

# HOW CHILDREN DISTRIBUTE: THE ACQUISITION OF THE UNIVERSAL QUANTIFIER IN BRAZILIAN PORTUGUESE

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## RESUMO

*Examinamos a aquisição do quantificador universal tod@(s) em crianças monolíngues falantes do português brasileiro (PB). Nossa hipótese é a de que em línguas com concordância nominal morfológicamente marcada, como o PB, as crianças não passarão por um estágio de quantificação do evento, como no inglês, pois a morfológica nominal servirá como pista para a quantificação sobre indivíduos. Testamos 20 crianças de 4 a 6 anos que demonstraram um comportamento adulto. Testamos, também, sentenças ambíguas em relação ao escopo do quantificador. 40 crianças de 3 a 6 anos demonstraram uma clara preferência por leituras distributivas (79,2%).*

## ABSTRACT

*We examined the acquisition of the universal quantifier tod@(s) (every/all) by monolingual Brazilian Portuguese (BP)-speaking children. Our hypothesis holds that in nominal agreement languages, such as BP, children deal with quantification over individuals and not events very early on since they are morphologically cued into that when compared to children acquiring English, a language in which children start out quantifying over events. We tested 20 4 to 6 year-olds and they performed at ceiling as non-spreaders. We have also tested for scope readings in ambiguous sentences. Forty 3 to 6 year-old children were tested, showing a preference for the distributive reading (79.2%).*

## PALAVRAS-CHAVE

*quantificador universal, português brasileiro, aquisição, abordagem formal*

## KEYWORDS

*universal quantifier, Brazilian Portuguese, acquisition, formal approach*

Introduction<sup>1</sup>

Our aim in this paper is to examine the acquisition of the universal quantifier *tod-* followed by a singular Noun Phrase (NP) or a plural Determiner Phrase (DP), by monolingual Brazilian Portuguese (BP)-speaking children. As we will discuss along the paper, the same morphological root *tod-* can combine either with a NP or a DP, yielding different interpretations (see MÜLLER, NEGRÃO & GOMES, 2007). We will be mainly interested in assessing children's interpretation for the *tod-* when combined with a singular NP (*todo sapinho* "every frog"), but we will also contrast that with the form *tod-* with a plural DP (*todas as meninas* "all the girls") in order to assess any preferential interpretation children might show during the acquisition process.

There is a vast literature on quantifiers in BP (see, among many others, GOMES (2004 e 2009), LIMA (2013), NEGRÃO (2002), PIRES DE OLIVEIRA (2003)), not always converging in the analysis of *tod-* as a quantifier proper, but rather as a modifier (see LIMA, 2013, for instance). Considering our interest here is to understand what happens with respect to acquisition, we will not explore the matter from a theoretical standpoint. We will, rather, explore hypotheses about the acquisition of quantifiers, assuming, for the sake of this paper, that *tod-* + a singular NP or a plural DP is a quantifier with different properties.

With that in mind, our starting point was rather descriptive: When exactly do children display an adult interpretation of quantifiers in

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<sup>1</sup> I thank the audiences at the 41st Linguistic Symposium on Romance Languages and the Generative Approaches to Language Acquisition meeting, GALA 2011. See LOPES (2013) for a previous version of this paper. I also thank an anonymous reviewer for the generous comments and suggestions. The usual disclaimer applies.

the language? By “adult interpretation” we simply mean that children will quantify over individuals and not over events, for reasons that will become clearer below.

Our general results on a picture selection task show that, when faced with a simple sentence containing inergative verbs and only one universal quantifier in subject position, such as (1), children reach a figure of over 60% of adult-like interpretation since their 3rd birthday.

- (1) *Todo sapinho –tá lendo.*

Universal quantifier-masc-sg frog-little-masc-sg is reading  
 ‘Every frog is reading’

Following studies in other languages, we decided to test “Is every X V-ing a Y?” (*Toda foca –tá jogando uma bola?* ‘Is every seal playing with a ball?’) sentences to check whether or not children could interpret them. We were considering PHILIP’S (1995) symmetrical hypothesis, according to which children establish a one-to-one mapping between the restrictor in subject and object positions ending up with an event-like interpretation.<sup>2</sup>

According to him, young children do not apply quantifiers over their nominal domains but rather take the sentence to be an event of Xs V-ing Ys, sometimes in an exhaustive manner. In other words, for such interpretation to apply and children take the sentences as true there has to be the same amount of Xs and Ys to take part in the event of Xs V-ing Ys. We will call that the “event quantification theory”.

