Internal forward model: simulate motor sys by the current state of C.N.S (central nervous sys) w/ the next motor command to predict next state.

↳ not intuition, → experience (learnt)

captures casual relation between actions & consequence → correct w/ actions

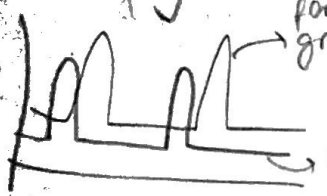
vs when using sensory info to estimate next state → large errors! modify synaptic weight

motor + sensory feedback + motor prediction.

You can't predict object's behavior based on sense (only touch)

Better to use an efference copy (internal copy of motor command) to anticipate upcoming load force (tapping on the bottle) when someone else does it → no efference copy!

→ ∃ delay



(delay → not synchronous w/ our estimation)

move my arm → predicted sensory f. = actual sensory f

you move my arm → ≠

(delusion in control by external force ~ schizophrenia)

takes a bit to get to motor sys (has to be processed) sensory feedback so force for grip is delayed!

The CNS is sensitive to unexpected / absence of expected event (reactive answers!)

↳ it also engages a sequence (cascade) of actions

From article we see that the delay causes a tickle sensation as from the predicted sensory f. (from efference copy) ∃ a sensory discrepancy.

Thanks to the prediction we can filter sensory info → irrelevant (attenuate)

(motor behavior) (HC is cognitive → understand) → critical / unexpected (highlight)

CNS is modular! → multiple controllers co-exist and selected based on context.

identification & selection per control: w/ multiple dynamics; run multiple

forward models to predict behavior if prediction matches feedback that controller is used to predict

↓ general framework to predict consequences of actions

lift a jar? → empty

(efference copy) ↓ full: sense comes faster than (comes w/ ↑ error)

empty