

Implicature for Plurals in Child Grammar

Terue Nakato-Miyashita and Tom Roper

Kitasato University and University of Massachusetts, Amherst

Children seem, surprisingly, to misunderstand plurals: they answer “yes” to the question like (1) (Sauerland et al. (2005)).

(1) Does a dog have tails?

Why do children give such a non-adultlike answer and how do they obtain the adult restriction? One possibility is that children cannot compute an implicature associated with the interpretation of bare plurals (cf. Spector (2007)). Bare plurals sometimes allow singular reference as in (2).

(2) Does your office have windows? -- Yes, one. (Sauerland et al. (2005))

Their interpretive possibility is contextually determined and rejection of that possibility depends upon an implicature that there is a better way to say it: a dog has a tail. The interpretation of definite plurals, on the other hand, is semantically determined given the assumption that the definite determiner selects the maximal element from the set denoted by a plural noun. Little is known about how children acquire such an intricate distinction between bare and definite plurals. The aim of our presentation is to give predictions made by syntactic and semantic proposals on adult grammar, together with an acquisition principle, and to provide acquisitional evidence for them.

Various proposals have been made with respect to the semantics and syntax of nominal projections. Chierchia (1998) argues that the semantics associated with root nouns is parametrized and that a mass/kind semantics is given as a default value. The majority of current syntactic literature assumes that NP has extended functional projections such as DP and NumP (Longobardi (2001), Schmitt and Munn (2002), Munn and Schmitt (2005), Watanabe (2006, 2009) among others). Another shared assumption is that a projection associated with number is included in the extended projections above NP, such as NumP or ϕ P (Sauerland (2003) among others). In order to give an appropriate interpretation to nominals, the semantics of number morphology and determiners, and implicature have to be computed at the projections above NP.

Under these assumptions, it is the full-specification of the semantic and syntactic features at the functional projections that children must possess in order to determine exactly where plural interpretation occurs. Plural interpretation would occur where Agreement occurs, DP. Under the structure [D [NP and NP]], the conjoined NPs only become a plural at the DP level: “the man and woman *are* here”. Then, it is natural that DP should be the level for implicatures. Economy of representation (Pérez-Leroux and Roeper (1999)) suggests that children should start with a minimal representation (NP not DP). If this is true, children go through a stage only with NP, not DP (or a stage without full feature-specification of functional projections), where nominals are uniformly given a mass/kind semantics. This makes early English like Japanese where no number is represented on N. English children could pass through a Japanese stage, but not the reverse. Therefore we predict:

(3) Children will not reject a plural for a singular reference until (a) DP is represented with fully specified features and (b) implicatures are computed.

Children use *the* for a unique reference by three years old. However *the* with a singular noun still does not guarantee DP. As de Villiers and Roeper (1995) observes, there is no DP barrier initially and children seem to generate *the* as Spec-NP. Our earlier work (Nakato-Miyashita (2011)) has shown that 3-to-6-year olds fail to grasp number-morphology if number is marked only on nominals. Also, implicatures have been argued to occur in the 5-to-7-year range (see Huang and Snedeker (2009)). Then, we predict late recognition of the impact of determiners on plural interpretation and further delay of the acquisition of the interpretation

of bare plurals. We also predict that children have further difficulty rejecting plurals for a singular reference when there is a conflict between context and syntax with conjoined nominals. Even adults easily say “yes” to a question with two conjoined nominals in the situation where context provides a singular and a plural, for example, one pepper and two onions.

In order to see if these predictions are correct, we conducted two experiments. In the first experiment, 50 6-to-8 year old children were given a picture and a question with an indefinite singular, a bare plural, or a definite plural ((4)).

(4) Picture 1: A boy is looking at two books.

Instruction: This is Harry. Harry is looking at books that he likes.

Picture 2: The boy is holding one of the two books.

Test Sentence: Did Harry take a book/books/the books?

Our results show that even when *the* is present, only the 7- and 8-year-olds reject the test sentences and that children are likely to start to make a distinction between bare and definite plurals at around the age of eight.

Based on their response pattern in the first experiment, we asked 31 6-to-8-year-old children to participate in the second experiment. They were divided into two groups: those who tended to accept singular reference of plurals and those who could deny it. They were given a series of pictures and a question with coordinated plurals with a definite determiner or coordinated bare plurals ((5)). Only in the former case, it is clear that a single DP dominates two plural NPs.

(5) Pictures: Two children are talking about what they like (for example peppers and onions) → A mother bought one pepper and two onions.

Test Sentence: ‘Oh good. You bought the peppers and onions / peppers and onions.’ ‘Is that right?’

Our results show that it is hard for the children to reject a singular reference even if they make a singular-plural distinction in the first experiment. The results also show that children seem to start to make a distinction between definite and bare plurals at around the age of eight.

This provides strong evidence that children do not compute implicatures when DP is not fully represented. Our evidence also provides unique support for the idea that implicature computation is directly linked not only to higher syntactic categories, but to categories which vary parametrically cross-linguistically. This in turn provides evidence for the claim that the syntax-semantics-pragmatics interface is UG-determined and not a result of purely cognitive factors.

Selected References

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