There is, however, a very different approach to the acquisition of quantifiers in the literature. We will call it the “Full competence theory” after CRAIN et al. (1996), among others. According to this theory, children know quantifiers from very early on and results that point

<sup>2</sup> ROEPER et al. (2004) also share the same analysis although they tackle the question with a different approach both theoretically and methodologically. We will go back to this point shortly.

otherwise are due to methodological flaws. By “knowing quantifiers” the authors mean that children interpret them as an adult, quantifying over individuals and not over events.

Our experiments tried to circumvent the problems raised by Crain et al. while providing children with the chance to show non-adult-like behavior. Interestingly, we did find it. As it will be discussed below when we present our experiments and results, Brazilian children did not treat the quantification according to the “event theory” but they were not fully competent as well since they had a tendency towards a distributive reading of the sentences, regardless of the morphological form of the Quantifier Phrase (QP). Adults tested as our control group showed a clear cut pattern of interpretation associating the *tod-* used in a singular nominal domain (*toda menina* ‘every girl’) as distributive and the one used in a plural nominal domain (*todas as meninas* ‘all the girls’) as collective. Children were distributers despite of the morphology involved.

Our hypothesis for the difference between English speaking children and Brazilian ones is related to the morphological differences of the two languages. Agreement factors cue Brazilian children from very early on in regard to the fact that the quantifier belongs in the nominal domain, therefore they don’t quantify over the event. However, they also have to figure out which morphological forms go with which interpretation, which prevents them from being fully competent. We will come to this point in section 3.4 for a detailed discussion. It might be the case, though, that this non-adult pattern – which seems to go on for quite a while – is not necessarily linked to the quantifiers per se but to the different options the language offers reflected in distinct morphological choices.

This paper will be organized as follows: In section 2, a brief overview of the literature on the acquisition of quantifiers is discussed; in section 3 we present our experiments and results and discuss them. We finish with a few final remarks in section 4.

## 1 *Different views on the acquisition of quantifiers: a brief overview*<sup>3</sup>

It is fair to say that there are roughly two approaches to the acquisition of quantifiers: those that attribute the non-adult responses to a lack of knowledge of quantificational operations and those that give a non-linguistic account for children's deviant responses.<sup>4</sup>

The first approach could be traced back as far as INHELDER & PIAGET'S (1964) work but we will concentrate here on what we have called the "event theory" on the previous section. PHILIP (1995) has proposed that children initially treat universal quantifiers as adverbial modifiers. Therefore, they would quantify over events, taking scope over the whole sentence, which yields a one-to-one mapping between subject and object. Thus, having to judge a sentence like (2) against the picture in (3) children will say that the sentence is not true since there is a pony which is not being held by any girl.

(2) Is every girl holding a pony?

(3)



<sup>3</sup> For a thorough review see MERONI, GUALMINI & CRAIN (2007).

<sup>4</sup> We will not discuss here another linguistic approach advanced by LIDZ & MUSOLINO (2002), among other papers, in which they discuss whether children deal with scope effects in quantified sentences in a linear or hierarchical manner, obeying c-command if the second option is available. We did not test for that.

One of the predictions of such a proposal is that children will go through different stages during the development of the quantifier. Philip (op. cit.) proposes three of them: (i) the exhaustive reading; (ii) the symmetrical reading and (iii) target. In the first case, anything in a scene would be taken as part of the event by children. In the second one, children map subjects and objects symmetrically. According to this view, children would give the exhaustive and symmetrical interpretation, respectively, for a sentence such as (4):

- (4) Is every boy riding a pony?
- a. “all minimal events in which either a boy or a pony (or both) is a participant, or in which any perceived object is a participant, are events in which a boy is riding a pony.” (PHILIP, 1995: 75)
  - b. “all minimal events in which either a boy or a pony (or both) is a participant are events in which a boy is riding a pony.” (PHILIP, 1995: 75)

The second approach mentioned above was first advanced by FREEMAN, SINHA & STEDMON (1982) and then generalized to any phenomena in child grammar by CRAIN et al. (1996). According to these authors, children know quantifiers and the errors found are the result of infelicitous experimental design, since the ‘yes/no’ option in scenarios like the one in (3) are not pragmatically plausible.

