Alcohol and memory for sexual assault: The effect of alcohol intoxication on lineup identification accuracy and the confidence-accuracy relationship

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Presentation based on:

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ALCOHOL AND SEXUAL ASSAULT

• Sexual violence often occurs in and around drinking establishments (e.g., Anderson, Hughes, & Bellis, 2007)

• Rape perpetrators seem to target people who are alcohol-intoxicated (Lisak & Miller, 2002)
LONDON BRIDGE ATTACK

• People frequently witness violent crime while drinking alcohol
PROBATIVE ASPECTS OF ALCOHOL

• More than 300 individuals, mostly convicted of sex offences have been exonerated based on DNA evidence (https://www.innocenceproject.org)

• If alcohol decreases accuracy, is a complainant’s testimony about a sexual assault reliable if she was alcohol-intoxicated during the attack?
WHAT DO WE KNOW ABOUT ALCOHOL AND MEMORY IMPAIRMENT?

‘Based on my personal experience, alcohol is bad for your memory.’
WHAT DO WE KNOW ABOUT ALCOHOL AND MEMORY IMPAIRMENT?

Basic research on memory and cognition finds that alcohol impairs memory.

During police interviews, people control and regulate their testimony (Weber & Brewer, 2008).
In evaluating the effect of alcohol on memory, completeness and accuracy must be distinguished:

Table 1. Number of correctly recalled details and errors for the three groups on the free and cued recall test, during session 1 (T1) and the follow-up test (T2)

<table>
<thead>
<tr>
<th></th>
<th>Sober (n = 14)</th>
<th>Moderately intoxicated (n = 27)</th>
<th>Severely intoxicated (n = 26)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T1</td>
<td>T2</td>
<td>T1</td>
</tr>
<tr>
<td>Free recall story</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct total</td>
<td>14.15 (4.93)</td>
<td>13.30 (4.31)</td>
<td>11.18 (3.51)</td>
</tr>
<tr>
<td>Errors (com/dis)</td>
<td>1.76 (1.16)</td>
<td>1.92 (1.38)</td>
<td>1.88 (1.36)</td>
</tr>
<tr>
<td>Free recall actions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct total</td>
<td>8.38 (5.31)</td>
<td>12.93 (5.57)</td>
<td>5.70 (3.97)</td>
</tr>
<tr>
<td>Errors (com/dis)</td>
<td>0.31 (0.48)</td>
<td>0.76 (0.83)</td>
<td>0.18 (0.48)</td>
</tr>
<tr>
<td>Cued recall story</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct total</td>
<td>2.71 (0.91)</td>
<td>2.50 (1.16)</td>
<td>2.44 (1.25)</td>
</tr>
<tr>
<td>Errors (com/dis)</td>
<td>1.14 (0.94)</td>
<td>1.35 (1.00)</td>
<td>1.18 (1.37)</td>
</tr>
<tr>
<td>Cued recall actions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correct total</td>
<td>11.71 (1.47)</td>
<td>12.35 (1.90)</td>
<td>10.59 (2.37)</td>
</tr>
<tr>
<td>Errors (com/dis)</td>
<td>0.42 (0.85)</td>
<td>0.21 (0.80)</td>
<td>0.62 (1.00)</td>
</tr>
</tbody>
</table>

From: OORSOUW*, H. MERCKELBACH, & SMEETS, 2015
INTOXICATED PARTICIPANTS ENGAGE IN A QUANTITY-ACCURACY TRADE-OFF

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The Effects of Alcohol on Crime-related Memories: A Field Study

KIM VAN OORSOUW* and HARALD MERCKELBACH
Forensic Psychology Section, Maastricht University, Maastricht, The Netherlands

Summary: This field study investigated to what extent memory of criminally relevant details is affected at (close to) zero (M\text{BAC} = 0.00\%\text{LOC}) and high (M\text{BAC} = 0.16\%\text{LOC}) levels of alcohol intoxication. Participants (N = 76) were approached in bars and crime scenes with a crime details, recalling a produced by the implicant.


Cognition and Neurosciences

Bottled memories: On how alcohol affects eyewitness recall

ANGELICA HAGSLAND, EMMA ROOS AF HELMSTÄTTER, PÅL ANDERS GRANHAG, CLAUDIA FABERL and ANNA SÖDERPAP MÖGÖRD
The Department of Psychology, University of Gothenburg, Gothenburg, Sweden

Summary: The effects of alcohol on eyewitness recall were investigated. Participants (N = 31) were randomly assigned to three groups with different blood alcohol concentrations (BAC) after a control group (mean BAC 0.00\%, N = 10), a low alcohol dose group (mean BAC 0.08\%, N = 10) or a higher alcohol dose group (mean BAC 0.16\%, N = 10). After consumption, participants witnessed a movie of a mock crime and were interviewed one week later. The main results showed that witnesses with the higher intoxication level recalled fewer details compared to witnesses with the lower intoxication level. The amount of alcohol consumed did not have an impact on the accuracy rate. No sex differences were found. The results are discussed in the light of past research. We conclude that more studies are needed before recommendations can be made in an applied setting.

Keywords: Alcohol, eyewitness memory, recall, sexual interest, intoxicated witnesses.

