

Experimental evidence for inherent grouping in preschool children

In multimodal studies of recursion (cf. Hunyadi 2006, Hunyadi to appear) it was found that significant properties of linguistic recursion, especially those found in prosody have a general cognitive nature and are present in the representation of abstract visual, abstract prosodic and concrete linguistic patterns alike. It was also pointed out that multimodal recursion is based on universal patterns of grouping. Essentially, it was shown that grouping is inherent, i.e. grouping is present as a representation of stimuli consisting of otherwise ungrouped elements. In view of this universal nature of recursion it is important to address the possible evolutionary nature of inherent grouping by, among others, trying to identify its traces in young children.

To test the presence of inherent grouping in preschool children (age 4-6) two linguistic and one non-linguistic protocol were used. In the simple linguistic situation we tested 9 different arrangements of 3-5 dog toy figures. They were given the task to imitate a bark for each dog. To control the possible role of memory capacity we applied a complex linguistic situation, where a more complex reaction was requested for a dog.

To test the general nature of inherent grouping we used a non-linguistic protocol too. The same subjects had to clap for each smile image they saw in a row.

In all situations the lengths of pauses (in ms) were measured between the corresponding two barks/claps.

In the second part of the series of experiments we tested different levels of perception and/or production of recursive structure in accordance with different arrangements of object.

All the different conditions in the experiments were counter-balanced.

Our results show the presence of inherent grouping behavior in preschool years. In the case of patterns with over 3 elements (toy figures) children systematically regroup stimuli into smaller chunks depending on the global amount of elements, regardless of individual differences in motor skills that was the tendency for the nonlinguistic stimuli. Since working memory capacity (measured by a non-word repetition task) apparently has no bias towards grouping performance, we can conclude that this tendency for regrouping incoming information seems to be a global behavioral tendency even in early years.

References:

Hunyadi, Laszlo, Grouping, the cognitive basis of recursion in language, *Argumentum* 2 (2006), 67-114.

Hunyadi, Laszlo, Cognitive grouping and recursion in prosody. To appear in H. van der Hulst and D. Everett (eds.), *Recursion in Human Language*. Mouton