Experiments, then, have to give the child a chance to consider a possible false outcome, which would make then plausible. Therefore, in a picture such as (3) having a girl holding something other than a pony could make it pragmatically plausible. Having this extra object, then, should flip children’s responses from non-adult like to adult ones. One has to keep in mind, though, that this is exactly what Philip considers to drive the ‘exhaustive’ reading initially.

ROEPER et al. (2004) have a similar approach to PHILIP'S (1995), that is, also a grammar internal one, although trying to circumvent the methodological problems raised by the non-linguistic approach to quantification. They claim children go through three different stages during the acquisition path to quantification: from a "bunny spreading" (BS) one, to a "classical spreading" (CS) period to target. During the first two stages, children treat the quantification as an event one, in other words, they "spread" the quantifier over the whole sentence. Only when they realize the quantifier belongs in the nominal domain they become target-like.<sup>5-6</sup>

To test their hypothesis, the authors showed children a picture of an event of V-ing, let's say bunnies eating apples and a teddy bear eating some cake. The bunnies and the apples are mentioned during the experiment but not the bear and the cake. Thus, there is an extra object in the scene but it is taking part in a different event. We have to keep in mind that this should do the trick for CRAIN et al (1996). Therefore, if non-adult responses are still there, it becomes hard to sustain that they are solely due to methodological questions. Going back to their proposal, in a sentence such as (5), if children still say it is not true against a picture such as the one in (6) then they can only be treating the quantifier as an operator over the events. It seems that one can compare both approaches in terms of the stages proposed during the course of development. The BS could be considered a "super exhaustive" stage, since it involves two different events and children would have to consider everything in the scenario.

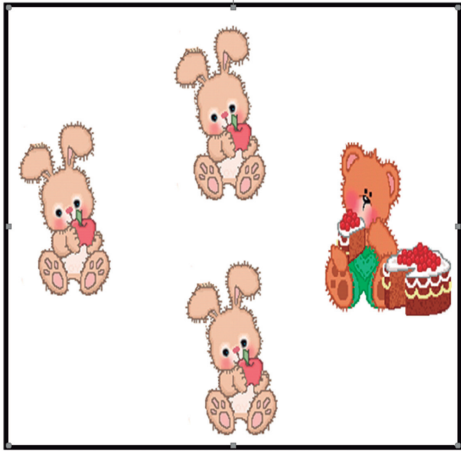
(5) Is every bunny eating an apple?

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<sup>5</sup> In either of these grammar internal approaches it is never clear what forces children out of one stage into the next.

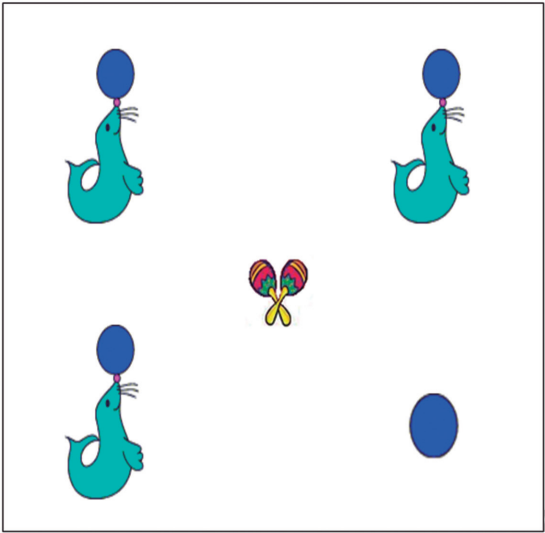
<sup>6</sup> Roeper et al's (2004) implementation of the theoretical proposal is quite different from the one found in Philip's work. We won't discuss them here.

