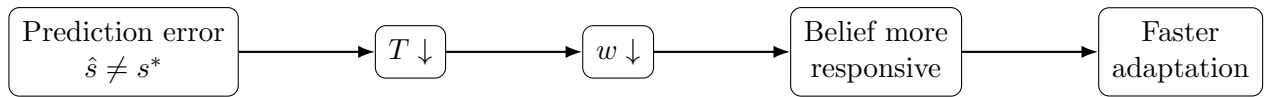# Concept Diagrams: Two Feedback-Loop Variants

Variant 2: Purely Cognitive Loop (Window-only)

Negative/balancing

| Prediction error $\hat{s} \neq s^*$ | → | $T \downarrow$ | → | $w \downarrow$ | → | Belief more responsive | → | Faster adaptation |

Positive/reinforcing

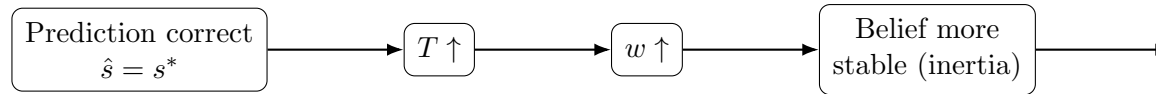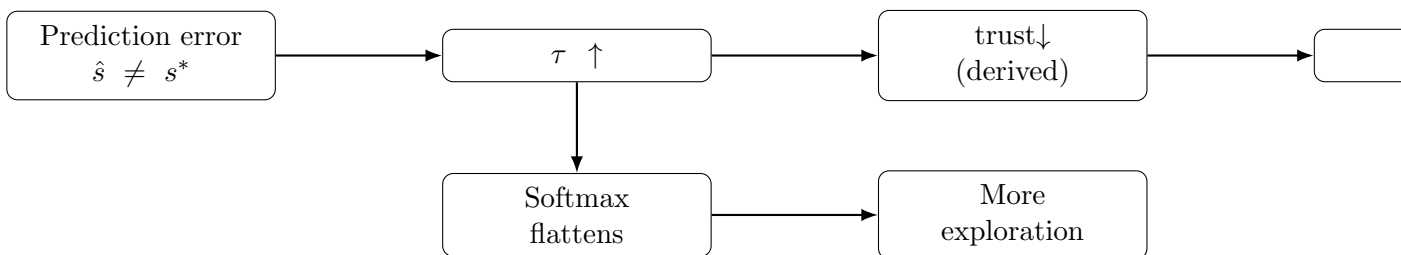| Prediction correct $\hat{s} = s^*$ | → | $T \uparrow$ | → | $w \uparrow$ | → | Belief more stable (inertia) |

Figure 1: Variant 2 (draft2): Trust T only modulates memory window size w, which changes how quickly beliefs respond. There is no separate decision-noise channel.

Variant 1: Cognitive + Decision Channel (Window + Choice Concentration)

Negative / balancing loop

Prediction error
$\hat{s} \neq s^*$ → $\tau\ \uparrow$ → trust↓
(derived) →

$\tau\ \uparrow$ → Softmax
flattens → More
exploration

Positive / reinforcing loop

Prediction correct
$\hat{s} = s^*$ → $\tau\ \downarrow$ → trust↑
(derived) →

$\tau\ \downarrow$ → Softmax
sharpens → More
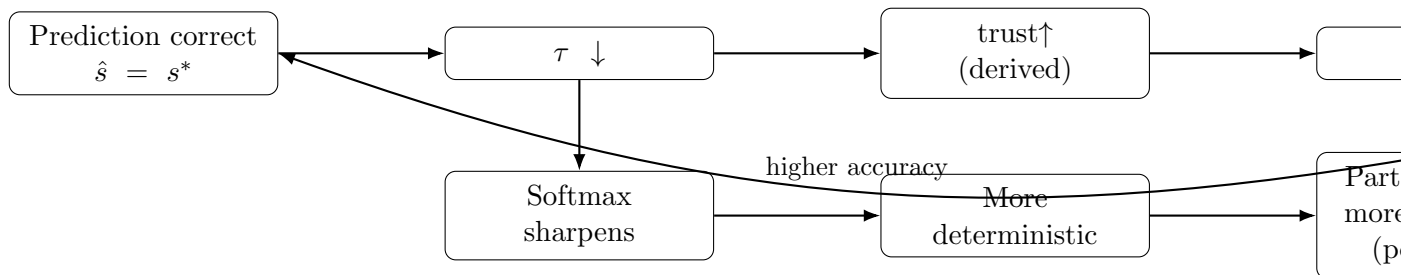deterministic → Part
more
(p

higher accuracy

Figure 2: Variant 1 (main): τ affects both (i) memory window w via derived trust and (ii) decision noise via softmax. The behavioral channel (softmax sharp/flat) is shown separately from the memory-window channel to avoid overlap.