

Metacognitive monitoring of memory conformity

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KEY POINTS

- Confidence in one's correct answer determines if they will change their answer to align with their peer.
- People successfully monitored their mistakes, indicated by their lower confidence judgements for incorrect items, regardless of what they previously agreed to their peers.
- Recognition performance and confidence negatively correlated with social anxiety and positively correlated with positively held beliefs in memory.



INTRODUCTION

- When people observe and later discuss an event together, they can falsely integrate elements of each other's memories into those of their own¹.
- This is a well-replicated finding reported in number of studies and across cultures³.
- Little is known:
 - Whether memory conformity influences metacognition in terms of confidence judgements regarding discussed details, given either individually or jointly.
 - Whether individual characteristics such as beliefs in memory and/or social anxiety influence memory conformity and confidence.

METHOD & PROCEDURE

- 48 pairs of Koç University students participated (29 F-F; 15 M-F; 4 M-M).
- The Manipulation of Overlapping Rivalrous Images (MORI)² task was used.
- Questionnaires included Social Interaction Anxiety, Personal Beliefs about Memory and Social Anxiety/Avoidance scales.

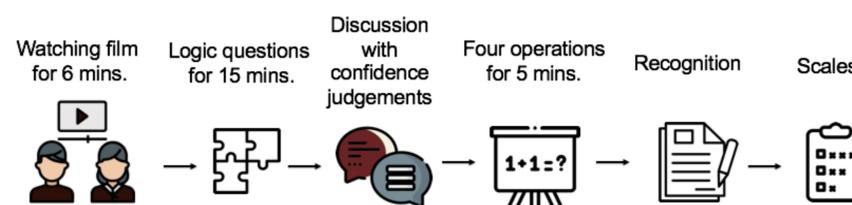


Fig 1. Schematic display of the study procedure. Participants watched two versions of a film, which overlapped with vertically and horizontally polarized eyeglasses. 12 details of the film (4 critical, 8 non-critical) were discussed together. Confidence in the given responses were collected both individually and jointly. Recognition included 20 questions (4 discussed critical, 4 non-discussed critical, 12 non-critical questions) and completed individually.

RESULTS

Discussion Phase:

- Chi-square tests of independence revealed a **significant association between conformity (conformed vs. non-conformed answers) and accuracy (correct vs. incorrect)**, indicating that conformed-answers are more likely to be wrong than non-conformed answers.
- Individual confidence: 2x2 ANOVA revealed a **non-significant main effect of conformity** (conformed vs. non-conformed), $F(1, 383) = 1.262, p = .262$, a **significant main effect of accuracy** (correct vs. incorrect), $F(1, 383) = 7.680, p < .05, \eta^2 = .02$, and a **significant interaction effect** on individual confidence ratings, $F(1, 383) = 132.779, p < .001, \eta^2 = .28$.
- Joint confidence: 2x2 ANOVA revealed a **significant main effect of conformity** (conformed vs. non-conformed), $F(1, 383) = 5.401, p < .05, \eta^2 = .014$, a **non-significant main effect of accuracy** (correct vs. incorrect questions), $F(1, 383) = .292, p = .59$, and a **significant interaction** on difference in confidence ratings (joint confidence – individual confidence) $F(1, 383) = 44.366, p < .001, \eta^2 = .104$.

Recognition

- The difference between recognition of discussed-critical and non-discussed critical questions was not statistically significant, $p > .05$, revealing inaccuracy in recognition.
- 2x2 ANOVA revealed a **significant main effect of question type** (discussed vs. non-discussed critical), $F(1, 767) = 220.799, p < .001, \eta^2 = .13$, a **significant main effect of accuracy** (correct vs. incorrect questions), $F(1, 767) = 305.197, p < .001, \eta^2 = .29$, but not a **significant interaction** of these two, $p > .05$, on confidence judgements.

