

EVIDENCE THAT IMPLEMENTATION INTENTIONS CAN OVERCOME THE EFFECTS OF SMOKING HABITS

Chris Armitage, PhD
Professor of Health Psychology,
University of Manchester, UK
chris.armitage@manchester.ac.uk

Evidence That Implementation Intentions Can Overcome the Effect of Smoking Habits

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Objective: In this study, the aim was to (a) test for the first time whether implementation intentions formed outside the laboratory can overcome the effects of habits, and (b) see whether the operation of implementation intentions could be improved by asking people to form certain “when–then” plans as opposed to uncertain “if–then” plans. **Method:** The study employed a 2×2 fully factorial design with baseline and follow-up measures of smoking status and habits. Smokers ($N = 168$; circa 33 years of age; 79 women, 89 men) were randomly allocated to 1 of 2 intervention groups to form either if–then plans or when–then plans using supporting tools, or to 1 of 2 control conditions in which they were exposed to identical supporting tools but were not asked to form if–then plans or when–then plans. **Results:** Certainty did not affect the operation of implementation intentions, but smokers who formed implementation intentions were significantly more likely to quit, $\chi^2(1, N = 168) = 8.86, p < .01$, and the effect was mediated by changes in smoking habits (95% CI [0.02, 0.14]). Similar effects were observed when cigarettes smoked per day, nicotine dependence, and craving served as the dependent variables. **Conclusion:** The findings demonstrate that people who have implementation intentions can overcome habits, such as smoking, outside the laboratory. The supporting tools described in the present research could be deployed at low cost with high public health reach to support behavior change.

Keywords: implementation intentions, smoking cessation, behavior change, intervention, volitional help sheet

How motivated are smokers to quit?

- US Centers for Disease Control (2012): 69% of smokers want to give up completely
- UK: 70% of smokers want to quit (Health and Social Care Information Service, 2013, August)
- Therefore, raising awareness, educating, informing will only get you so far

Beyond motivation?

- Although seemingly paradoxical, the finding that people express positive intentions yet do not act upon them is consistent with theories of behaviour change that posit a distinction between motivation and volition (e.g., Gollwitzer; Schwarzer)
- How can we bridge the gap between motivation and volition?

Implementation Intentions (Gollwitzer, 1999)

- For example, I walk the same route to work everyday, passing a shop.
- Approximately three times per year, I need to call in at the shop, but often forget because the habit of walking past the shop is so deeply ingrained.
- But if I form an implementation intention, then I'm much better at remembering.
- “If I'm walking past the general store, then I will buy a plant pot”



Pickering, North Yorks, from: <http://homepage.ntlworld.com/tomals/index8.html>



http://www.thegardensuperstore.co.uk/acatalog/Heavyweight_Sankey_Plant_Pots-Large.gif

Implementation Intentions

Gollwitzer (1991)

- “**If-then**” plans
- “**If**’s” increase the salience of “critical situations” (e.g., when you might be tempted)
- “**then**’s” provide instructions as to what you might do
- **Linking** “**if**’s” with “**then**’s” ensures that “**then**’s” are triggered automatically

Volitional help sheet: Control condition

Situations

- If I am tempted to smoke when I am happy and celebrating ☒
- If I am tempted to smoke when I am very angry about something or someone ☐
- If I'm tempted smoke with my partner or close friend who is smoking ☒

Responses

- then I will think about something else ☐
- then I will tell myself that society is changing in ways that make it easier for nonsmokers ☒
- then I remember that my need for cigarettes makes me feel disappointed in myself ☒

