### ***Mechanistic bases of outcome devaluation and its disruption***

We propose a computational model to explain outcome devaluation behavior through different cognitive mechanisms and fit this model to our data. Specifically, we use leaky competing accumulation models to explain the decision-making before and after consuming the meal. The typical reduction in sated odor choices can manifest in two ways. The first mechanism involves changes in input values before the decision process.

Take the example where a participant has consumed a savory meal, then the stimulus associated with a non-sated odor (e.g., sweet) has a higher input value, leading to faster drift rates and increased choice likelihood of choosing the sweet odor. The second mechanism involves asymmetric lateral inhibition during decision-making, where the sweet odor-predictive stimulus accumulator exerts greater inhibition on the savory odor-predictive stimulus accumulator, biasing choices toward the sweet odor. These mechanisms may act separately or in combination (**Fig. 6B**). Both mechanisms are capable of producing overall outcome devaluation behaviors, but one operates before the decision-making and another during the decision-making and make qualitatively distinct predictions when the input values of the two options are equal.

Knowledge of stimulus-outcome associations is essential for either mechanism to play a role. An absent or blurred representation of this knowledge would adjust the drift rate incorrectly or affect the asymmetric inhibition incorrectly, thereby reducing normal devaluation behavior.

Such knowledge can be modulated during the learning phase via affecting encoding (Day 1), or the testing phase via affecting retrieval (Day 2). On Day 1, participants learn both value weights (e.g., preference strength from 0.5 to 1) and outcome identity (e.g., sweet vs. savory) of each given stimulus (**Fig. 7A**). If the two processes are fully coupled, value and identity strengths would be perfectly correlated; if orthogonal, identity learning could be selectively impaired by TMS, affecting choices without altering value learning. In the previous analysis (Fig. 5), we assumed orthogonality between value and identity learning, but with the computational model and the Day 2 choice data, this assumption can also be quantitatively tested.

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**Fig. 7. Mechanistic bases of outcome devaluation and its disruption. A.** Two hypothesized relationships between value and identity learning during Day 1. **B.** Two hypothesized mechanisms of causing devaluation behavior (i.e. more of choosing non-sated odor stimuli than sated odor stimuli), either through altering drift rates or through asymmetric lateral inhibition.