



Figure 7-figure supplement 1. Model comparison per subject, and random-effects model comparison. (a) shows the contribution of each subject to the model comparison shown in Fig. 7b. As in Fig. 7b, the grey line shows the threshold above which the alternative models provide a decisively worse (if negative) or better (if positive) model fit. As can be seen, the model comparison is mostly consistent across subjects, except for models that weight both modalities either by acceleration or velocity only. Even in these cases, pooling across subjects leads to a decisively worse fit of the alternative model when compared to the optimal model (Fig. 7). (b) and (c) show the results of a random-effects Bayesian model comparison (Stephan, Penny et al. 2009). This model comparison infers the probability of each model to have generated the behavior observed for each subject, and is less sensitive to model fit outliers than the fixed-effects comparison shown in Fig. 7b (e.g., a single subject might strongly support an otherwise unsupported model, which could skew the overall comparison). (b) shows the inferred distribution over all compared models, and supports the optimal model with exceedance probability $p \approx 0.664$ (probability that the optimal model is more likely than any other model). This random-effects comparison causes models with very similar predictions to share some probability mass – in our case the optimal model and the model assuming evidence weighting by the velocity time-course. In (c) we perform the same comparison without the ‘weighting by velocity’ model, in which case the exceedance probability supporting the optimal model rises to $p \approx 0.953$.