incorporated into the strengthening, an alternative sentence involving the disjunction could have been uttered. The difference between indefinites and disjunctions with respect to their alternatives and possible inferences is the topic of ongoing debate, both at the empirical level as well as the theoretical level.

the lines of "How many girls ate apples?" relevant, children behave more adult-like in their ability to derive the scalar implicature *not all girls* given a target sentence with *some girls*. This is due, presumably, to the fact that this QUD makes the *all* alternative relevant.

In a recent paper building on this idea, Skordos et al. (2022) show that children are much less likely to derive symmetric interpretations when provided with contexts where the relevant issue is the number of agents acting on particular objects; in the case at hand, that would be the number of girls eating apples. In a set of familiarization trials, children were presented with the same trial sentence *every girl ate an apple* either in a context in which only 2 out of the 3 girls ate apples, or in one in which all 3 girls ate apples and no apples were left over; note that the first context made the sentence false while the second context made the sentence true. They found that children who were exposed to the first type of familiarization item were more likely to exhibit adult-like behavior and not reject the target sentences showing leftover objects. One could explain these results along the same lines as above. Similarly to what was observed by Skordos and Papagragou for *some* sentences, what we notice here is that when the QUD is one making the quantity relevant, children become more adult-like in their responses. This, I argue, is due to the fact that children are more likely to start deriving scalar implicatures when the QUD is one that makes scalar alternatives relevant. The difference between this experiment and the one in Skordos and Papagragou 2016 is that the relevant alternatives are not directly addressed by the QUD, which is about the universally-quantified subject rather than the indefinite object. One suggestion could be that once one set of scalar alternatives is made relevant, any other scalar alternatives are made relevant as well. Once this *exactly* inference is derived, children become more adult-like by virtue of no longer deriving the distributive inference needed to obtain the q-spreading effect.<sup>10</sup>

Note that Skordos et al. (2022) offer a different take on their results. Their argument, following Crain et al. 1996, is that children exhibit non-adult like behaviour because the conditions for plausible dissent are not satisfied in the second type of familiarization trials (as well as most studies out there showing q-spreading effects in children); that is, the question being asked is pragmatically infelicitous since there are no contexts in which it is made false. In such situations, the argument goes, children converge on a different statement that does satisfy the condition of plausible dissent, such as *Every apple was eaten by a girl*. Since the first type of familiarization trials present cases where the target sentence is false, the issue of plausible dissent no longer arises and children thus are no longer forced to find a repair strategy. In their account then it's not an issue of children drawing additional inferences but rather one of mis-interpretation of the sentence as a whole. Such accounts, however, suffer from one major issue, namely why all children would overwhelmingly converge on the same statement.

Denić and Chemla take yet another perspective on similar observations from studies showing that the choice of experimental topic can influence the presence of q-spreading in children (e.g., Hollebrandse 2004; Philip 2011). These studies show that if the focus is the universally-quantified subject, children are less likely to derive q-spreading and judge the target sentences as false. On the other hand, if the topic is the indefinite object, the q-spreading rates go up by comparison. Denić and Chemla argue that what is at the heart of this contrast is the following:

<sup>10</sup>To confirm this prediction, namely that children are more likely to derive these exactly implicatures, one could create scenarios where subjects have the possibility of acting on more than one object to see how children rate the relevant target sentences when the subject is acting on multiple objects.

when the subject is made more relevant and little attention is given to the object, children are less likely to consider as relevant the domain alternatives which are responsible for deriving the distributive/q-spreading inferences. Note that such an account could also explain the effects observed by É. Kiss and Zétényi (2017) in their study where it was shown that the more life-like/naturalistic the scene, the less likely children were to derive q-spreading inferences. Here too Denić and Chemla could argue that the more naturalistic the scene, the less relevant the individual members of the domain of the indefinite are, hence the reduction in q-spreading inferences. Along the same lines, it was found by Sugisaki and Isobe (2001) that when a higher number of extra objects were involved, the levels of q-spreading were drastically decreased.

Their proposal differs from the one I suggested above since they take the activation of domain alternatives to be subject to relevance whereas I argue that the scalar alternative is subject to relevance. It is completely plausible, however, to make these accounts compatible and argue that both domain and scalar alternatives are subject to relevance and that lack of q-spreading can be attributed to one of two sources: lack of active domain alternatives in the presence of too many or irrelevant objects or active domain and scalar alternatives in the presence of a certain type of QUD.

### 4.2. Predictions and complications from adult language

One prediction of the account proposed here is the following: in the absence of the stronger lexical alternative, adults should behave like children and derive distributive inferences, thus giving rise to q-spreading effects. For example, modified numerals such as *at least one* and mass nouns fall in this category in that they don't give rise to stronger scalar alternatives. The prediction then is that in a context with leftover apples and leftover water, respectively, the sentences in (14) should be judged as false since the distributive inference that every apple was eaten and all the water was drunk would not be satisfied. Introspection suggests that this is likely not the case: even with leftover apples and water, we are still likely to accept these sentences as long as they are true on their literal interpretation.

- (14) a. Every girl ate at least one apple.  
b. Every girl drank water.

Assuming we take for granted that distributive inferences are obligatory, or as obligatory as they are with disjunctions, the present account could, however, still be maintained if we were to assume that adults appeal to domain restriction when faced with irrelevant material, e.g., leftover apples and water in (14), as per the suggestion in Denić and Chemla 2020. A similar mechanism appears to be at play in scenarios involving one or more of the girls taking multiple apples. Even in the presence of leftover apples, introspection suggests that speakers will accept an EVERY[AN] sentence, despite the fact that in this case neither the DI (involving the entire domain) nor the *exactly one* SI would be derived.

## 5. Conclusion

This paper presented an alternative view on what governs the difference between adults' and children's interpretation of EVERY[AN] sentences, taking as a starting point the hypothesis that children, like adults, are capable of deriving implicatures involving domain alternatives. I proposed that the difference in behavior can be traced to the (lack of) generation of an alterna-

tive involving lexical replacement, something that children have been shown to lag with when compared to adults.

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