DO IMPLEMENTATION INTENTIONS REDUCE ALCOHOL CONSUMPTION? A SYSTEMATIC REVIEW AND META-ANALYSIS

Richard Cooke, Aston University
Helen Lowe, Birmingham City University
Paul Norman, Sheffield University
Excessive alcohol consumption can lead to negative health outcomes (hangover; cancer; liver disease).

Implementation Intentions (II) (if-then plans) consistently shown to promote behaviour change (Gollwitzer & Sheeran, 2006).

Recent increase in number of studies testing the impact of forming II on alcohol consumption (Hagger et al., 2012; Norman & Wrona-Clarke, 2016).
To quantify the *effect size difference* in *unit alcohol consumption* between individuals asked to form implementation intentions and individuals not asked to form implementation intentions.
METHODS

- Protocol for review was registered on Prospero
- Systematic literature searches were conducted using: Cochrane database of systematic reviews; EThOS; PsychArticles; PubMed; Web of Science
- All searches were conducted independently by first and second author
INCLUSION CRITERIA

1. Include an intervention condition where participants were asked to form an implementation intention and a control condition where participants were not asked to form an implementation intention.

2. Report the mean, standard deviation of unit alcohol consumption per week, and, the sample sizes for both conditions to us to calculate the effect size difference.
META-ANALYTIC APPROACH

- Analyses performed in Comprehensive Meta Analysis v2
- Effect size differences (ESD) calculated for each study
- ESD pooled using random-effects meta-analysis
Papers identified through search strategy and imported into EndNote = 425

After duplicates removed = 229

Papers included after title screen = 75

Papers included after abstract screen = 15

Papers included in the meta-analysis = 10

(K = 12 Samples)

Duplicates removed = 196

Excluded = 154

Excluded = 60

Excluded = 5
RESULTS: RANDOM-EFFECTS META

 lautophil

- $N = 1131; K = 12$
- Pooled effect size $d^+ = 0.28 \ [0.16; 0.40]$
- Small, positive, effect size difference showing that forming implementation intentions reduced weekly unit consumption relative to control
- Test of homogeneity showed no variation between studies $\chi^2(11) = 10.21, p < .001$
Meta Analysis of Implementation Intention Studies

<table>
<thead>
<tr>
<th>Study name</th>
<th>Std diff in means</th>
<th>Standard error</th>
<th>Variance</th>
<th>Lower limit</th>
<th>Upper limit</th>
<th>Z-Value</th>
<th>p-Value</th>
<th>Control</th>
<th>Intervention</th>
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<tbody>
<tr>
<td>Arden 12</td>
<td>0.362</td>
<td>0.324</td>
<td>0.105</td>
<td>-0.273</td>
<td>0.997</td>
<td>1.118</td>
<td>0.264</td>
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<td>21</td>
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<tr>
<td>Armitage 09</td>
<td>0.377</td>
<td>0.315</td>
<td>0.099</td>
<td>-0.239</td>
<td>0.993</td>
<td>1.199</td>
<td>0.231</td>
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<td>0.150</td>
<td>0.022</td>
<td>0.281</td>
<td>0.867</td>
<td>3.836</td>
<td>0.000</td>
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<tr>
<td>Armitage 12</td>
<td>0.188</td>
<td>0.326</td>
<td>0.106</td>
<td>-0.450</td>
<td>0.826</td>
<td>0.577</td>
<td>0.564</td>
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<td>Armitage 14</td>
<td>0.191</td>
<td>0.245</td>
<td>0.060</td>
<td>-0.289</td>
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<td>0.779</td>
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<tr>
<td>Armitage 15</td>
<td>0.129</td>
<td>0.249</td>
<td>0.062</td>
<td>-0.358</td>
<td>0.616</td>
<td>0.519</td>
<td>0.604</td>
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<td>34</td>
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<tr>
<td>Hagger Eng</td>
<td>0.322</td>
<td>0.219</td>
<td>0.048</td>
<td>-0.107</td>
<td>0.751</td>
<td>1.470</td>
<td>0.142</td>
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<tr>
<td>Hagger Est</td>
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<td>0.213</td>
<td>0.045</td>
<td>-0.070</td>
<td>0.764</td>
<td>1.632</td>
<td>0.103</td>
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<tr>
<td>Hagger Fin</td>
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<tr>
<td>Norman 16</td>
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<td>0.158</td>
<td>0.025</td>
<td>-0.233</td>
<td>0.387</td>
<td>0.487</td>
<td>0.626</td>
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</tbody>
</table>

Zoomed into the graph for the meta-analysis of Implementation Intention Studies, showing the distribution of standardized differences and their standard errors, with a focus on distinguishing between Favoring Control and Favoring Intervention.
LENGTH OF FOLLOW-UP AS A MODERATOR

- Length of follow-up moderated the effect size difference when follow-up data was collected within one month: 
  \[ d_+ = 0.33 \ [0.19; 0.46]; \chi^2(8) = 7.89, p = 0.45; \]
  Positive, small, significant, effect size difference

- when follow-up data was collected beyond one month 
  \( d_+ = 0.12 \ [-0.12; 0.36]; \chi^2(2) = 0.20, p = 0.90); \]
  negative, null, non-significant effect size difference
SUMMARY

- Individuals who formed Imps reported lower alcohol consumption at follow-up compared to individuals not asked to form Imps.
  - However, the effect was small.

- Imps significantly reduced unit consumption < one month; No effect > one month
LIMITATIONS

- Small number of studies (10 reporting 12 samples)
- Overrepresentation of UK samples; only Hagger et al. report data from outside UK (Estonia & Finland)
  - smaller effect found in Finland
- Most studies had follow-up periods < one month
QUESTIONS

- Calculating effect size differences while adjusting for baseline consumption
- Suitability of Cochrane Risk of Bias tool for coding study quality in lab studies
ACKNOWLEDGEMENTS

✓ Helen for doing all the hard work
✓ Paul Norman and Martin Hagger for providing unpublished data
✓ My final year module, for providing the inspiration for the review