(6)



Finally, let's compare the BS set up in (6) to the CS one in (7), with the extra object and a distractor. That would be classically tested with sentences such as "Is every seal playing with a ball?"

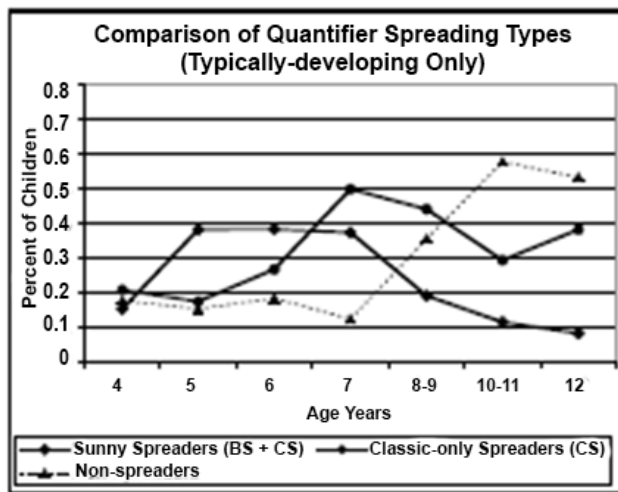
(7)





ROEPER et al. (2004) show that the BS and CS stages can occur together but the CS one will still go on for a long period of time. In other words, children as old as 9 years will still say ‘no’ to (7). They start to show an adult-like behavior in English only around their 10th birthday. It is clear that children acquiring English are spreaders for a long period of time before their grammar starts to have the quantifier restricting nouns. Those results can be seen in Figure 1:

FIGURE 1: From ROEPER et al (2004: 26)



As we will see in the next sections, most of our experiments were designed either as the classical set up or as a replication to ROEPER et al's one, although we had two different experiments designed to test scope interaction between the universal and the existential quantifiers. Our hypothesis, already laid out in the first section, is a grammar-internal one although it compromises with the “full competence” theory as well to a certain extent. We will come back to that in the discussion section of the paper.

## 2 *Our study*<sup>7</sup>

Albeit running the risk of not presenting our study in the traditional format of experimental work, in the sake of clarity we will present each experiment separately together with the results found and a brief discussion. Procedure and subject descriptions will be found amidst each experiment description. A global discussion bringing us back home to the hypothesis proposed will be found in the last section.

### 2.1 The first experiment

As briefly discussed in the Introduction, this first experiment wanted to answer a very simple and descriptive question: When do BP-speaking children display an adult interpretation of quantifiers in the language?

The task was a picture-selection one. Children were presented with three pictures: one was true and the other two were false – one with an extra subject (not doing the expected activity) and one with an extra subject and a distractor. This task should avoid any pragmatic effects such as those pointed out by CRAIN et al. (1996), becoming a truth value one since children had two options: true and false.

Six simple activity-verb sentences were tested always with the universal quantifier in subject position followed by a singular NP. A sample sentence and the respective picture set can be found in (8) – which repeats (1) – and (9) below:

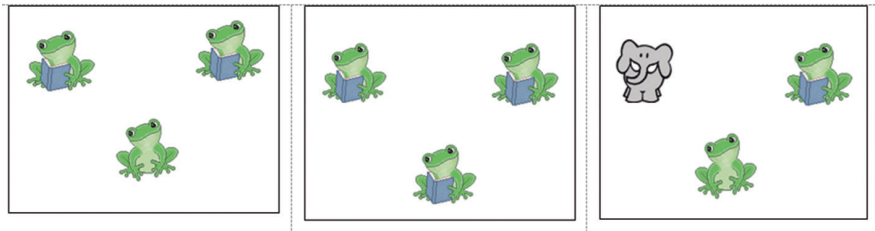
- (8) *Todo sapinho tá lendo.*

Universal quantifier-masc-sg frog-little-masc-sg is reading  
Every frog is reading.

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<sup>7</sup> IRB (CEP/FCM/Unicamp) approval for all the experiments number 401/2008. I'd like to thank Danielle Algate for preparing the pictures and running the experiments. I'd also like to thank the children – and their parents, for consent – at the CECI (Centro de Convivência Infantil) and the EMEI (Escola Municipal de Educação Infantil Maria Célia Pereira) both at UNICAMP.

