

Background

Current findings evidence intrinsic features of events are caught by images routine activation during events comprehension (De Vega, 2005; Fischer & Zwann, 2008) (e. g., RUNNING as motion on a lateral axis. Instead, JUMPING as motion on a vertical axis). Particularly, Richardson et al., (2003) registered single images (schemas) related to verbs devoted to describe lateral motion as RUNNING and vertical motion as BOMBING. At the same time, other studies (Santiago et al 2007) found imaginistic representation of extrinsic features of events as time. For example, Left-Past Right-Future mappings or Left-Potential Right-Factual mappings (Aguirre & Santiago, 2015). Then, intrinsic and extrinsic event's features got an imaginistic representation. Both kind of imaginistic representations seem to result of the concept's sensibility to perceptive and motor experience. Then, we wonder how the activation of imaginistic representation of these features is modulated: they compete or become melded into holistic representations? On the aim of testing the scope of embodied cognition claims we assess the role of attentional task demands and working memory load. Although intrinsic and extrinsic event's features got an imaginistic representation, we predict task demands and working memory load modulate alternative priming and interference effects.

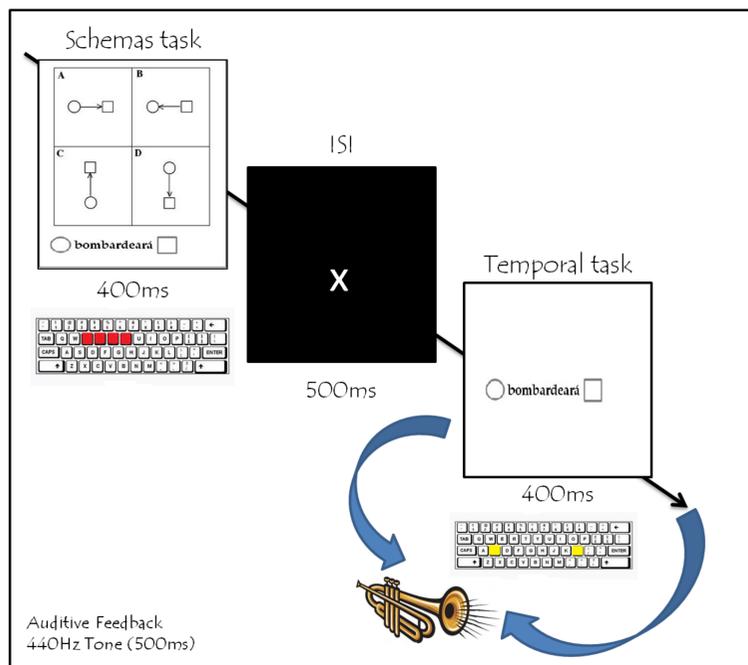
Aim

Testing the effects of highlighting intrinsic spatial features of motion events on using L-R mental timeline for processing time of verbs

Method

SCHEMAS TASK: Similar to Richardson et al (2003), in a forced-choice task, past and future verbs were placed in a simple rebus sentence, with circle and square symbols representing agents and patients, respectively. Participants were asked to select one of four simple image schemas that best reflected the meaning of each verb. 21 lateral (11) and vertical (10) verbs were translated and adapted from Richardson et al. (2003) norming study of image schemas. These verbs were included into a Likert scale test (4 points) done by 25 non-experimental participants. Verbs scored between 3 (agreement) and 4 (plenty agreement) points at the score were included at the task. The others were replaced by Spanish similar score options.

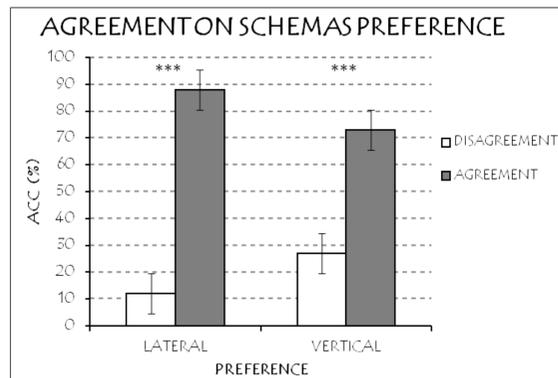
TEMPORAL TASK: After Schemas Task, participants were asked to categorize the same verbs of previous rebus sentences as referring to past or future events by pressing a left ("s") or right ("l") response key on a keyboard. There were two experimental blocks, one for the congruent time-response mapping and the other for the incongruent mapping. In the congruent condition, participants pressed the left key in response to past verb forms, and the right key in response to future verb forms. In the incongruent condition, this mapping was reversed. The order of blocks was counterbalanced over participants.



