

## An artificial language investigation on number and number neutrality

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In this paper we use an artificial language (modeled after Hudson Kam & Newport, 2005, 2009), to test American English (AmE) and Brazilian Portuguese (BrP) adult subjects' ability to learn a number system in which number is not grammaticalized, as in Korean. We ask how learners acquire a system that has number-neutral bare NPs (which can be interpreted as singular or plural) and optional singular and plural morphemes, with particular interest in how they interpret plural- and singular-marked NPs in neutral vs. downward entailing (DE) environments (negation in this case).

Background: In a Korean-like language, bare nouns appear freely in argument position with a number-neutral interpretation (Kang, 1994; Kwon & Zribi-Hertz, 2004). To disambiguate between a plural and singular interpretation, the number 'one' or a pluralizer morpheme (teul) can be optionally added to an NP. In AmE, the singular/plural distinction is obligatory and bare count nouns cannot appear in argument position. BrP allows bare count nouns in argument position with a number-neutral interpretation, as in Korean; like AmE, however, it has a grammaticalized plural/singular distinction elsewhere (Schmitt & Munn, 2002). With respect to the interpretation of plural morphology, BrP patterns with AmE in opposition to Korean. In BrP and AmE, singular is semantically specified as 'one', and plural is semantically unmarked (Sauerland et al., 2005; Spector, 2007; Zweig, 2008). In neutral contexts, a plural is interpreted as referring to a set of 'more than one' element, but in negative contexts, a plural is interpreted as 'one or more than one'. In AmE, (1a) is true iff the lion circles no dogs (the same holds for BrP speakers). If it circles even one dog, (1a) is false. In Korean, (1b) is interpreted as >1 and will be true if the lion circles one dog or no dogs.

- (1) a. The lion did not circle dogs.  
b. saca-nun kay-tul-uy cwupyen-ul maymtolci anh-a-ss-ta  
lion-TOP dog-PL-GEN near-ACC circle NEG-do-PST-DECL

The results suggest that BrP and AmE participants correctly used the bare NP with singleton and multiple-item pictures and also used the plural-marked NP for sets of >1 (no statistical difference by language group). In the final comprehension task of neutral environments (Figure 2), both BrP and AmE participants treated the bare NP as number neutral and the plural as >1 reading only. Interestingly, in negative contexts, based on the average of the 17 (of 29) participants who learned negation (5 BrP and 12 AmE), all participants seem to be interpreting the plural-marked NPs as 'more than one' (as in Korean), rather than what they would do "in their native language". These findings suggest that, when facing a three-way distinct number system (where 50% of NPs in the input language were bare NPs), plural cannot be treated as semantically 'one or more than one'.