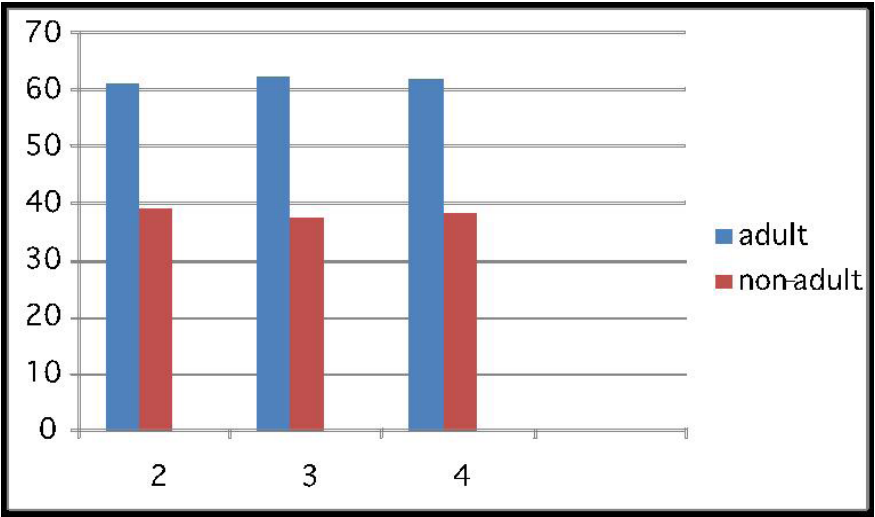
(9)



Twenty children were tested: three 2 year-olds, eight 3 year-olds and nine 4 year-olds. Unfortunately the task proved too difficult for the 2 year-old children. Only three out of more than ten were able to finish the experiment and/or understand that they should match a picture to the sentence. Most of them just marbled at the pictures.

Results were scored in a pre-prepared sheet of answers. We can see the overall results in Figure 2:

FIGURE 2: Overall results (in %) for adult and non-adult interpretation of the universal quantifier by age.



The three age groups have quite similar results, although it is hard to sustain anything about the 2 year-olds having so few of them. As we can see, children get over 60% of expected answers.

We have broken the answers down in order to check whether the non-adult responses had anything to do with one of the false options. Results are shown in Table 1:

TABLE 1: Adult vs. extra-subject and distractor options by age<sup>8</sup>

Age	Adult choice	Extra subject	Distractor	
2	11/18	5/18	2/18	18
3	30/48	8/48	10/48	48
4	32/52	11/52	9/52	52
Total	73 (61.9%)	24 (20.3%)	21 (17.8%)	118

The only interesting result is that the two year-olds have a tendency to pick the extra subject picture as true more often than the one with the distractor. This goes contrary to the predictions made by CRAIN et al. (1996). However, we can't really claim anything since we only tested three children, whom, apart from that, seem to pair up with the 3 and 4 year-olds. These two age groups don't seem to make any distinctions between the two false conditions.

Despite answering our initial descriptive question, showing that young children have a preference for the adult interpretation of the universal quantifier, this experiment could not address any of the other possibilities raised in section 1 since this task cannot take apart quantification over nouns or over the event.<sup>9</sup>

<sup>8</sup> One of the 4 year-olds did not answer two of the questions.

<sup>9</sup> Options could fit the same judgment: (i) it is the case that if x is an individual then x is reading; (ii) it is always the case that there is an event of reading and xs are doing

## 2.2 The second experiment

Are Brazilian children spreaders like the children tested for English? If so, are they also exhaustive or perfectionist children as PHILIP (1995) puts it?

