Aspects interpretation and increment size – a cross-linguistic eyetracking study
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Languages differ in their grammatical means of expressing aspect (e.g. Comrie 1976) but what are the processing consequences thereof? We conducted a cross-linguistic eyetracking study to investigate how online processing is adapted to the aspectual properties of a language. We compared the time course of aspectual mismatch detection in German which lacks overt marking of aspect with mismatch detection in Russian. We hypothesized that in an aspect language like Russian temporal adverbials immediately impose restrictions on aspect choice, whereas non-aspect languages leave the aspectual interpretation underspecified until the processor has encountered a complete predication, i.e. the verb and its arguments (Cross-linguistic Aspectual Variation (CAV) Hypothesis). Thereby, the processor minimizes the risk of aspectual reanalysis in a non-aspect language like German. We exploited the relatively free word orders of German and Russian and constructed 36 items, embedded in larger sentence contexts, in a 2x2 within design: (A) aspectually mismatching adverbials (for x time) vs. controls (x time ago) appeared (B) either before or after transitive achievements (e.g. the famous boxer, subject won, verb (Russian; perfective) the fight, object). We tested SVO-Adv vs. Adv-VSO order in German and SVO-Adv vs. Adv-VOS order in Russian. The CAV hypothesis led us to expect an immediate mismatch effect at the verb in Russian Adv-VOS sentences, whereas German readers of Adv-VSO sentences should wait until the object before being able to detect an aspectual mismatch.

Pretest: Russian sentences of the type for two hours won, perfective cannot be continued in any sensible way. This is different for their German counterparts as in zwei Stunden lang gewann niemand etwas (for two hours won nobody anything). Finding delayed mismatch effects in German Adv-VSO sentences as opposed to immediate effects in Russian could thus be due to anticipating an appropriate continuation. We conducted a combined acceptability judgment/continuation study. 60 native German speakers had to decide whether up to the verb the items in the Adv-V(OS) mismatch condition allowed for a sensible continuation and if so, had to write it down. In the majority of the cases (70%) participants rejected the sentence beginnings as nonsensical. Thus, immediate effects could in principle be expected in both languages.

Exp. 1: 36 monolingual native German speakers read the items (112 fillers) and provided a sensicality judgment after each sentence. Mismatch was correctly rejected in 82% of the trials indicating that readers paid attention to aspectual properties. In the SVO-Adv order mismatch slowed down RTs of the adverbial during first-pass reading (mismatch: 702ms vs. control: 581ms; ANOVAs p<.01) and regression path durations (930ms vs. 684ms; p<.01), but did not lead to a significant increase of regressions out. As predicted by the CAV hypothesis, in the Adv-VSO order mismatch and control differed neither in first fixation durations, first-pass times, regression path durations or proportions of regression out before the object. Only then mismatch started to yield results resulting in more regressions out (21% vs. 13%; GLME: p<.05) and longer regression path durations (652ms vs. 534ms; p<.01) than in the control condition.

Exp. 2 (24 monolingual native Russian speakers; identical experimental setup): In the SVO-Adv word order we observed clear mismatch effects at the adverbial: mismatch increased the proportions of regressions out (40% vs. 13% (control); GLME: p<.01) and led to increased regression path durations (mismatch: 1175ms; control: 875ms; ANOVAs p<.01). In the Adv-VOS order mismatch yielded immediate effects at the object immediately following the achievement verb with the perfective suffix: It led to more regressions out (38% vs. 23% (control); p<.05) and longer regression path durations (mismatch: 770ms; control: 587ms; p<.01) than control. The effects appeared locally at the word following the aspectually marked verb. At the following two regions containing the subject (the famous, boxer) mismatch and control did not differ reliably.

Conclusions: German readers specified lexical aspect only after having seen the verb and both arguments. In line with the CAV hypothesis they seem to require a sentence-sized processing domain before they can start compositional aspectual interpretation. Russian native speakers, by contrast, immediately compose the adverbial with the verb in an incremental fashion.