Volitional help sheet: Intervention condition

Situations

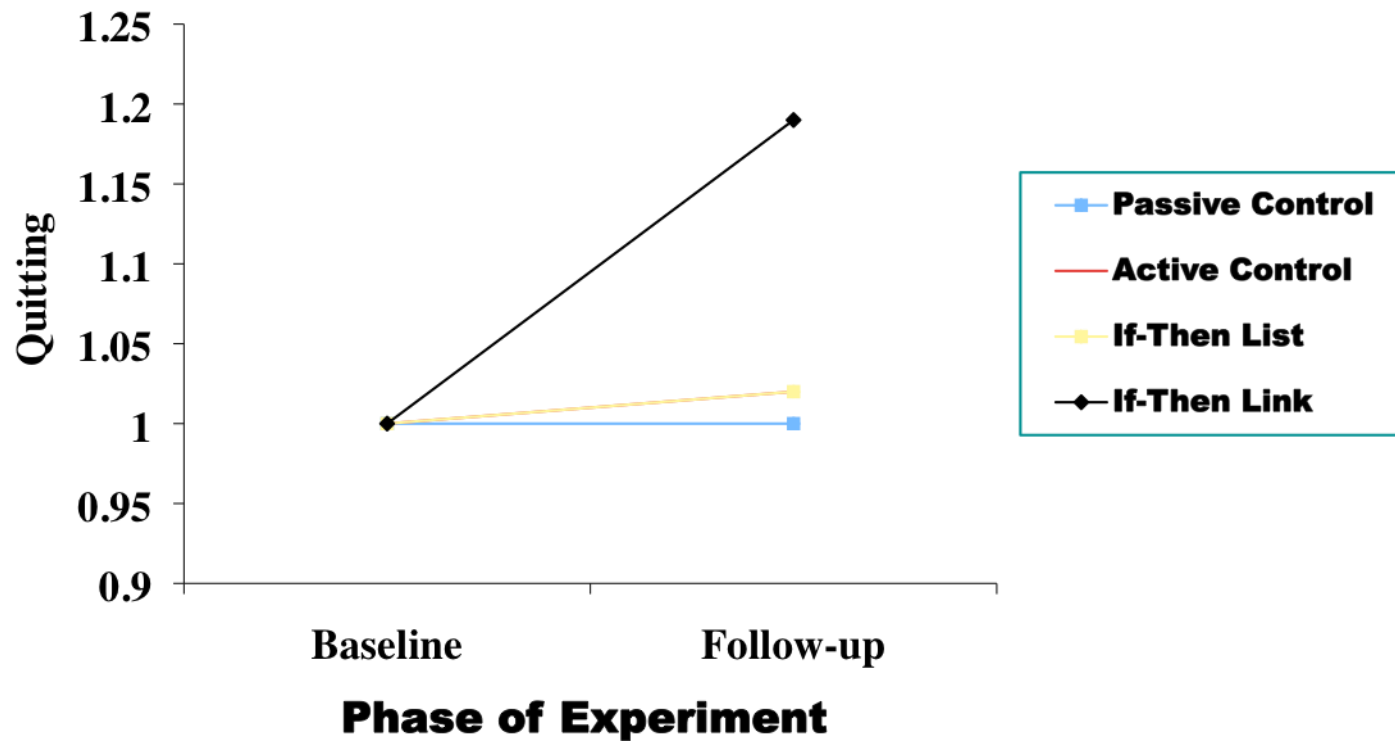
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Intervention Effects on Quitting

Armitage, 2008, *Health Psychology*



Summary

- The volitional help sheet significantly reduced smoking compared with three control conditions, 19% quit in the volitional help sheet condition as opposed to 2% in the next best condition
- Making a **link** between critical situation and appropriate behavioural response appears to be the “active ingredient” in implementation intentions
- Simply forming a plan is not sufficient – it has to adhere closely to the theory (i.e., it’s not just ‘common sense’)
- But...what mediates the effects?

