Assessing the role of rewards and priors on confidence judgments

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Benefits of Confidence

- Beneficial to predict the outcome of a task
- Confidence: estimate of probability correct e.g., Fleming & Dolan (2012)

How Do Priors and Payoffs Affect Decisions?

Do people adjust confidence for asymmetric priors but not for payoffs?
Task: Discrimination + Confidence Report

Stimuli: or
Task: Discrimination: or
Confidence: Low or High
Feedback: Correct/incorrect on discrimination; reward if correct

Priors and Payoffs Manipulation

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SDT: Confidence

SDT: Confidence Criteria

$C_{discrim}$

“Left” or “Right”

Probability

Internal Response

“Left” or “Right”

Probability

Internal Response

Galvin et al. (2013)
Models of Confidence

- Models differ in whether confidence criteria are affected by:
  - Model 1: Priors but not payoffs (Partially Paired)
  - Model 2: Priors and payoffs (Fully Paired)
  - Model 3: Neither priors nor payoffs (Unpaired)
Partially Paired

Fully Paired

Unpaired

Best-Fitting Models of Confidence

Model | Frequency of Best Fit
--- | ---
Partially Paired | 0
Fully Paired | 6
Unpaired | 4

Calculated model evidence by marginalizing parameter grid

1. Assumed optimal criterion shifts
   - But people show conservatism: Incomplete criterion shift from neutral to optimal
     e.g., Healy & Kubovy (1981), Ackermann & Landy (2015)
Discrimination Criteria

- People show conservatism
- More conservative for asymmetric payoffs (closer to optimal for asymmetric priors)

Prior

Payoff

Criterion Assumptions

1. Assumed optimal criterion shifts
   - But people show conservatism: Incomplete criterion shift from neutral to optimal
2. Assumed shifts in single-asymmetry conditions sum

Predicting Criterion Shift

Conservatism in Confidence

Does conservatism carry over to confidence?

Conservatism in Confidence

More conservatism

Conservatism in Confidence

More conservatism
### Best-Fitting Models of Confidence

#### Discrimination:
- Optimal
- Conservative
- Conservative

#### Confidence:
- Optimal
- Optimal
- Conservative

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### Conclusions

- **Discrimination:**
  - Criterion shifts for payoffs and priors sum

- **Confidence:**
  - Conservatism carries over into confidence decision
  - Not normative: respond to both priors and payoffs or neither