Free-energy bound on surprise

$F = -\langle \ln p(\tilde{s}, \vartheta | m) \rangle_q + \langle \ln q(\vartheta | \mu) \rangle_q$

Action minimizes prediction errors

$F = D(q(\vartheta | \mu) \parallel p(\vartheta)) - \langle \ln p(\tilde{s}(a) | \vartheta, m) \rangle_q$

$a = \arg \max \textit{Accuracy}$

Perception optimizes predictions

$F = D(q(\vartheta | \mu) \parallel p(\vartheta | \tilde{s})) - \ln p(\tilde{s} | m)$

$\mu = \arg \max \textit{Divergence}$