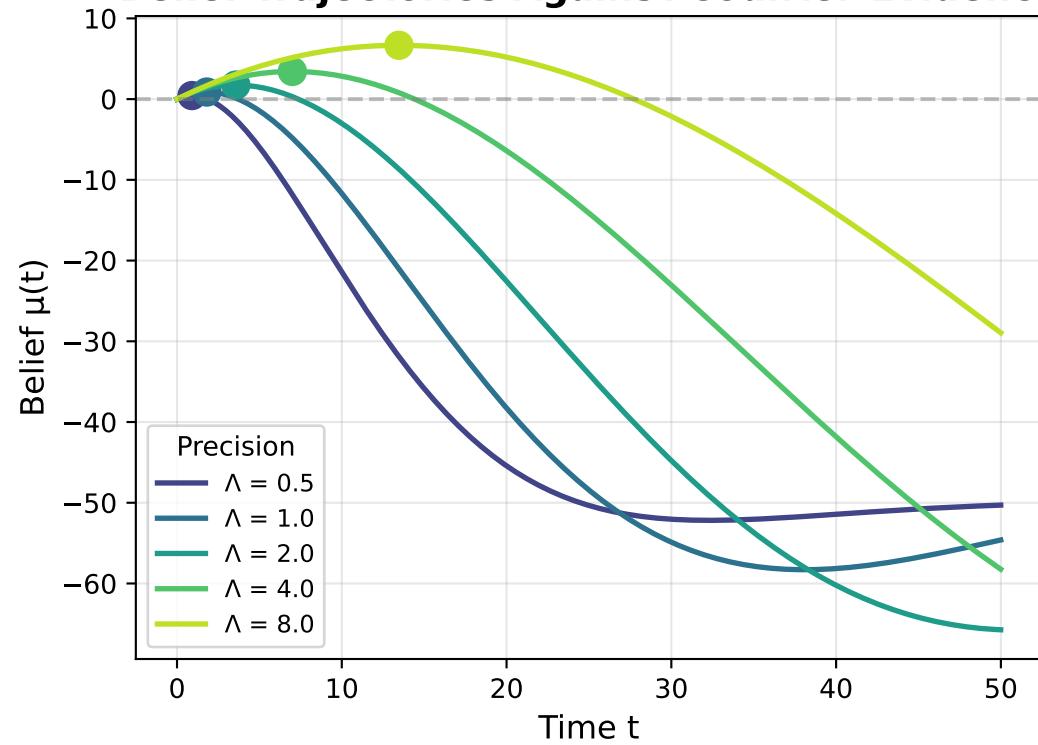
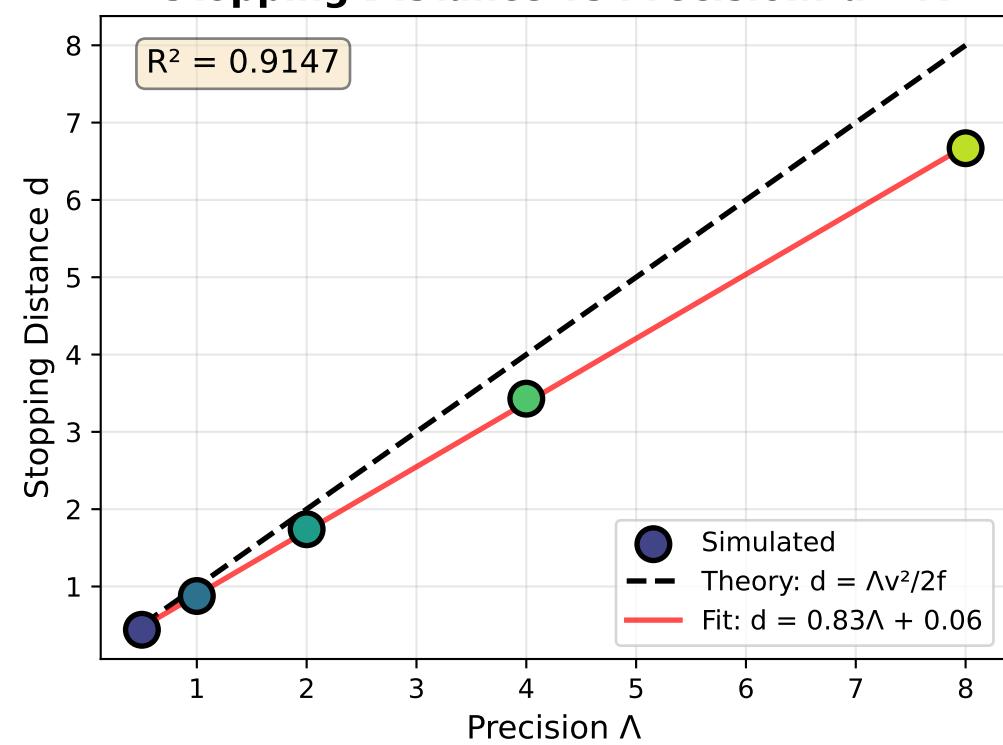


