Plurals in Brazilian Portuguese and Chilean Spanish:
variation effects in first language acquisition
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Language variation and language acquisition are necessary ingredients for language change. We know that variation that affects the realization of functional vocabulary items can lead to grammar competition and language change. But we also know that variation itself can be learned (Smith et al 2009) and sustained through many generations. In this paper we provide acquisition evidence that input variability can give rise to two different performance signatures, one consistent with grammar competition and the other consistent with varying processing costs. Although we can only speculate when language change will happen, we argue that one signature provides at least the necessary conditions, while the other does not.

Acquisition background: Miller and Schmitt 2009, 2011, 2012 (M&S) have argued that variability that causes ambiguity has an impact in acquisition (as predicted by Yang's 2004 variational hypothesis). They showed that Mexican-Spanish-speaking children, exposed to categorical input, can use plural morphology much earlier than Chilean-Spanish children, who are exposed to variable realization of plural morphology. Similar claims have been made by Castro & Ferrari Neto 2007: European Portuguese-speaking children, exposed to categorical input, performed better than Brazilian Portuguese-speaking children, a dialect with variable realization of number morphology. Although the sources of variation are different and the potential reliability of the forms is different (a low-level lenition process in ChS and a morpho-syntactic process in BrP), in both cases it is clear that variability affects the acquisition timeline.

Question and hypotheses: In this paper we depart from the assumption that variability can affect the acquisition of grammatical morphology, and we ask whether the BrP variability in the realization of number morphology have the same impact as it does in ChS. We hypothesize that variation can (i) lead children to entertain a non-adult grammar and show a systematic pattern of responses or (ii) lead children to be less efficient processors of grammatical morphology, causing a variable pattern of responses within an individual subject depending on the task.

Linguistic background Unlike Mexican Spanish, Chilean Spanish and Brazilian Portuguese have a variable realization of plural morphology (Table 1 provides numbers for dialects tested experimentally). In comparison with ChS, BrP rates of omission are slightly lower and the source of variation is different. While ChS variability is a consequence of a variable rule that weakens syllable-final /s/ which can be weakend to [h] or to Ø ((Miller 2007; Cepeda 1995), the variation in BrP results in [s] or Ø and is the consequence of a rule that targets agreement (Pereira & Scherre 1995, Koelling 2004). Importantly though, the overall distribution of the variation is fairly similar in both languages: determiners tend to show more number marking than nouns and the variation is sensitive to education and class distinctions.

Experiments: Mexican, Chilean and Brazilian working class (WC) children were tested using the same experiments (see Tables 1 & 3 for subjects). For the indefinites, an act-out experiment asked children to place *uma/una NP* (an NP) or *umas/unas NP* (some NPs) in a box (8 experimental items). For the definites, we replicate Munn et al 2005's act-out experiment asking children to give *the toy/ toys next to the house* to the experimenter (8 experimental items) in a scenario as in Figure 1. Importantly, while the indefinite experiment only requires the use of [s] to distinguish singular vs. plural, the definite determiner experiments are harder. For the definite singular interpretation to be felicitous children must impose an implicit restriction to the definite (as in the closest to the house), otherwise only the plural interpretation is felicitous (as there are 3 toys next to the house).

Results and Discussion: BrP and MexS speaking children can use plural morphology in indefinite NPs in contrast to ChS children whose answers are biased towards the singular interpretation (Table 2). Table 3 shows the distribution of subjects by response types. Most subjects either use or do not use number

morphology. Very few have mixed-type responses. Tables 4 & 5 show the responses for the experiments with the definite determiner. The definite NPs experiment biased children towards the plural interpretation (without the implicit restriction). The main error is treating the singular definite as a plural. In the singular definite, 50% of BrP children have mixed responses, sometimes answering with a singleton and sometimes with a plurality, unlike the Chilean children. The results suggest that the impact of variation in BrP children is milder and seems to cause more of a processing load when the task is more complex (definite singular) but there is no evidence that BrP children have a non-adult grammar at this point, since they have no problem with the indefinite plural. ChS children' systematic responses in both experiments, on the other hand, show that children are still entertaining a non-adult grammar.

Table 1: % Distribution of plural morphology in the adult language

Chilean Spanish (Miller 2007)			Brazilian Portuguese (Koelling 2004)		
	%Determiner	%Noun		%Determiner	%Noun
[s,h]	85	50	[s]	98	59
Ø	15	50	Ø	2	41

Table 2: % correct Indefinites in ChS & BrP in comparison to MexS-speaking children

Child Group	N	Age	% Indefinite plural	% Indefinite singular
MexWC	11	3;09-5;11 (M=4;07)	84	100
ChWC	50	4;01-6;01 (M=5;00)	**59**	92
BrWC	18	3;9-5;9 (M=4;10)	89	89

Table 3: Plural indefinites: distribution of subjects according to response types

Child Group	N	%Subjects Singletons	%Subjects Pluralities	Mixed: Pl+Sg
MexWC	11	9	91	0
ChWC	50	**58**	**36**	6
BrWC	18	5	90	5

Table 4: % correct definites in ChS & BrP in comparison to MexS-speaking children

Child Group	N	Age	%Definite plural	%Definite singular
MexWC	30	3;06-6;02 (M= 4;06)	96	92
ChWC	27	4;00-4;07 (M=4;04)	74	75
BrWC	18	3;9-5;9 (M= 4;10)	82	**53**

Table 5: % Plural indefinites: distribution of subjects according to response types

Child Group	% Definite singular				% Definite plurals			
	Systematic behavior			Mixed behavior	Systematic behavior			Mixed behavior
	Sing	Plural	Sg+Pl		Sing	Plural	Sg+Pl	
MexC	93	7	100	0	0	100	100	0
ChC	70	15	85	15	14	64	78	22
BrC	28	22	**50**	**50**	11	83	94	6

Figure 1: Give me the frog(s) next to the house