**Model fitting to human choice and accuracy data**

"Accuracy increased across the block overall" :

Effect 01: "trial" F(6.87,116.86)=29.902, p=0.000

"but did so faster in blocks with familiar cues." :

Effect 01: "trial" F(6.87,116.86)=29.902, p=0.000

Effect 02: "novel" F(1.00,17.00)=149.680, p=0.000

Effect 03: "novel""trial" F(6.94,117.96)=2.899, p=0.008

"Participants began with a bias to respond `target` that abated across the block in roughly equal measure for the two conditions."

Effect 01: "trial" F(7.37,125.24)=46.063, p=0.000

Effect 02: "novel" F(1.00,17.00)=24.619, p=0.000

Effect 03: "novel""trial" F(6.78,115.25)=0.454, p=0.861

interaction between conditions

"specifically, mean values of alpha\_R were" ... "for blocks with familiar and novel cues respectively, diverging reliably from the respective parameters" ... "that yielded maximal performance under this model in both cases"

**alpha RT**

mean fittings : 0.34 0.49

mean optimals : 0.21 0.18

std fittings : 0.20 0.24

std optimals : 0.08 0.08

familiar ttest : t(17) = +3.65, p = 0.002

novel ttest : t(17) = +5.68, p = 0.000

"similarly, mean values for tau were" ... "both showing a divergence from the performance-maximising parameters" ... "that was statistically reliable"

**alpha\_m**

mean fittings : 2.44 2.22

mean optimals : 1.53 0.96

std fittings : 1.23 1.41

std optimals : 1.03 0.71

familiar ttest2 : t(17) = +2.30, p = 0.034

novel ttest2 : t(17) = +3.71, p = 0.002

**alpha RC**

mean fittings : 0.44 0.43

mean optimals : 0.33 0.26

std fittings : 0.22 0.27

std optimals : 0.07 0.08

familiar ttest : t(17) = +2.05, p = 0.056

novel ttest : t(17) = +2.68, p = 0.016

"however, values of tau were smaller ... and values of alpha\_R were larger" ... "in the familiar relative to novel cues condition"

alpha\_M ttest : t(17) = +0.61, p = 0.547

alpha\_RT ttest : t(17) = -1.98, p = 0.065

alpha\_RC ttest : t(17) = +0.19, p = 0.853

"interaction between fittings/optimal and familiar/novel"

**alpha\_RT**

Effect 01: "cue" F(1.00,17.00)=2.157, p=0.160

Effect 02: "optimal" F(1.00,17.00)=49.771, p=0.000

Effect 03: "optimal""cue" F(1.00,17.00)=6.149, p=0.024

**alpha RC**

Effect 01: "cue" F(1.00,17.00)=0.840, p=0.372

Effect 02: "optimal" F(1.00,17.00)=13.182, p=0.002

Effect 03: "optimal""cue" F(1.00,17.00)=0.399, p=0.536

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RankSum Test

adaptation between conditions

**fittings on taco4**

p(alpha\_M ) = 0.762

p(alpha\_RT) = 0.063

p(alpha\_RC) = 0.848

p(tau ) = 0.116

**optimals on taco4**

p(alpha\_M ) = 0.060

p(alpha\_RT) = 0.410

p(alpha\_RC) = 0.008

p(tau ) = 0.040

deviance from optimality

**familiar on taco4**

p(alpha\_M ) = 0.031

p(alpha\_RT) = 0.026

p(alpha\_RC) = 0.220

p(tau ) = 0.000

**novel on taco4**

p(alpha\_M ) = 0.006

p(alpha\_RT) = 0.000

p(alpha\_RC) = 0.059

p(tau ) = 0.000

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Correlation Parameter / Performance

**ALPHA M**

r(familiar) = -0.3326

r(novel) = -0.5327

p(familiar) = 0.1775

p(novel) = 0.0229

**ALPHA RT**

r(familiar) = -0.2262

r(novel) = -0.4548

p(familiar) = 0.3668

p(novel) = 0.0579

**ALPHA RC**

r(familiar) = -0.5348

r(novel) = -0.0808

p(familiar) = 0.0222

p(novel) = 0.7500

**TAU**

r(familiar) = -0.6949

r(novel) = -0.7033

p(familiar) = 0.0014

p(novel) = 0.0011

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BIC Scores

**Fitting (familiar / novel)**

BIC(human) = 32.0413 ± 0.1759 = 32.7083 ± 0.0744

BIC(god) = 38.6333 ± 0.3613 = 40.0568 ± 0.1324

BIC(hbm) = 36.8194 ± 0.5052 = 38.6293 ± 0.2327

BIC(ta3) = 37.8985 ± 0.2117 = 39.1219 ± 0.1770

BIC(ta3opt) = 39.7748 ± 0.3826 = 41.7100 ± 0.2193

BIC(co3) = 38.0386 ± 0.2196 = 38.9329 ± 0.1918

BIC(co3opt) = 40.6822 ± 0.3417 = 41.7815 ± 0.2204

BIC(taco4) = 39.0755 ± 0.1762 = 40.0401 ± 0.1637

BIC(taco4opt) = 41.3003 ± 0.3899 = 43.1427 ± 0.2243

**Test (familiar / novel)**

BIC(human) = 31.9841 ± 0.2089 = 32.7730 ± 0.0544

BIC(god) = 38.2427 ± 0.4556 = 40.0047 ± 0.2188

BIC(hbm) = 36.5909 ± 0.5426 = 38.3735 ± 0.2471

BIC(ta3) = 39.5754 ± 0.3627 = 41.0839 ± 0.4033

BIC(ta3opt) = 40.4352 ± 0.4451 = 41.6207 ± 0.3443

BIC(co3) = 40.0569 ± 0.3723 = 41.0461 ± 0.3670

BIC(co3opt) = 41.0717 ± 0.4175 = 41.7441 ± 0.3819

BIC(taco4) = 41.2352 ± 0.3060 = 42.5176 ± 0.3498

BIC(taco4opt) = 41.6794 ± 0.4745 = 43.1694 ± 0.3673