



**Figure 7 - figure supplement 2. Model comparison for models with alternative parameterization.** (a) compares the optimal model as described in the main text to various alternative models. The first model changes how drifts and bounds relate to coherence (see Supplementary Text), and introduces one additional parameter. The second model fits drifts and bounds separately for all coherences. The other models either use a single non-decision time (instead of one or each modality), no heading biases, or a combination of both. The figure shows the Bayes factor, illustrating that in all cases the alternative models are decisively worse (grey line close to origin indicating threshold) than the original model. (b) and (c) show the overall model goodness-of-fit (left panels) of two model that used an alternative parameterization of how drifts and bounds depend on coherence (see (a)). Furthermore, it compares these models, which still perform optimal evidence accumulation across both time and cues, to sub-optimal models (right panels) that do not (except “separate k’s”, which is potentially optimal). These figures are analogous to Fig. 7 and show that neither change of parameterization qualitatively changes our conclusions.