Individual differences in the effects of trial-by-trial feedback on criterion shifting during recognition tests

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https://youtu.be/4SbNiOs7tvs

Background

The degree to which an individual shifts a decision criterion is a uniquely individualistic cognitive trait (Layher et al., 2020)**. Some people will strategically shift criteria to large extents, while others fail to shift entirely. When decisional evidence carries a lot of uncertainty, individuals who strategically shift criteria will achieve better decisional outcomes compared to those who inadequately shift criteria.**

Given the individualistic nature of criterion shifting tendencies, we assessed whether trial-by-trial feedback during recognition memory tests would promote strategically larger criterion shifts. We then examined whether changes in criterion shifting strategy would persist on a subsequent session in both recognition memory and novel visual detection tests.

Previous studies have demonstrated that trial-by-trial feedback promotes greater criterion shifts *on average* (Rhodes & Jacoby, 2007; Verde & Rotello, 2007)**. However, this finding has not been assessed at the individual level.**

PREDICTIONS: There will be individual differences in how trial-by-trial feedback affects criterion shifting performance. [1] Some will only improve when feedback is given, [2] some will shift to greater extents on a subsequent session, but only in the same task type, [3] others will shift to greater extents for both the recognition and visual detection tests.

Task Design (2 groups)

Session 1: recognition memory test WITHOUT trial feedback
Session 2: recognition memory test WITH OR WITHOUT (control group) trial feedback
Session 3: recognition memory test and visual detection test WITHOUT trial feedback

Recognition Memory Task

FA = False Alarm
CR = Correct Rejection

STUDY PHASE

300 ms

d' = ~0.5

TEST PHASE: +5 cents if correct

Conservative

FA = -10 cents

OLD +5 or -10 NEW +5 or 0

Liberal

MISS = -10 cents

OLD +5 or 0 NEW +5 or -10

512 test trial ($0.00 to $25.60)

FEEDBACK

OLD (HIT): Okay decision
OLD (FA): Terrible decision!
NEW (CR): Great decision!
NEW (MISS): Good decision!

OLD (HIT): Great decision!
OLD (FA): Good decision!
NEW (CR): Okay decision
NEW (MISS): Terrible decision!

Visual Detection Task

Is a person present?

