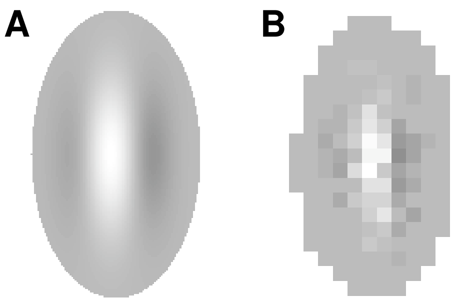

Figure 2. Gabor-shaped cortical RFs. Lighter grays to white: positive values of Gabor function, corresponding to weights of ON-center LGN cells with centers at corresponding spatial positions; darker grays to black: negative values of Gabor function, corresponding to weights of OFF-center cells. **A**. A full Gabor function, used to determine LGN inputs to a cortical cell in the conceptual model. **B**. Typical LGN inputs to a cortical cell in the computational model, after probabilistic sampling from the full Gabor (see Methods). These receptive fields are 'typical'; different cortical cells may have different preferred orientations, spatial phase (relative locations of ON or OFF subregions), spatial location and, in the computational model, different outcomes of the probabilistic sampling. Spatial frequency of sinusoid in Gabor function is 0.8 cycles/degree.

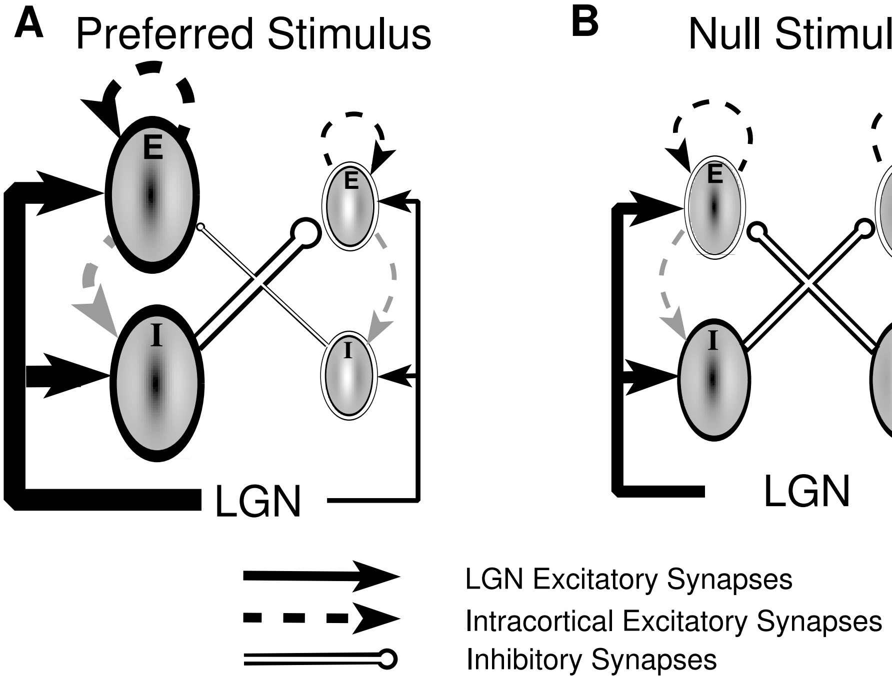

Figure 6. Behavior of model using correlation-based connectivity. Schematic representing behavior of the model in response to preferred (**A**) and null (**B**) stimuli. The excitatory cell described in the Results is in the upper left; its inhibitory "anti-phase partner" is in the lower right. E: excitatory cells; I: inhibitory cells. Solid lines: excitation and depolarization; open lines: inhibition and hyperpolarization. Line thickness and size of RF icon represent magnitude of activity. Dashed lines represent correlation-based excitation, which is included in the complete computational model only (Figs. 8-11). Some simulations were performed without cortical excitatory projections onto inhibitory neurons (gray dashed lines), but this did not substantially affect network behavior (see Fig. 13B).