# Confirmation Bias: Stopping Distance Proportional to Precision

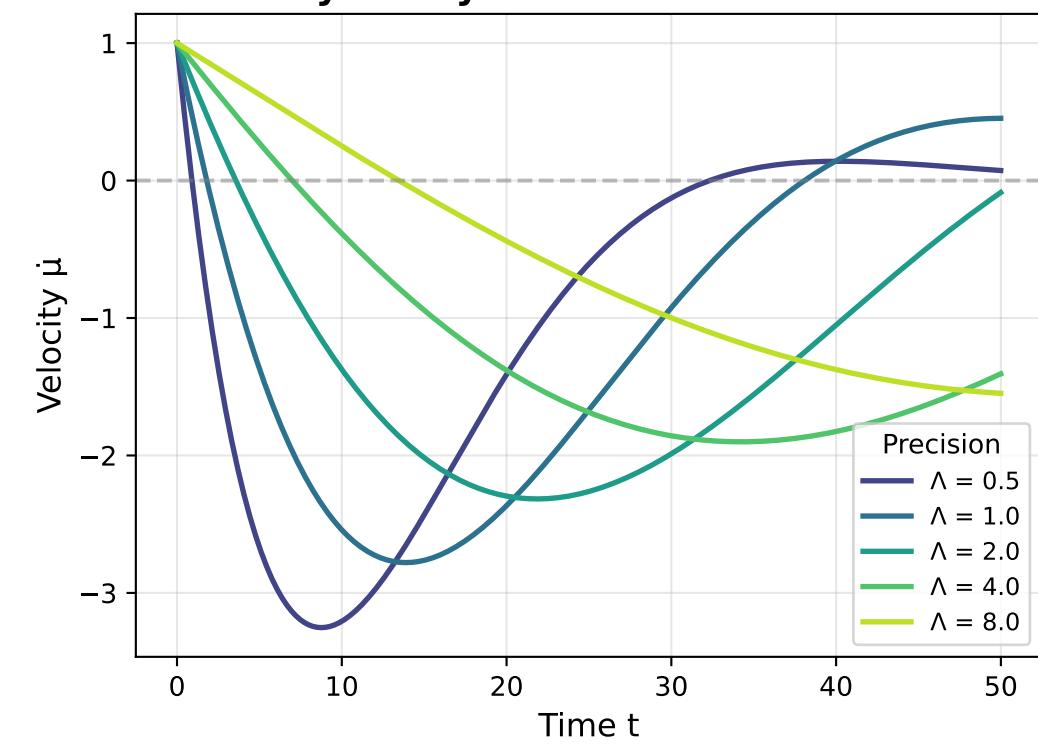
## Belief Trajectories Against Counter-Evidence



## Stopping Distance vs Precision: $d \propto \Lambda$



## Velocity Decay Under Counter-Evidence



CONFIRMATION BIAS AS MOMENTUM (Eq. 33-35)

Stopping Distance Formula:

$$d_{\text{stop}} = M \|\mu'\|^2 / (2\|f\|) = \Lambda v^2 / (2f)$$

Where:

- $M = \Lambda$  = precision (epistemic mass)
- $v = \mu'$  = belief velocity
- $f$  = counter-evidence force

KEY PREDICTION:

$$d_H / d_L = \Lambda_H / \Lambda_L$$

"A person twice as confident overshoots twice as far"

SIMULATION RESULTS:

Linear fit:  $d = 0.830\Lambda + 0.059$

Theory:  $d = 0.500\Lambda$

Correlation  $R^2 = 0.9147$

CONFIRMATION BIAS EMERGES FROM  
BELIEF INERTIA, NOT IRRATIONALITY!