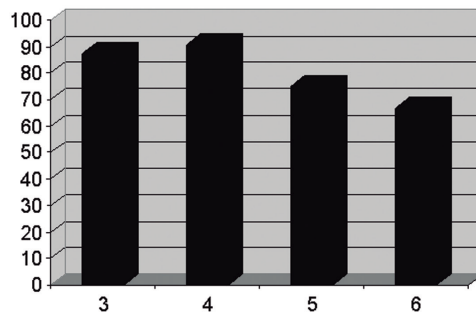
We have used a picture judgment task in this experiment. Therefore, all children had to do was to judge the sentences presented as true or false. We have tested sentences with the famous “Is every X V-ing a Y” format but we did it in an affirmative mode:

- (10) Toda foquinha –tá jogando uma bola.  
 Universal quantifier-fem-sg seal-little-fem-sg is playing a ball  
 ‘Every seal is playing with a ball.’  
 Is that so/right, child?

Ten sentences were tested against the “classic spreading” set up as shown in picture (7). Since the expected answers were positive, we have used fillers to counterbalance for negative ones.

Forty children between the ages of three and six responded quite consistently to the task. We made sure we had 10 children per age group. Two year-olds were excluded in view of the results obtained in the first experiment. Results are shown in Figure 3:

FIGURE 3: Overall percentages of adult interpretation by age



The most striking result is the mean percentage of expected answers when all age groups are considered: 81.5% (326/400). However, there were three 5 year-olds and four 6 year-olds who consistently behaved as what appears to be an “exhaustive child”. A couple of questions come to mind.

Was there, in fact, a pragmatic factor at play? Was the material infelicitous? It is hard to make such a claim considering the younger children did so well in the task. Other hypotheses can be entertained. The first one is that the adult-like behavior in the younger groups is fully adult like. If so, then one has to explain the non-adult-like behavior in the older groups. The second one would predict that the younger groups behavior is only apparent; in other words, it is achieved by using non-adult means, either in parsing strategies or grammar stages.

This sort of U-shaped development effect is not unusual in the literature. As a matter of fact, CONROY, LIDZ & MUSOLINO (2009) discuss it with respect to inverse scope – quantifier/negation – and claim that older groups integrate more refined parsing strategies which are responsible for the age effect found. We come back to that briefly when discussing our third experiment.

Due to the results found in the second experiment, we decided to run another one.

## 2.3 The third experiment

We wanted to make sure Brazilian children are not spreaders. This time, though, we decided to check that with a “Bunny spreading” set up as the one discussed in section 2. We tested sentences such as the one presented in (5), and repeated here as (11) in BP, to be judged against pictures such as the one shown in (6).

- (11) *Toda coelhinha –tá comendo uma maçã?*  
 Universal quantifier-fem-sg bunny-fem-sg is eating an apple?  
 ‘Is every bunny eating an apple?’

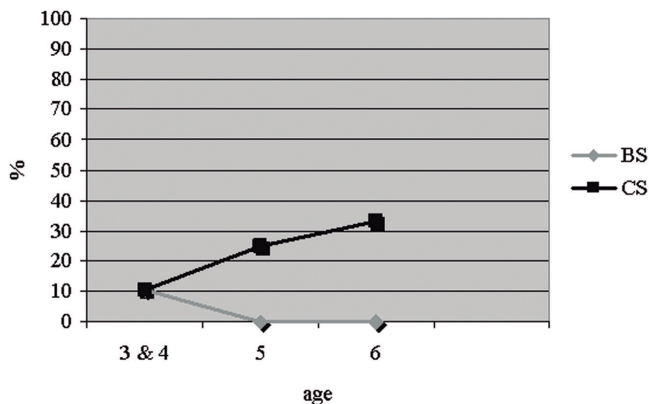
We had six sentences counterbalanced with NO-fillers since the expected answer was YES.

We decided to test 5 and 6 year-olds due to the results obtained in the previous experiment, having 10 of them per age group. Surprisingly, results were 100% adult-like. We then tested another 14 children between 3 and 4 years of age. The mean adult-like response percentage was 89.2.

It seems fair to say that if there is a BS stage, then it is previous to these children 3<sup>rd</sup> birthday fading away quite quickly, according to our results.