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TWO VIEWS ON CONFIDENCE-ACCURACY RELATIONSHIP

• The Optimality Hypothesis (Deffenbacher)
  • Confidence is predictive of accuracy under optimal conditions (e.g., learning is strong, retention interval is short)

• Information Theory (Palmer et al.)
  • When learning conditions are salient, confidence is predictive because participants will take into account theory-based information about factors that might diminish accuracy
PREDICTIONS

• Alcohol consumption during encoding will decrease lineup identification accuracy

• Under the ‘optimality hypothesis’, confidence will be less predictive of accuracy for participants who were intoxicated during encoding

• Under the ‘information theory’ hypothesis, confidence will be more predictive of accuracy for participants who were intoxicated during encoding
PARTICIPANTS

- 153 women between the ages of 18 and 32 (M = 20.38)
DESIGN

- We ran a 2 beverage (alcohol or tonic) x 2 expectancy (told alcohol or told tonic) x 2 perpetrator (present or absent in lineup) factorial design
- Women were randomly assigned to a condition

To control beverage:
- In the alcohol group, women received vodka, tonic and limes, and they were dosed to achieve an average BAC of .075%
- In the tonic group, women were given tonic water and limes that were soaked in vodka

To control expectancy:
- Half of the participants in each beverage group were told they had received vodka, and the other half were told they had received tonic.
DESIGN

• Measures

  • Lineup identification outcome (perpetrator, filler, reject)
  • Identification confidence (7 point Likert-type scale)

• Full ethical approval

  • Followed BPS ethics requirements
  • Informed consent procedures utilised

• For generalizability purposes, 4 different perpetrators, each participant saw one of them
PERPETRATOR
SCREENING

- Medical conditions
- Medication
- Problem drinking behaviours
- Pregnancy
Stage 1

Screening

Stage 2
Experiment

Beverage
And
Expectancy
Manipulation

Interactive
Scenario

Stage 3

24 hours or
7 days later
Finally, all participants were fully debriefed regarding the aims of the study.
**IDENTIFICATION OUTCOMES**

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**Proportions of Identification Responses by Beverage Group, Expectancy, and Identification Outcome**

<table>
<thead>
<tr>
<th>EXPECTED ALCOHOL</th>
<th>EXPECTED TONIC WATER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumed Tonic Water</td>
<td>Consumed Tonic Water</td>
</tr>
<tr>
<td></td>
<td>PP</td>
</tr>
<tr>
<td></td>
<td>(n = 23)</td>
</tr>
<tr>
<td>perpetrator</td>
<td>0.61</td>
</tr>
<tr>
<td>filler</td>
<td>0.09</td>
</tr>
<tr>
<td>reject</td>
<td>0.30</td>
</tr>
</tbody>
</table>

Consumed Alcohol

<table>
<thead>
<tr>
<th></th>
<th>PP</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n = 19)</td>
<td>(n = 21)</td>
<td></td>
</tr>
<tr>
<td>perpetrator</td>
<td>0.42</td>
<td>--</td>
</tr>
<tr>
<td>filler</td>
<td>0.16</td>
<td>0.19</td>
</tr>
<tr>
<td>reject</td>
<td>0.42</td>
<td>0.81</td>
</tr>
</tbody>
</table>

Perpetrator present; PA = Perpetrator absent

---
ALCOHOL CONSUMPTION AND ACCURACY

![Graph showing hit rate and false alarm rate with data points for Placebo and Alcohol, along with a line for chance.](image-url)
CONFIDENCE-ACCURACY RELATIONSHIP

Choosers Only

- Alcohol
- Tonic Water
- Perfect calibration

Accuracy

Confidence

0% 10-40% 50-70% 80-100%
CONFIDENCE-ACCURACY RELATIONSHIP

Choosers and Nonchoosers

Accuracy

Confidence

- Alcohol
- Tonic Water
- Perfect calibration
## CALIBRATION STATISTICS

*Calibration Statistics by Beverage Group, Choosers and Nonchoosers Combined*

<table>
<thead>
<tr>
<th></th>
<th>Tonic Water</th>
<th></th>
<th>Alcohol</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Value</td>
<td>Jackknife SE</td>
<td>95% CI</td>
<td>Value</td>
</tr>
<tr>
<td>O/U</td>
<td>-0.32</td>
<td>0.06</td>
<td>-0.43 to -0.20</td>
<td>-0.4</td>
</tr>
<tr>
<td>C</td>
<td>0.07</td>
<td>0.15</td>
<td>-0.22 to 0.36</td>
<td>0.04</td>
</tr>
<tr>
<td>NRI</td>
<td>0.03</td>
<td>0.03</td>
<td>-0.03 to 0.09</td>
<td>0.04</td>
</tr>
</tbody>
</table>
SUMMARY

- Alcohol consumption at encoding did not decrease identification accuracy 24 hours or 7 days later.

- Alcohol consumption at encoding did not affect confidence-accuracy calibration.

- The confidence-accuracy data were more in line with information theory than with the optimality hypothesis, suggesting alcohol consumption reduces overconfidence.
IMPLICATIONS AND FUTURE DIRECTIONS

• Larger doses of alcohol should be studied so that we can more easily generalise
  • Field research needed, though perhaps will have to tradeoff scenario realism and not use a rape vignette for ethical purposes

• Further research should examine judgments of learning and showup accuracy, as showups are still widely used, particularly in the US
IMPLICATIONS AND FUTURE DIRECTIONS

• The testimony of Intoxicated witnesses should not be automatically discounted

• The results of this study align with several others, showing that accuracy does not differ depending on intoxication at encoding
Conference:
• Interviewing Intoxicated Victims: New Evidence for Practice
• July 17th @ Leicester Police HQ

Get in touch if you would like further information about the paper:

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Email me if you would like to attend the conference
(Space is limited – only 10 out of 100 places remaining as of this morning!)