Criterion shifting in recognition memory is a stable cognitive trait

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Introduction

Strategic criterion shifting during recognition memory can greatly improve the outcomes of memory based decisions.

We assessed the test-retest reliability of criterion shifting during recognition memory tests across 10 separate sessions.

Criterion placement, a stable cognitive trait[1], served as a comparison measure to assess whether criterion shifting should also be considered a stable trait

Encoding phase

300 ms

Test phase

1 = studied 0 = unstudied

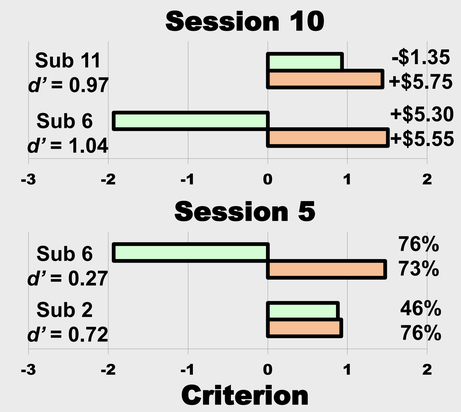
Unlimited time

Criterion conditions

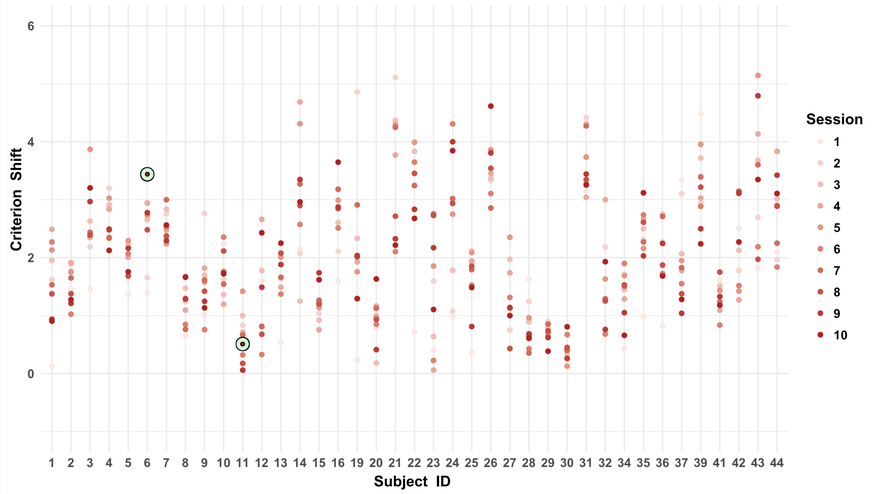
	Conservative	Liberal	Neutral
Study 1	Hit: +$0.05 Correct Rejection: +$0.05 Miss: $0.00 False alarm: - $0.10	Hit: +$0.05 Correct Rejection: +$0.05 Miss: -$0.10 False alarm: $0.00	Hit: +$0.05 Correct Rejection: +$0.05 Miss: $0.00 False alarm: $0.00
Study 2	Old images: 25% New images: 75%	Old images: 75% New images: 25%	Old images: 50% New images: 50%

Participants performed 3 encoding/test blocks for each of the 10 sessions

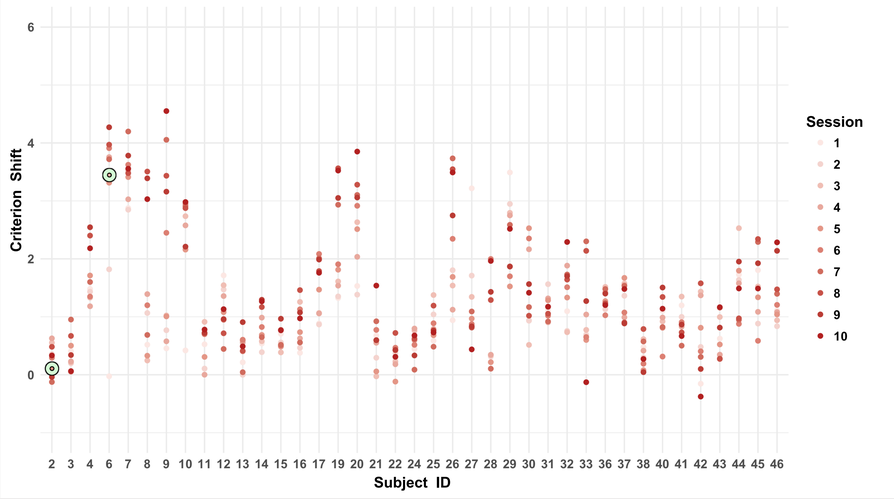
Criterion shift outcomes



Study 1: Payoff Manipulation (N = 39, M = 2.00, SD = 0.88)



Study 2: Probability Manipulation (N = 39, M = 1.29, SD = 0.80)

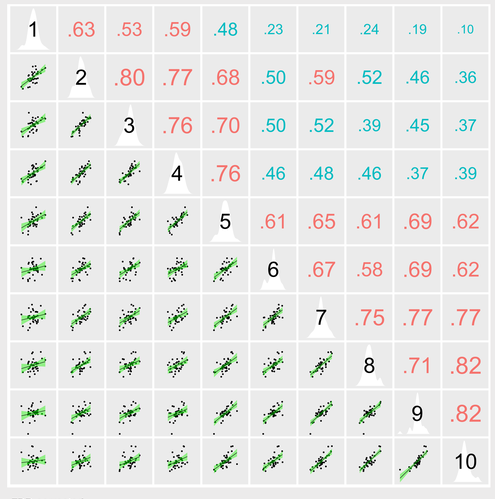


Study 1: Criterion Shift

Study 1: Criterion Placement

Study 2: Criterion Shift

Study 2: Criterion Placement



Red values: $p < 0.001$, FDR-corrected

Conclusion

Criterion shifting during recognition memory is as stable as, if not more stable than, criterion placement (a stable cognitive trait[1]).

The mean session-to-session correlation coefficients in Study 1 (r = 0.76) and Study 2 (r = 0.83) are comparable to stable traits in other domains such as visual working memory capacity[2] (r = 0.76).

Although the within subject stability of criterion shifting is quite high, there are massive individual differences in behavior.

Criterion shifting MUST be assessed at an individual level because group analyses insufficiently describe individual behaviors

References

[1] Kantner, J., & Lindsay, D. S. (2012). Response bias in recognition memory as a cognitive trait. *Memory & Cognition*, 40(8), 1163-1177. doi: 10.3758/s13421-012-0226-0

[2] Xu, Z., Adam, C. S., Fang, X., & Vogel, E. K. (2018). The reliability of visual working memory capacity. *Behav. Res.*, 50, 576-588. doi: 10.3758/s13428-017-0886-6

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