If we compare both experiments, collapsing the percentages for the 3-4 age groups, we come out with the following, considering only the non-adult spreading behavior:

FIGURE 4: Percentage of spreading over age groups



Comparing Figure 4 with ROEPER et al.'s (2004) results shown in Figure 1, we detect a clear difference between the acquisition of quantifiers in English and Brazilian Portuguese. The amount of spreading is really low, although persistent between the 5 and 6 year-olds. Children acquiring English moved from the "classic spreading" stage into the target only around their 10<sup>th</sup> birthday and figures of non-adult responses were much higher. Thus, we will try and sustain that the younger groups do behave adult-like but the older ones get tramped into other more fine grained semantic and grammatical processes which showed in their somewhat poorer performance in the third experiment. We will claim that this is linked with scopal effects that come into play and, therefore, with the collective or distributive features of the quantifiers due to a morphological distinction of the language.

To check that, we designed yet another experiment.

## 2.4 The forth experiment

Considering BP-speaking children are not spreaders, how do they deal with quantifiers and their restrictors? Do they distribute individuals or have a collective reading? Do they get scopal ambiguities? Do they perceive that the same morphological item can get different semantic readings in the language according to number agreement in the nominal domain?

MÜLLER, NEGRÃO & GOMES (2007) have shown that the same morphological item can bear different features and combine either with a NP or a DP, yielding different interpretations, as we have pointed out before throughout the paper:

(12)

- a. *tod-* + NP\_sg → EVERY
- b. *tod-* + DP\_sg = adverbial (= whole, entire)
- c. *tod-* + DP\_pl → ALL



respectively,

(12')

- a. *Todo menino -tá brincando com uma bola.*  
Q\_sg boy is playing with a ball  
“Every boy is playing with a ball.”
- b. *Todo o sofá está molhado.*  
Whole the sofa is wet  
“The whole sofa is wet.”
- c. *Todas as bolas –tão numa caixa.*  
Q\_pl the\_pl balls are in+a box.  
“All the balls are in a box.”

We have disregarded (b) since it bears no interest for this paper. The singular choice seems to trigger a distributive reading while the plural, a collective one.

To make sure that was the case, we had an adult control group for this experiment. We gave twenty 18 to 30 year-old monolingual Brazilians an off-line questionnaire with four sentences in two conditions – singular and plural. They had two possible choices for each sentence and they were told they could choose one or both of them. (13) and (14) present a sample of the questionnaire for each condition:

(13) *Toda menina está em um barquinho*

Every girl is in a boat

- a. ( ) *Há 4 meninas e todas elas estão num mesmo barquinho*  
There are 4 girls and all of them are in the same boat
- b. ( ) *Há 4 meninas e cada uma delas está em um barquinho distinto*  
There are four girls and each one of them is in a different boat

(14) *Todas as bolas estão numa caixa.*

All the balls are in a box.

- a. ( ) Há 3 bolas e todas elas estão numa mesma caixa.  
There are 3 balls and all of them are in the same box
- b. ( ) Há 3 bolas e cada uma delas está em uma caixa distinta.  
There are 3 balls and each one of them is in a different box

Results are found in Table 2:

TABLE 2: Percentage of distributive and collective choices among adults in the singular and plural conditions

	Distributive reading	Collective reading
Condition		
SINGULAR	97.5	15
PLURAL	47.5	97.5

Our results were clear-cut: Adults clearly prefer to distribute when the quantifier is in a singular form (12'a), while favoring a collective reading in the plural environment (12'c). Lima (2013) found similar results for the plural form and the collective reading.

MARCILESE and RODRIGUES (2012), however, do not obtain the same results in an on-line test with adults. This might imply that our off-line test induced the adults into the preferences shown, which would indicate that there is a methodological problem here. Since we did not know of that at the time, we were moved by our results and whether or not children would be aware of such an effect in the language.

To test that we applied an act-out task. Children were given props and had to “act the sentence said by the experimenter out”. But we wanted to make sure they would not fall into a symmetrical or exhaustive behavior, in other words, fall into a spreading trend, therefore extra objects were provided both for the subject as well as the object of the sentences. (15) illustrates the two possible outcomes:

(15)

Four trees and four giraffes, one giraffe under each tree.	Several giraffes – usually all of the props given – under one and the same tree. Sometimes the other trees were displayed by themselves, sometimes not.
<b>Distributional</b>	<b>Collective</b>

Once again forty 3 to 6 year-olds were tested, since we wanted to assure at least 10 children per age group. They were presented with six sentences – three in each condition – plus fillers. The singular and plural conditions were randomized during the experiment application according to the different answer sheets the experimenter had previously prepared to take note of the results.

