weights for each voxel as its mean responses to single words on the left and right in the
counter scans. We then “inverted” the model via linear regression to estimate the two channel
responses in each condition of the main experiment (Figure 3A). Comparing channel responses
across cue conditions indexes the effect of spatial attention on voxels that are tuned to specific
locations and may reveal effects that are obscured by averaging over all voxels in an ROI.

But not all regions necessarily contain two parallel spatial channels; in fact, we predict
that a region after the bottleneck should only have one channel. Therefore, we also fit a simpler
one-channel model to each region and compared its fit quality to the two-channel model. In the
one-channel model, each voxel is given a single weight: the average of its localizer responses to
left and right words. We then model the voxel responses in each condition of the main
experiment by scaling those weights by a single channel response.

![Figure 3: Estimated left hemisphere channel responses from the spatial encoding model.](image)

(A) Mean responses, separately for each ROI, channel, and cue condition. (B) Selective attention effects: the differences between each channel’s responses when its visual field location was focally cued vs. uncued. (C) Divided attention effects: the differences between each channel’s response when its location was focally cued vs. when both sides were cued. Error bars and asterisks as in Figure 2. See Figure S4 for right hemisphere data.

Adjusting for the number of free parameters, we found that the two-channel model fit
significantly better than the one-channel model in left hemisphere VWFA-1: mean adjusted R² =
0.63 vs. 0.57; 95% CI of differences between models = [0.02 0.19]. In left VWFA-2, the two-