Rationale

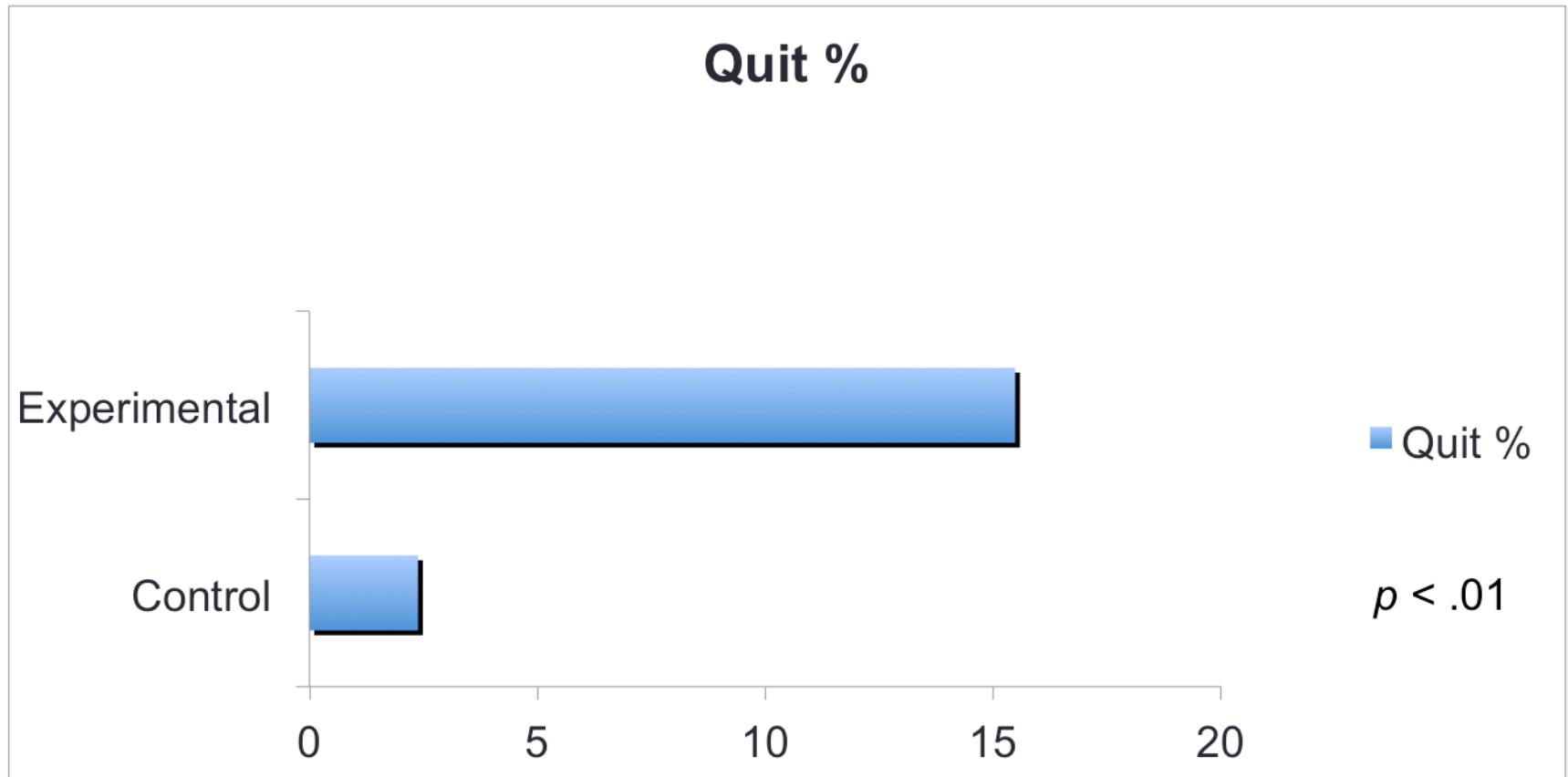
- In laboratory studies:
 - specifying “if’s” increases cue accessibility
 - linking “if’s” with “then’s” ensures that the “then” component is acted upon automatically
- In field studies, implementation intentions do not influence:
 - Behavioural intentions
 - Self-efficacy
- Habits are tendencies to act automatically in specific contexts: could forming implementation intentions overcome the effects of habits?
- Habits can be measured in the field: Gardner et al.’s (2012) behavioural automaticity index (e.g., “Smoking is something I do automatically”)

