**Doubling Attention’s Temporal Resolution?**

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**Introduction:** Previous work suggests that visual attention samples the environment approximately seven times per second (VanRullen, Carlson & Cavanagh, 2007). Previous work also suggests that distinct neural resources mediate attention to the left visual field (LVF) and the right visual field (RVF) (Alvarez & Cavanagh, 2005). Here, we investigated the extent to which these independent LVF and RVF neural resources might operate additively to approximately double attention’s temporal resolution.

**Method:** Denison University undergraduates viewed bilateral-stream RSVP displays containing two targets (T1 and T2) and reported the identity of each target on each trial. Across trials, four target-hemifield configurations (LL, RR, RL, LR) varied randomly. In Experiment 1, the LVF and RVF streams were either temporally synchronized or asynchronized such that new visual information appeared at either 7.5 or 15 Hz, respectively. Experiment 2 comprised the asynchronized condition from experiment 1, and a “triple” condition that embedded T1 and T2 within separate LVF-only or RVF-only stimulus trios at 15 Hz.

**Results:** Experiment 1: Doubling the visual information rate from 7.5 Hz (synchronous condition) to 15 Hz (asynchronous condition) did not impair T2|T1 accuracy (p=0.162, n.s.). Also, T2|T1 accuracy for LVF-T2’s significantly exceeded that for RVF-T2s (p<0.001). Experiment 2: T2|T1 accuracy in the asynchronous condition significantly exceeded that in the laterally faster “triple” condition when the two targets appeared within the same hemifield (p<0.001). This effect vanished when the two targets appeared in separate hemifields. T2 accuracy also significantly exceeded T1 accuracy in the triple condition’s “RL” hemifield configuration (p<0.05), further evidencing a LVF advantage.

**Conclusion:** Our findings suggest that independent LVF and RVF neural resources can cooperate to effectively double attention’s temporal resolution, under appropriate stimulus conditions. Additionally, the present LVF advantages further support a right parietal lobe “when” pathway (Battelli, Pascual-Leone & Cavanagh, 2007).

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Here, we investigated the extent to which visual attention’s ~7 HZ temporal resolution might be increased by phase-shifting dynamic visual information across the LVF and RVF. If both of these earlier findings were true, one would expect that the independent LVF and RVF neural resources could operate additively, thereby doubling the rate at which attention samples the entire visual field. Here, we tested this possibility by phase-shifting dynamic information across the lateral hemifields.

Experiment 2A comprised the asynchronized condition from experiment 1, and a “triple” condition that embedded T1 and T2 within separate LVF-only or RVF-only stimulus trios at 15 Hz. We again used experiment 2A’s “triple” condition in experiment 2B but required the participants to report only T2, ignoring the physically present T1. Lastly, experiment 2C differed from experiment 2B only in that we physically removed T1 from each display.

Also, T2|T1 accuracy in the LVF significantly exceeded that in the RVF (p<0.001). In experiment 2, T2|T1 accuracy decreased significantly in the laterally faster “triple” condition when the two targets appeared within the same hemifield (p<0.001).

**Conclusion:** Our findings suggest that visual attention’s temporal resolution is set “regionally” (separately in the lateral hemifields), not globally (across the lateral hemifields). Additionally, the present LVF advantages further support a right parietal lobe “when” pathway (Battelli, Pascual-Leone & Cavanagh, 2007).