The development and evaluation of StopAdvisor: a theory-based interactive internet-based smoking cessation intervention

Dr Jamie Brown
SSA Senior Research Fellow
Clinical, Health & Educational Psychology
University College London

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StopAdvisor team

- Susan Michie, Ben Gardner Sood, Lion Shahab, Andy McEwen, John Stapleton, & Robert West,
- Adam Geraghty, Sascha Miller, Judy Joseph & Lucy Yardley
Background

• Internet represents excellent opportunity to deliver low-cost behavioural support to large number of smokers which is currently not being realised (Brown et al., 2013; Civljak et al., 2013)

• Concerns online support may be more effective for smokers with high SES
  – apparent greater literacy to engage with websites compared with smokers with low SES (Hill et al 2013)
Developing StopAdvisor

- Principles from PRIME theory
  - West, 2006; West & Brown, 2013

- Evidence on effectiveness of particular BCTs
  - Michie et al. 2010, reviews and NHS SSS observational data

- Expertise in web design

- Usability testing with low SES smokers
• A general, comprehensive theory of motivation (West & Brown, 2013)

• At every moment we act in pursuit of what we most desire (want or need) at that moment
StopAdvisor

- Offers ongoing automated behavioural support for smoking cessation
  - up to 33 evidence- or theory-based BCTs (Michie et al., 2012)

- Linked by overarching theme
  - automated advisor to support smokers using structured quit plan and a ready source of information

- E-mail reminders and texts to help in stressful & social situations, and to sign-in regularly for new sessions
Usability testing

- Think-aloud interviews
  - smokers with lower SES (n=24)
  - walked through parts of website and asked to think aloud
  - tape-recorded, transcribed and thematic analysis

- Identified themes to address
  - Readability
  - Interactivity
  - Manage expectations and under-use
Evaluation in RCT

- Individually randomised to StopAdvisor or a control condition (brief advice, non-interactive website)
- 4613 smokers (2142 with lower SES)
- Primary outcome was biochemically verified 6 months of continuous abstinence
  - secondary outcome biochemically verified point prevalence (short-term measure of abstinence)
StopAdvisor was an effective aid to smoking cessation in smokers with low, but not high, SES

<table>
<thead>
<tr>
<th></th>
<th>StopAdvisor</th>
<th>Control</th>
<th>Relative risk (95% CI)</th>
<th>Odds ratio (95% CI)*</th>
<th>Percentage-point difference (95% CI)</th>
<th>p value†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary outcome (abstinence for 6 months)</td>
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<tr>
<td>High SES</td>
<td>147/1233 (12%)</td>
<td>156/1238 (13%)</td>
<td>0.95 (0.77 to 1.17)</td>
<td>0.94 (0.74 to 1.19)</td>
<td>-0.68 (-3.27 to 1.91)</td>
<td>0.61</td>
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<tr>
<td>Adjusted</td>
<td></td>
<td></td>
<td>0.97 (0.78 to 1.19)†</td>
<td>0.95 (0.75 to 1.22)‡</td>
<td></td>
<td>0.75</td>
</tr>
<tr>
<td>Low SES</td>
<td>90/1088 (8%)</td>
<td>64/1054 (6%)</td>
<td>1.36 (1.00 to 1.86)</td>
<td>1.39 (1.00 to 1.94)</td>
<td>2.20 (0.02 to 4.38)</td>
<td>0.0499</td>
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<tr>
<td>Adjusted</td>
<td></td>
<td></td>
<td>1.43 (1.05 to 1.96)‡</td>
<td>1.46 (1.04 to 2.05)‡</td>
<td></td>
<td>0.0229</td>
</tr>
</tbody>
</table>
Discussion

• Concern about online support being less effective for low SES smokers appears unwarranted
  – previous studies showed smokers of low SES engaged less with internet-based support, which may have arisen from inequalities in online literacy (Hill et al 2013)

• User testing was exclusively with low SES smokers and seems to have been successful in producing an effective website for that group
  – at the expense of meeting needs of high SES smokers?
  – future research should explore this possibility with a view to tailoring cessation websites to SES
Conclusion

• Use of theory provided an overarching structure for deciding what features and advice to include

• The use of PRIME theory allowed us to provide a comprehensive range of support that addressed the variety of mechanisms involved in cigarette addiction

• The resulting website - StopAdvisor - was an effective aid to smoking cessation in smokers with low, but not high, SES

• StopAdvisor could be implemented easily and made freely available
  – smokers with high SES unlikely to benefit, but no evidence their use of the website would lead them to be less successful
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- StopAdvisor team: Michie, S., Yardley, L., Gardner, B., Geraghty, A., McEwen, A., Miller, S., Shahab, L., Stapleton, J., West, R.
StopAdvisor publications