Method

- 79 women and 89 men (all smokers) recruited from worksites
- Aged between 18 and 75 ($M = 33$ years, $SD = 12.30$)
- 1 (0.59%) did not complete the follow-up questionnaire
- 4-week follow-up (consistent with NHS targets)
- Dropouts were treated as “no-changers”

Smoking Quit Rate

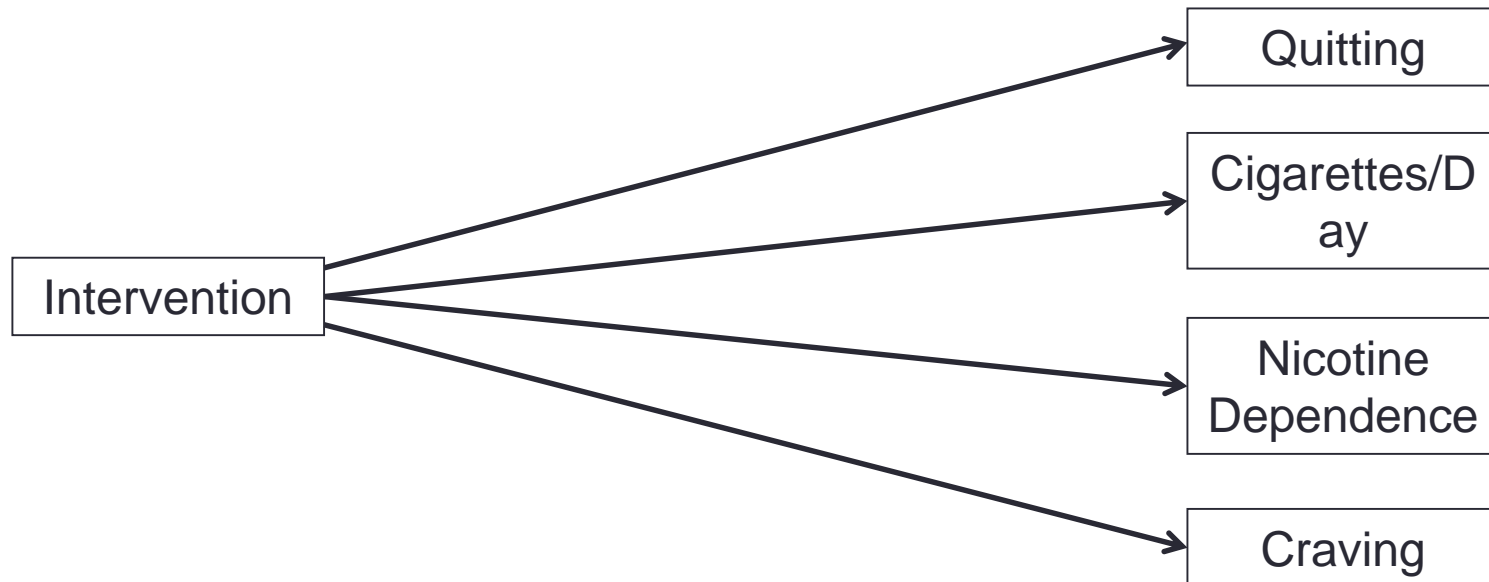
Armitage (in press, *Health Psychology*)