500 ms 200 ms 200 ms

Conservative

FA = -10 cents

PRESENT +5 or -10 ABSENT +5 or 0

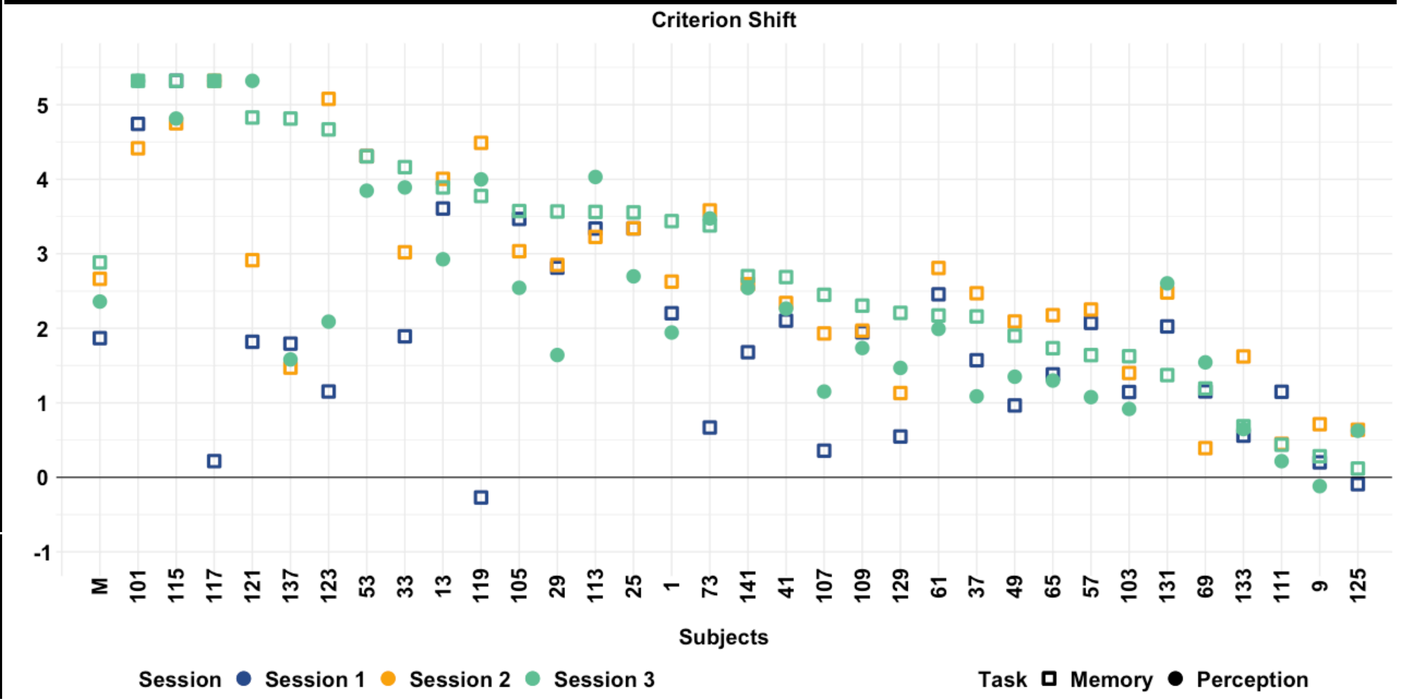
Liberal

MISS = -10 cents

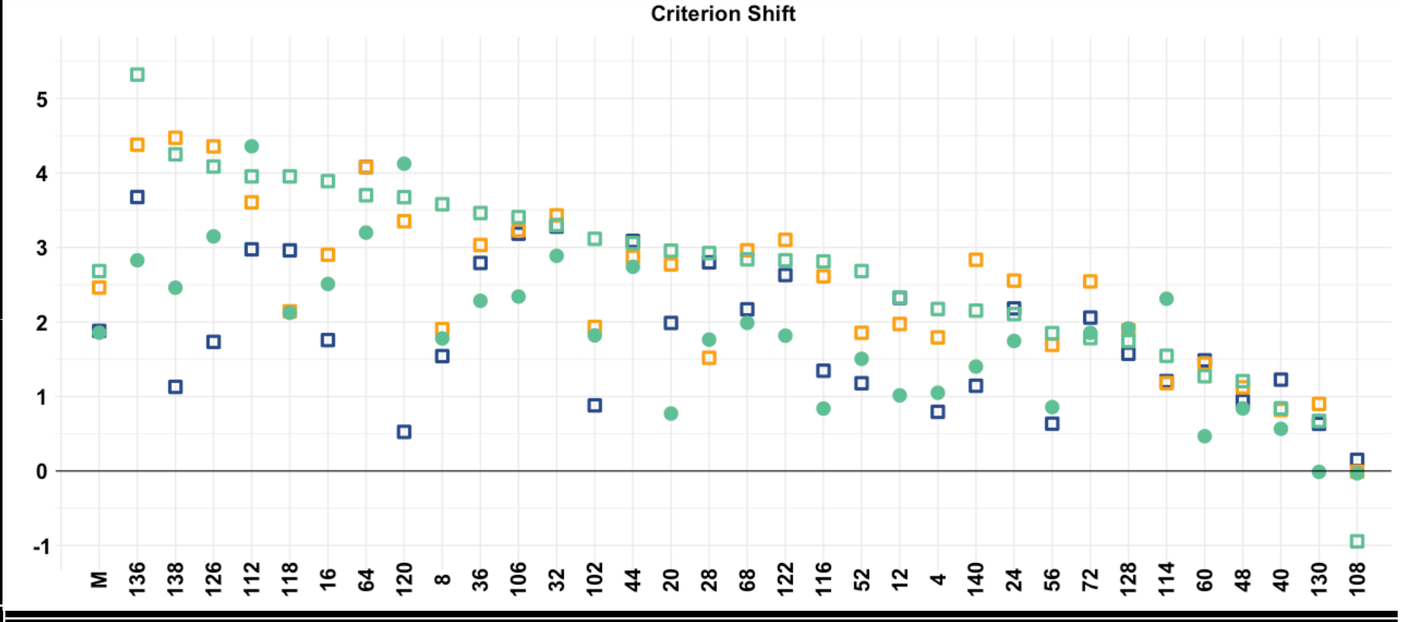
PRESENT +5 or 0 ABSENT +5 or -10

Results

FEEDBACK GROUP (session 2): *N* = 33



CONTROL GROUP (no session 2 feedback): *N* = 33



Conclusion

There are individual differences in how trial-by-trial feedback affects criterion shifting performance. However, end of session payment feedback alone appears to be sufficient for some individuals to shift criteria to greater extents on subsequent sessions.

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