Overall results can be seen in Table 3 below:

TABLE 3: Percentage of different interpretations – all age groups collapsed

	<b>Collective reading</b>	<b>Distributive reading</b>
Condition		
SINGULAR	26.6	73.4
PLURAL	15	85
Total	20.8	79.2

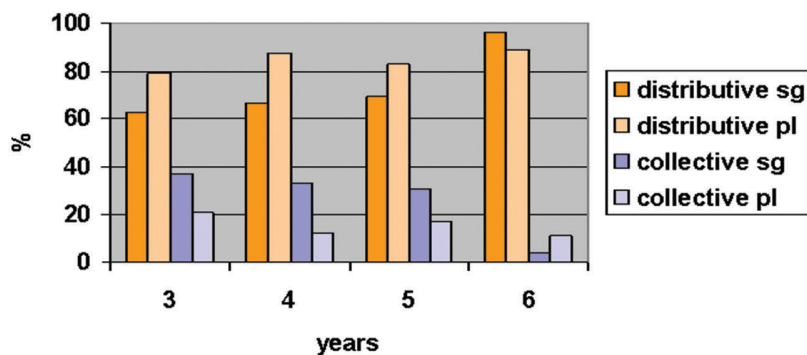
There is a striking preference towards the distributive reading, despite the morphological options on the DP.

No one showed any spreading tendency whatsoever during this experiment. This leads us into thinking that the responses found for the 5 and 6 year-olds in the second experiment is either due to the

experimental material, which is odd since results for the younger groups were quite clean, or with the fact that they are starting to deal with the morphological and scopal phenomena involved in quantification in BP. As a matter of fact, an age effect was found between age groups 5 and 6 ( $\chi^2 = 5,8$ ,  $gl=1$ ,  $p < 0,05$ ).

It should be pointed out, however, that only four children (one 4, two 5 and one 6) showed an adult-like behavior, systematically associating the plural form with the collective reading and the singular one with the distributive option. However, the overall age group results do not show this tendency, once we would expect to see a decrease in the collective in the singular condition – which happens – together with an increase in the plural condition – which does not happen. Those results are shown in Figure 5:

FIGURE 5: Percentage of different interpretations by age group



### 3 Final remarks

Although Brazilian children do not show a symmetrical behavior, or are spreaders in any sense, they do show a preference for distributing up to the last age group examined here.

A possible explanation has to do with the syntactic behavior of the universal quantifier *tod-* in the language. The difference between English and BP, then, has to do with morphology. Agreement factors cue the BP grammar in placing the quantifier in the nominal domain very early, since at least the gender agreement mark will be present, if not the gender and number marks. On the other hand, while helping children find the right semantic restriction, morphology is also responsible for differences in interpretation, which are clearly difficult to sort out, according to the results we obtained in the last experiment discussed above.

It seems that there are language specific factors involved in such choices. BROOKS & BRAINE (1996) showed that children acquiring English did better with *all* – a collective quantifier – than with *each* – a distributive one. However, their results were not replicated in Dutch (see DROZD, 1996) or Russian (see KUZNETSOVA et al., 2007). Most interestingly, though, were results achieved by KNEZEVIC (2010) for Serbian. She reaches the same conclusions we did for BP: children are not spreaders and prefer to distribute. But it still remains to be explained why children in both languages default into the distributive option.

Coming back to our initial hypothesis, we are driven into a grammar-internal approach, which, in a way, compromises with the “full competence” theory. Putting all of our results together it seems fair to claim that children do know that universal quantifiers quantify over individuals, what they have to figure out is how they work within the morphological system of the language, considering the different meanings available as the output of the possible syntactic combinations with the root *tod-*. Getting out of non-adult stages is, therefore, not a matter of quantifying erroneously but sorting the grammatical factors out.

In any event, it is important to note that the jury is still out with respect to the results obtained in the off-line adult test and its implications for our conclusions here, considering MARCILESE & RODRIGUES (2012, among others).

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