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Results

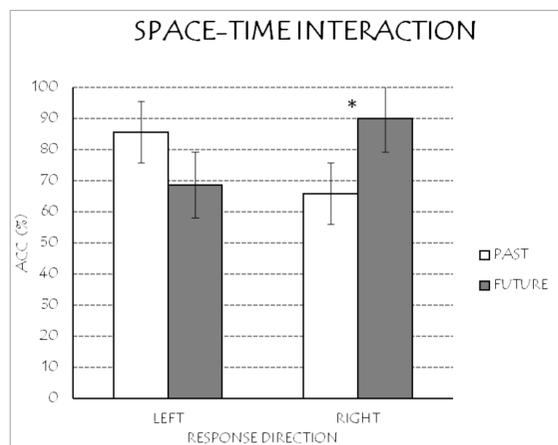
N = 25
Uruguayan Spanish native speakers
Right-handed = 23
Left-handed = 2
Women = 18
Men = 7
Age = 19-58
Age (Mean) = 17,24
Age (SD) = 2,0
Verb intrinsic feature (Horizontal vs Vertical) X Verb extrinsic feature (Past vs Future) X Response side (Left vs Right)
Schemas task (ACC): Wilcoxon signed-rank test. Temporal task: ANOVA repeated-measures, T-test. Outliers defined by Temporal task (1.8%)



SCHEMAS TASK

Agreement (between Likert test and participants) on labeling verbs as lateral or vertical events

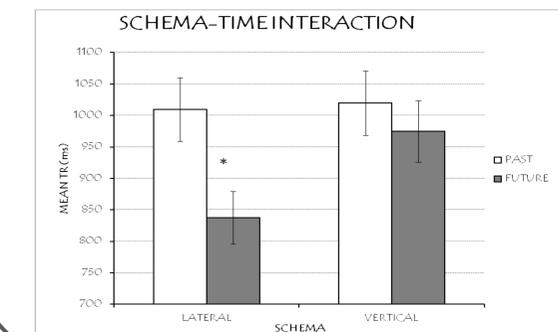
SPATIAL SCHEMA-VERB INTRINSIC FEATURE REGISTERED



TEMPORAL TASK

Higher accuracy for past events with left hand and future events with right hand than the opposed mapping. Verb's schema did not affect the space-time mappings registered by accuracy measures. Latencies did not register the congruency effect

SPATIAL SCHEMA-VERB EXTRINSIC FEATURE REGISTERED



UNEXPECTED

Future was faster processed for lateral verbs than for vertical ones

Meaningful shorter latencies for processing future lateral verbs than in the other conditions

Discussion

SCHEMAS TASKS did not register interactions between events schemas (Lateral vs Vertical) and time of events. Instead of, the TEMPORAL TASK did. These results suggest attending to the role of working memory load of the double task at each essay. Mainly, the latencies were shorter at the TEMPORAL TASK than in previous studies (Santiago et al 2007; Aguirre & Santiago, 2015): exposing participants to the temporal meaning of events at the SCHEMAS TASK had effects on TEMPORAL TASKS latencies. Then, we suggest registering the L-R mental timeline by accuracy measures at the TEMPORAL TASK would be a consequence of: (i) time of events was partially processed by participants when doing the SCHEMAS TASK whenever this information was not relevant for the task, (ii) this stored time information in working memory became relevant at the TEMPORAL TASK.

Additionally, at the TEMPORAL TASK the unexpected two ways Schema-Time interaction suggest to explore whether processing future is primed for horizontal events than for vertical events. As an hypothetical speculation, this interaction would result of the matching between horizontal verbs schema and the lateral axis of L-R mental timeline.

Conclusions

The L-R mental time line was registered for lateral and vertical events without differences between them. Although imaginistic representations of intrinsic and extrinsic features of events can be registered, these results suggest task demands rule the alternative activation of these representations. A non same sized L-R mental timeline for lateral and vertical events was not supported by results. However, the two ways Schema-Time interaction suggest processing lateral and vertical events differ in ways others. On a brief summary, results suggest this spatial imaginistic representation become not clearly melded even when task demands would use shared information stored at the working memory: spatial schema-verb intrinsic feature or spatial position-verb extrinsic feature become alternatively activated, but they not seems to interact or have an automatic activation. Trying the opposite task order at each essay is a strategy for testing these suggestions.

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