

Extended Data Table 1 – Latent profile analysis top 3 BIC values

Model Structure	# of Classes	BIC
VVI – varying variance, fixed covariance	4	-11298.47
VVV – varying variance, varying covariance	2	-11456.46
VEE – equal variance, equal covariance	7	-11494.58

Extended Data Table 2 – Reward Function Descriptions

Reward Function	Description
R1	- Split reward functions based upon the given advice agreeing with own classification - reduced complexity for receive advice context (gamma is held at .5). - Probability of staying with same answer given receiving advice that is inconsistent with own classification is random
R2	Sensory evidence alone
R3	- Split reward functions based upon giving/receiving advice - Probability of consistent responding is complementary to probability of inconsistent responding for that context
R4	- Split reward functions based upon giving/receiving advice - Probability of consistent responding is complementary to probability of inconsistent responding for that context - Reduced complexity for receive advice context
R5	- Split reward functions based upon the given advice agreeing with own classification - Same for give/receive advice contexts
R6	- Split reward functions based upon the given advice agreeing with own classification - reduced complexity for receive advice context (eta is held at .5). - Probability of staying with same answer given receiving advice that is consistent with own classification is random

Extended Data Table 3 – Reward Function Equations

Reward	Reward Function - Give	Reward-Function, Receive
R1	$R_{o,advice=C1} = 2s\eta + s(1 - \eta) + (1 - s)(1 - \gamma)$ $R_{o,advice \neq C1} = 2s\gamma + s(1 - \gamma) + (1 - s)(1 - \eta)$	$R_{o,advice=C1} = 2s\eta + s(1 - \eta) + (1 - s)0.5$ $R_{o,advice \neq C1} = s + 0.5s + (1 - s)(1 - \eta)$
R2	$R_o = s + s(0.5) + (1 - s)0.5$	$R_o = s + s(0.5) + (1 - s)0.5$
R3	$R_{o,advice=C1} = 2s\eta + s(1 - \eta) + (1 - s)(1 - \eta)$ $R_{o,advice \neq C1} = 2s(1 - \eta) + s\eta + (1 - s)\eta$	$R_{o,advice=C1} = 2s\gamma + s(1 - \gamma) + (1 - s)(1 - \gamma)$ $R_{o,advice \neq C1} = 2s(1 - \gamma) + s\gamma + (1 - s)\gamma$
R4	$R_{o,advice=C1} = 2s\eta + s(1 - \eta) + (1 - s)(1 - \eta)$ $R_{o,advice \neq C1} = 2s(1 - \eta) + s\eta + (1 - s)\eta$	$R_{o,advice=C1} = s + 0.5s + (1 - s)(1 - \gamma)$ $R_{o,advice \neq C1} = 2s\gamma + s(1 - \gamma) + (1 - s)0.5$
R5	$R_{o,advice=C1} = 2s\eta + s(1 - \eta) + (1 - s)(1 - \gamma)$ $R_{o,advice \neq C1} = 2s\gamma + s(1 - \gamma) + (1 - s)(1 - \eta)$	$R_{o,advice=C1} = 2s\eta + s(1 - \eta) + (1 - s)(1 - \gamma)$ $R_{o,advice \neq C1} = 2s\gamma + s(1 - \gamma) + (1 - s)(1 - \eta)$
R6	$R_{o,advice=C1} = 2s\eta + s(1 - \eta) + (1 - s)(1 - \gamma)$ $R_{o,advice \neq C1} = 2s\gamma + s(1 - \gamma) + (1 - s)(1 - \eta)$	$R_{o,advice=C1} = s + 0.5s + (1 - s)(1 - \gamma)$ $R_{o,advice \neq C1} = 2s\gamma + s(1 - \gamma) + (1 - s)0.5$

Extended Data Table 4 – Model Comparison

Model	Reward Function	Parameters	XP	PXP
M1	R1	$\lambda, \alpha, \beta, \eta, \gamma$	0.036	0
M2	R2	λ, α, β	0.073	0
M3	R3	$\lambda, \alpha, \beta, \eta, \gamma$	0.29	0
M4	R4	$\lambda, \alpha, \beta, \eta, \gamma$	0.09	0
M5	R5	$\lambda, \alpha, \beta, \eta, \gamma$	0.02	0
M6	R6	$\lambda, \alpha, \beta, \eta, \gamma$	0.5	1

Extended Data Table 5 – Empirical Priors Distributions, M6

Parameter	Prior Distribution
λ	$\sim \text{Gamma}(21.2365, 0.2062)$
η	$\sim \text{N}(4.1287, 4.2778)$
γ	$\sim \text{N}(-6.0929, 4.6656)$
α	$\sim \text{N}(0.5239, 0.2785)$
β	$\sim \text{N}(0.6028, 0.2594)$