Optimal decision-making on noisy logarithmic coding is biased

a)

Low distribution ($\mu = 5$)
High distribution ($\mu = 10$)

Optimal deccision boundary

Prob density

Representation of number line (log space)

Optimal deccision boundary

Real-world number line (linear space)
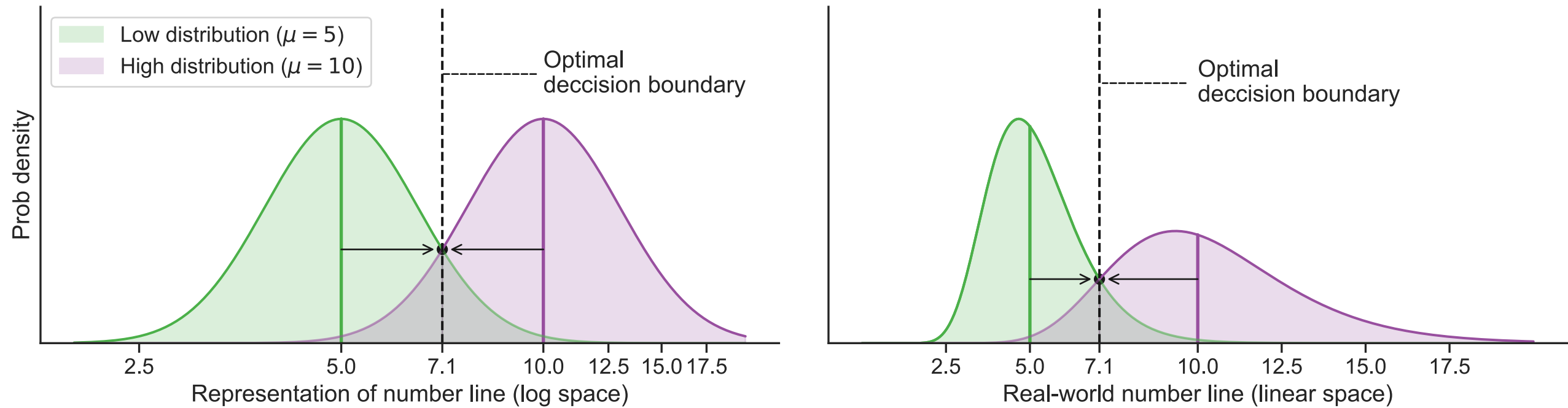
Noisy logarithmic coding explains risk aversion and non-deterministic behavior

b)

Risky choice behavior

Less risk-averse subject
Highly risk-averse subject
Maximize expected value

Choice prob risky option

Ratio risky option (50%) vs safe option (100%)

Number representation

Safe option (100%)
Risky option (50%)

Safe option (100%)
Risky option (50%)