Grammatical constraints on event packaging and potential effects on the segmentation of the perceptual stream: Motion events in language and cognition under a cross linguistic perspective

Definitions of the category *event* can be found in different disciplines, ranging from linguistics, cognitive science, psychology to physics. They all have in common that they take events as entities in time (cf. Davidson's definition 'events are objects in time' or in physics as 'a single occurrence that is localized at a single point in space and instant of time'). What we do not get by this definition, however, is a criterion for segmentation, i.e., for setting boundaries. Previous studies on event segmentation in cognition (e.g. Radvansky & Zacks 2014) and linguistics (e.g. Bohnemeyer & Pedersen 2011) show that there is no 'natural' way of forming events. While we know some of the criteria people draw on when forming events, such as *change of state of an entity* or *causal relations between states of affaires*, the challenging questions remain which factors guide a person a) when segmenting the perceptual stream in cognitively manageable packages and b) when selecting components to form a propositional unit, expressed in language, and c) whether and d) how these levels interact. It is the latter question which we will address in our paper: We are interested in the role of linguistic structure in processes of segmentation in perception and cognition. The conceptual domain of motion events provides an interesting field of study in this respect. It is well-known that languages package information on motion events differently (cf. Talmy 2000). Cross linguistic research has shown that different languages do not only offer different options for referring to motion events but that event construal is grammatically constrained leading to differences in what constitutes a *reportable event* in a language (the authors). The following examples illustrate two types of constraints: (1) path segmentation; *A child is running across the lane into the house.*vs. *Un enfant traverse le chemin et entre dans la maison.*('A child crosses the lane and enters the house'). Both verbalisations refer to the same limited part of the external world. English speakers, however, can present it as one unit of cognitive processing, while French speakers must form two, if they want to express the same amount of information. (2) Boundary crossing; *A car is driving into the village* vs. *Une voiture roule (sur la route) et entre dans le village*. (A car is driving (on the road) and is entering the village.). Again, we have a situation which can be expressed in one cognitive unit in English, including manner and path of motion, while French speakers have to produce two.

Drawing on a large data base on the description of motion events across nine languages (the authors, 2006-2015), elicited by using short real world video clips as stimuli, we can identify specific types of scenes which are almost uniformly segmented differently by speakers of different languages, patterns which we attribute to the different linguistic systems. The question we will approach in the current study is the following: Are the differences in event representation at the verbal level (type 1 and 2 above) reflected in visual processing of the input? If so, are there differences between segmentation for verbalization and segmentation in a non-verbal task? The methodology we use is eye tracking during scene description (verbal) and during a button-press (non-verbal) segmentation task. First results reveal that native speakers of French and English show different segmentation patterns which to some extent correlate with specific patterns of visual attention. The results will be discussed in the

context of the general question on principles of event segmentation across cognitive modes.

References

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