Figure 1. Individual confidence judgements during discussion

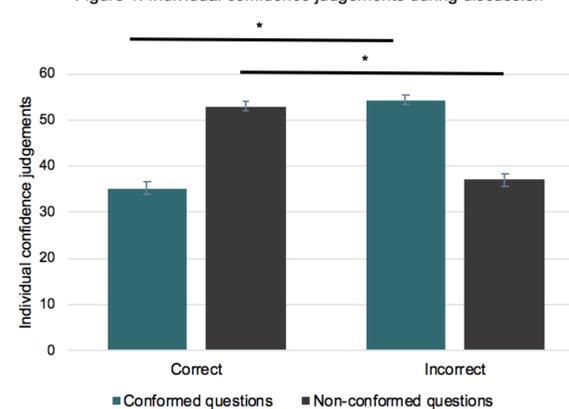


Figure 3. Individual confidence judgements during recognition

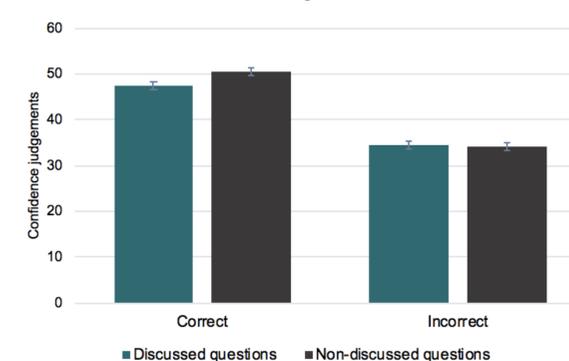
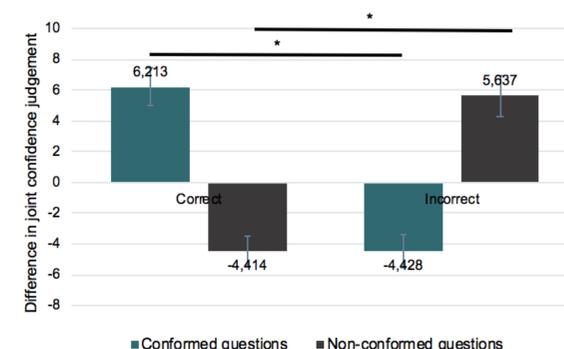


Figure 2. Differences in joint confidence judgements during discussion



Correlations:

- Social interaction anxiety negatively correlated with confidence in non-conformed answers, $r = -0.37$, and with total number of correct answers in discussion, $r = -0.22$.
- Negative beliefs in prospective memory change negatively correlated with joint confidence in discussion, $r = -0.43$.
- Control beliefs positively correlated with joint confidence in correct answers, $r = 0.26$.
- Negative beliefs in prospective control negatively correlated with joint confidence in correct answers, $r = -0.22$.
- Retrospective change negatively correlated with total number of correct answers in recognition, $r = -0.25$.
- Control beliefs positively correlated with correctly answered discussed questions in recognition, $r = 0.21$.

DISCUSSION

In this present study:

- Joint confidence judgments during recognition were higher for discussed than non-discussed questions, attributing joint decision-making a facilitatory role for individuals' confidence.
- Recognition rates were low and not different between discussion and recognition phases, indicating inaccuracy in recognition. But confidence judgements indicate that participants were able to discriminate correct from incorrect answers, showing successful monitoring during recognition.
- Some significant correlations observed between beliefs in memory, social anxiety, recognition performance, and confidence judgements, indicating the role of individual differences in this process.
- Results extended previous findings on memory conformity by emphasizing the importance of considering individual characteristics and decision confidence in this process.
 - People align with others to feel affiliated to a group or overcoming negative emotions associated with diverging from the group opinion².
 - Investigating metacognitive monitoring during memory conformity with this paradigm allows us to disentangle whether a decision change reflects a pretend agreement or an actual opinion change.

¹Gabbert, F., Memon, A., & Wright, D. B. (2006). Memory conformity: Disentangling the steps toward influence during a discussion. *Psychonomic Bulletin & Review*, 13(3), 480-485.
²Garry, M., French, L., Kinzett, T., & Mori, K. (2008). Eyewitness memory following discussion: Using the MORI technique with a Western sample. *Applied Cognitive Psychology: The Official Journal of the Society for Applied Research in Memory and Cognition*, 22(4), 431-439.
³Ho, H., Barzykowski, K., Grzesik, M., Gülgöz, S., Gürdere, C., Janssen, S. M., ... & Albuquerque, P. B. (2018). Eyewitness Memory Distortion Following Co-Witness Discussion: A Replication of Garry, French, Kinzett, and Mori (2008) in Ten Countries. *Journal of Applied Research in Memory and Cognition*.