



**Figure 4.** Change in sound modulation index during running laser on trials can be well predicted by the sum of the running and VIP activation effects computed separately. **A.** Example neuron that exhibits an increase in activity during running and during VIP activation. Black traces show responses to WN during laser off trials, cyan traces show WN responses show responses during laser on trials. Mean responses during running trials are indicated with dashed lines. Red line indicates expected combined effect of running and VIP activation (response sitting laser off + change during running + change during VIP activation). **B.** Example neuron showing suppression during running and facilitation during VIP activation. **C.** Running effect on sound modulation index plotted against VIP activation effect on sound modulation index for each neuron. The effect of running and activation VIP neurons do not correlate in the population of recorded cells ( $\rho = 0.11$ ,  $p = 0.25$ ). **D.** Combined change in sound modulation during running and VIP activation plotted against predicted change in sound modulation index computed on running and VIP activation effect separately, showing strong correlation ( $\rho = 0.70$ ,  $p < 0.001$ ). Observed change in sound modulation during running laser on trials can be well predicted by summing effects of running