Exhaustivity in Clefts & Questions, and the Quantifier Connection – A Crosslinguistic Study

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Cleft constructions and wh-questions share the property of having an exhaustivity requirement, Kiss (1998), Hagstrom (2003). In a situation where John ate a sandwich and a banana and other non-eaten items are a cookie and a hamburger, the cleft in (1) and the answer in (2)b. are not appropriate since they do not list all the items that have been eaten, i.e. they are non-exhaustive.

(1) # It is the sandwich that John ate.

(2) a. What did John eat?
    b. # John ate a sandwich.

Exhaustivity also applies to multiple questions where the exhaustive answer consists of a pair list response, (3)b.

(3) a. Who ate what?
    b. John ate a sandwich, Peter ate a banana, Susan ate a cookie etc.

Furthermore, exhaustivity is an inherent property of universal quantifiers like every. Hence, sentence (4) is inappropriate in a situation where 3 women are sailing boats and 1 is standing ashore.

(4) # Every woman is sailing a boat.

This paper is a systematic study of when and how children acquire the exhaustivity requirement across these structures. The experimental results show that exhaustivity emerges in the following sequence: simple questions and quantifiers and later in multiple questions and clefts, graph (5).

(5) Average % correct answers by age groups
A study using a Truth-Value Judgment task for clefts and a questions-after-pictures task for questions and quantifiers was conducted with 3 to 6-year-old monolingual American children. 15 children each for age groups 3-4-5 and 7 children for age group 6 were tested (total 52 children). The study included 5 cleft items and 6 items each for simple questions, multiple questions and quantifiers in addition to control/filler items, equaling a total of 48 data points per child.

The results exhibit a main effect of structure type, showing that exhaustivity in simple questions/quantifiers is acquired significantly earlier than in multiple questions/clefts, F(1,48)=52.7, p<0.001; and a main effect of age, F(3,48)=3.87, p=0.015. There were no differences within simple questions and quantifiers, nor within multiple questions and clefts. Whereas the simple question/quantifier pair exhibits only a marginal age trend, F(3,48)=2.31, p=0.089, the multiple questions/clefts pair exhibits a significant age effect, F(3,48)=2.98, p=0.041.

The analysis put forward is that children have a greater difficulty acquiring multiple questions and clefts than simple questions/quantifiers for independent reasons. Multiple questions are acquired late because children are unable to connect two variables which is required to derive an adult pair list answer. Clefts are acquired late because the child does not impose exhaustivity due to confusions with minimally different structures that do not have an exhaustivity requirement, such as an existential relative structure as in (6) as opposed to (1).

(6) There is a sandwich that John ate.

The same study is currently run in German. The same sequence of acquisition of exhaustivity as observed for English is predicted for these languages since the studied structures are comparable in complexity. Superiority violations are not observable for German matrix questions thus a greater variability in non-exhaustive answer patterns in German than in English children is predicted.