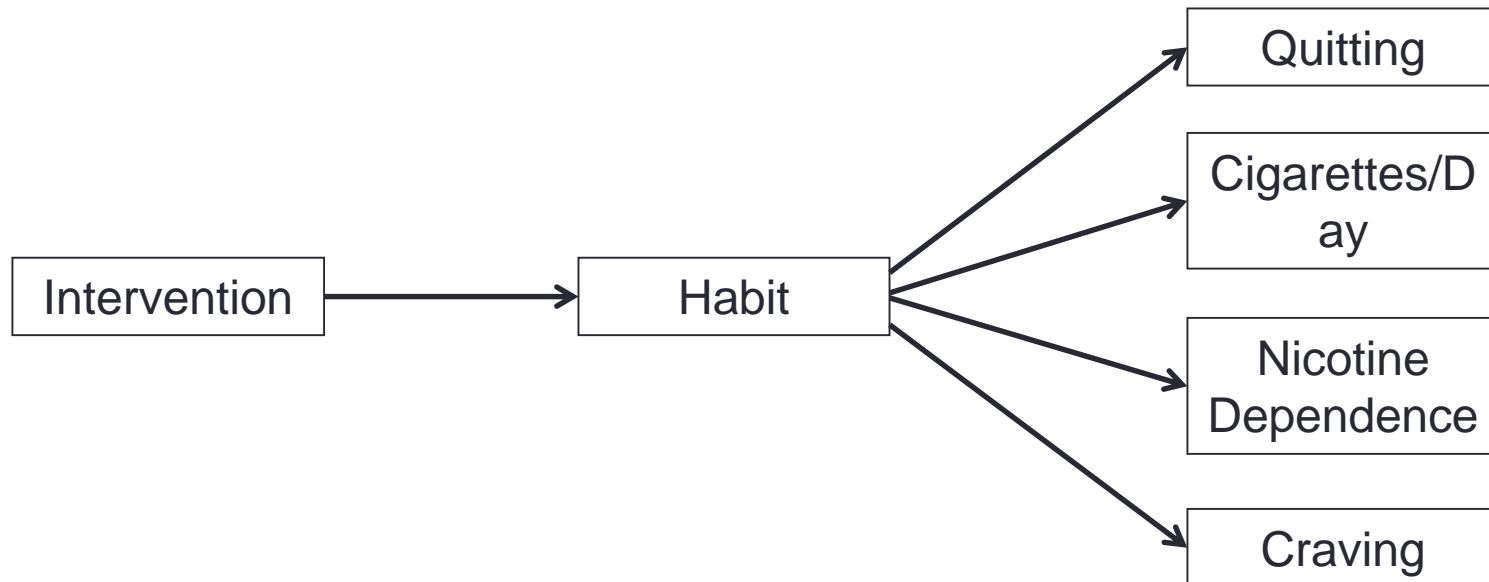
Results

- At follow-up, smokers who formed implementation intentions:
 - Were more likely to quit (15.48%) than smokers in the control group (2.38%), $\chi^2(1, N = 168) = 8.86, p < .01$;
 - Smoked fewer cigarettes, $F(1, 164) = 7.05, p < .01, \eta_p^2 = .04, d = 0.41$;
 - Were less nicotine dependent, $F(1, 164) = 14.94, p < .01, \eta_p^2 = .08, d = 0.59$;
 - Experienced fewer urges, $F(1, 164) = 16.68, p < .01, \eta_p^2 = .09, d = 0.63$;
 - Had weaker habits, $F(1, 165) = 10.79, p < .01, \eta_p^2 = .06, d = 0.51$.

Mediating analysis



Mediating analysis



Summary

- Implementation intentions were effective in reducing smoking, as evidenced by:
 - Increased quitting
 - Lower nicotine dependence
 - Fewer cigarettes smoked per day
 - Fewer cravings
- The effect of the intervention were mediated through changes in habits

Discussion

- Would be useful to have CO verification and longer-term follow-up, but the findings are encouraging
- What else might mediate the effects of implementation intentions (e.g., self-regulation, Armitage, 2015, *JBM*)?
- Adapt the volitional help sheet for use in new technology
- Could new technology help with measuring cue accessibility and automaticity in the field?

Conclusions

- Implementation intention-based interventions seem to be effective in changing behaviour ($d = 0.65$, Gollwitzer & Sheeran, 2006) but...
- ...understanding **how** these (and other) interventions work is important for:
 - Improving existing interventions
 - Developing new interventions
 - Transferring techniques from one domain to another

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