Reaction time used as a mean to asses perceptual latencies in cortical motion processing.

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In a previous work we showed that a moving object (primer) whose trajectory intersects the trajectory of another objet (target) increases the magnitude of the flash lag illusion. Based on those results we argued that a pre-activation mechanism could be involved in the generation of the illusion, given by the combination of the feed-forward sensory input and intra-cortical horizontal connections, which result in a reduced perceptual latency. A consequence of this mechanism would be that the reaction time (RT) to the detection of a target should be less when it is preceded, in a certain time window and spatial surround, by a moving object that converges to the same spot. We showed, inducing motion illusion with short sequences of gabor patches and varying the spatial and temporal relations between them and the target that the RT is, indeed, modulated in a manner consistent with the pre-activation mechanism. In the limit, when just one primer is present, we get the configuration studied by Polat and Sagi (1993) where two gabor patches were presented flanking a central target. They showed that the flankers, depending on the lateral distance and timing, reduce the threshold for target detection. We carried out similar experiments using RT and we obtained similar qualitative and quantitative results getting further support to our approach. Interestingly Polat and Sagi relate their findings to contour integration and we relate ours to motion perception. Naturally, the same circuitry is activated in both cases and the outcome of the processing will depend on contextual elements and the reciprocal connections with other areas. A neural pattern will prevail, emerging from those dynamic interactions, which will ultimately determine the effective percept.