

Can Knowledge of Another Person's Decision Bias Fingerprint Examinations?

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Introduction

- Contextual bias can cause errors in forensic examination (Dror et al., 2005; Dror et al., 2006; Saks et al., 2003).
 - Information can create an expectation that samples should, and increase correct and incorrect match decisions.
- For example, fingerprint experts are given a suspect sample and asked to confirm whether this sample matches the crime sample. Only if an expert determines a “match”, the same prints are sent to another expert to verify the match. An examiner knows another examiner determined that they match if they are asked to perform a verification evaluation.
- Knowledge of another examiner’s decision is a form of contextual information.
 - it creates an expectation that the prints will match and biases the second examiner’s evaluation (Chaiken & Maheswaran, 1994).

Research Questions

- Are people’s judgements about whether two fingerprint samples match influenced by a previous conclusion allegedly reached by someone else?
- If so, is the influence mediated by a biases in how much similarity people perceived in the prints?

Method

Participants and Design

- A total of 96 undergraduate participants completed the study.
- The design was experimental, with 3 between-subjects conditions that participants were randomly assigned to. Participants saw that a (fake) previous participant determined that the prints: **1) match, 2) did not match, or 3) did not complete the sheet (no decision made).**
- The outcome variables were the percentage of the comparison print that was circled in green and red, their decision about whether the prints matched, and their confidence in that decision.

References

- Chaiken, S., & Maheswaran, D. (1994). Heuristic Processing Can Bias Systematic Processing: Effects of Source Credibility, Argument Ambiguity, and Task Importance on Attitude Judgement. *Journal of Personality and Social Psychology*, 66(3), 460-473.
- Dror, I., Charlton, D., & Peron, A. (2006). Contextual Information Renders Experts Vulnerable to Making Erroneous Identifications. *Forensic Science International*, 156(1), 74-78.
- Dror, I., Peron, A., Hind, S., & Charlton, D. (2005). When Emotions Get the Better of Us: The Effect of Contextual Top-down Processing on Matching Fingerprints. *Applied Cognitive Psychology*, 19(5), 799-809.
- Saks, M.J., Risinger, D.M., Rosenthal, R., & Thompson, W.C. (2003). Context Effects in Forensic Science: A review and Application of The Science of Science to Crime Laboratory Practice in the United States. *Science & Justice*, 43(2), 77-90.

Procedure

Step 1: Participant encounters planted sheet



Match - No Match - Nothing

Step 2: Cover story + receive prints

8 possible ambiguous print sets: All do not match

Crime Sample #4905

Comparison sample #2775



Step 3: Circle points of similarity in green and difference in red.

Comparison sample #2775



Step 4: Match decision + confidence.

These prints:

Match

Do Not Match

How confident are you in your decision?

0%

50%

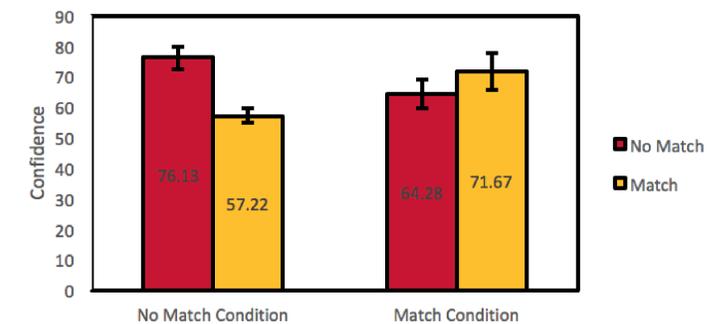
100%

Step 5: Post-Experiment Questions and Debrief.

Did you see the sheet? What did it say?

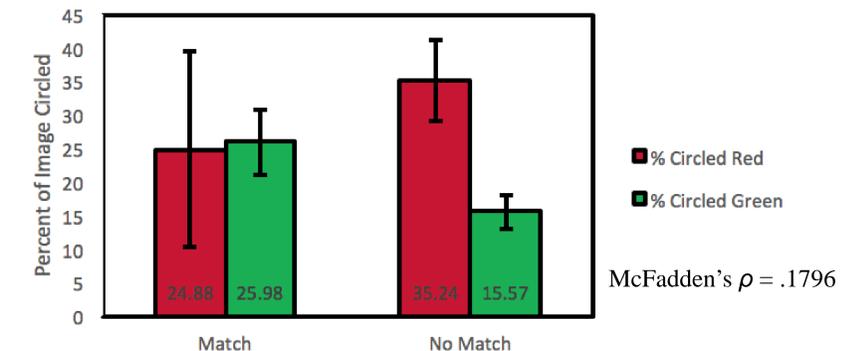
Results

Participant's Confidence in Match Decision by Condition



There was no significant impact on match decision, but when people made a decision that was consistent the previous participant’s decision, their confidence was higher ($B = -.049, p = .001$).

Participant's Circling Decision by Participant Actual Match Decision



The percent of green that people circle on the fingerprint significantly predicts their match decision ($B = 12.49, p = .0113$). When people circled more green, they were more likely to say “match”. With more data, we anticipate a significant moderation.

Discussion

- Confidence was significantly higher when participants saw the prior participant’s sheet and made a decision consistent with the expectation created by the sheet.
- Circling the fingerprint appeared to justify one’s decision. A moderation effect was found such that participants who circled more of the comparison print in green were more likely to decide that the print matched the crime print.
- There are real life implications of this research → experts may express more confidence to authorities when confirming another individual’s decision, which may affect investigations.