Falsely exaggerating risks scares people off things – new study finds

written by Clive Bates | 26 September 2014

Let's put this on e-cigarettes! That'll teach 'em...

A promising contender has emerged for the coveted Worst Published Paper of All Time award...

Popova L, Ling P. Nonsmokers' responses to new warning labels on smokeless tobacco and electronic cigarettes: an experimental study, *BMC Public Health* 2014, 14:997 doi:10.1186/1471-2458-14-997

Researchers from UCSF (where else?) exposed non-smokers to different types of warnings on smokeless tobacco and e-cigarettes to see if their perceptions of risk changed. Funnily enough they did – especially when e-cigarette users were shown graphic warnings *suggesting that e-cigarettes cause mouth cancer* – using the graphic above. The graphic below shows the design of the experiment: non-smokers were randomised into 6 groups and shown a message related to smokeless tobacco or e-cigarettes – their change in perception of risk was recorded before and after exposure to the warning message.
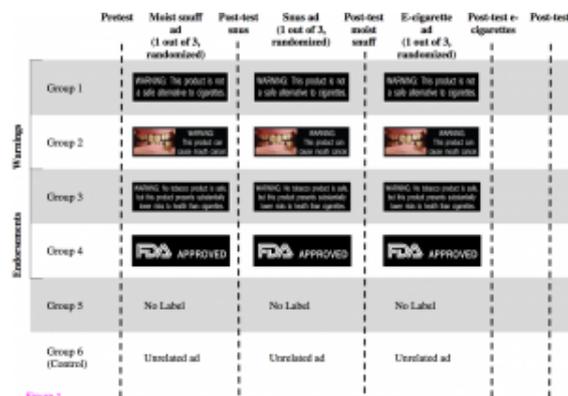

Click to enlarge

No doubt the e-cigs cause mouth cancer warning was shocking news to the subjects of the experiment: and they duly modified their assessment of the risk of these products. The graphic below uses an index of perceived harm (actually a very poorly designed index, but that's another story) and the lines below show how perception change before and after exposure to different warnings – broadly classed as 'warnings' and 'endorsements'. Upward slope means they found it more scary after seeing the warning.
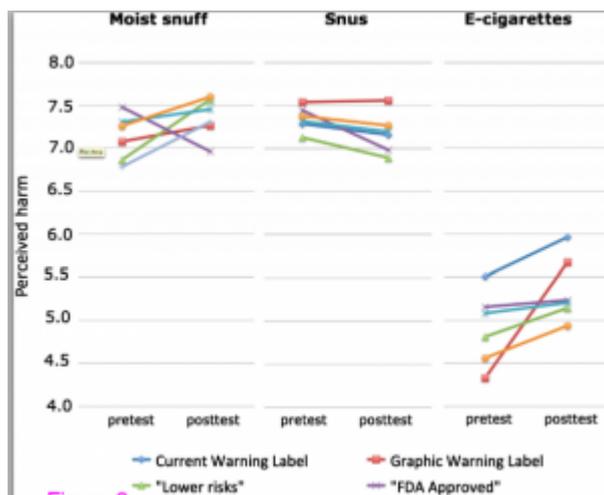
The problem is that the warning statement that has the biggest reaction (a graphic showing e-cigarettes causing mouth cancer) is simply not true, and other statements are just more subtle ways of misleading about risk [discussed in Kozlowski & O'Connor 2003]. However, the effect the researchers were looking for was not the impact of truthful communication, but a deterrence effect that is unconcerned by deception. On the basis of this, they thought they had enough to recommend policy to regulatory agencies like the FDA.

> *Regulatory agencies should not allow "lower risk" warning labels, which have similar effects to the "FDA Approved" label, which is prohibited, and should consider implementing graphic warning labels for smokeless tobacco products and e-cigarettes.*

There's so much wrong with this, I hardly know where to start:

- Concealment. Saying something is lower risk when that is true is not an 'endorsement', it is fact and it is unethical to conceal it
- Deception. Exaggerating or inventing risks, or communicating them in a way that is likely to be perceived incorrectly is deception. It may change

risk perceptions adversely and may cause behaviour change that is harmful to individuals

- Harm-induction. The authors appear unconcerned by potential adverse changes in tobacco use that might arise from the changed perceptions: smokers who might have switched to lower risk products may remain as smokers; users of lower risk tobacco products may become indifferent to risks and start to smoke; young people may initiated nicotine use through smoking rather than less risky approaches; smokers will reject these products as ways of quitting
- Non-sequitur. The FDA does not allow products to claim they are FDA approved if they are not – that is not the same as prohibiting truthful risk communication
- Narrow population focus. The target population here can loosely be counted as: "*non-smokers considering trying smokeless tobacco or e-cigarettes, who go as far as reading what is on the pack*". It assumes that the warning intervention will work for this very small group at this point
- Unexamined objective. The unstated assumption that a deterrent to non-smokers trumps all other concerns – including truthfulness and the welfare of tobacco users
- Real world impact. No consideration of whether (wrong) perceptions created in the artificial test translate to real life perceptions, and whether such perceptions change behaviour
- Credibility **haemorrhage**. No consideration of the general weakening of trust in warning messages (and all communication by public health authorities) when examples can be pointed out with demonstrably false information.
- Hubris. *Nothing at all* in the experiment justifies the policy proposal to regulatory agencies – it is based on a flawed experiment using misleading messages focussed on a narrow subset of the at-risk population with no consideration of unintended harmful impacts on tobacco users
- Unethical experiment. The authors should not have been given ethical clearance to mislead their subjects in this way – deception in experimentation is a serious matter and requires a substantial justification
- Incompetent journal. It's astonishing that this passed through editorial scrutiny and peer review process without these themes being raised in criticism

I left a [comment on the BMC web site](#) – here it is.

This paper uses an inappropriate and unethical experiment to advocate misleading people about risk in order to modify their behaviour in ways that the authors favour. The authors appear untroubled by the fact that smokeless tobacco and e-cigarettes actually are of the order 95-100% less risky than smoking [1][2]. If you smoke this is important health-sensitive information. If you don't smoke, this information is merely true.

Yet the authors advocate removing any communications of the truthful relative risk and replacing these with a text warning [not a safer alternative to cigarettes] that is misleading, or, even worse, graphic warnings suggesting that smokeless tobacco and e-cigarettes cause oral cancer. There is not one single piece of evidence from anywhere that e-cigarettes cause oral cancer, and there is not even a speculative mechanism that has been identified by which it would be plausible. The communication is pure fabrication. Likewise, the most recent assessments of modern American and Scandinavian smokeless tobacco also suggest zero or minimal risk of oral cancer [2][3] – yet the risks of smoking are well understood and orders of magnitude greater than either use of smokeless tobacco or e-cigarettes.

The authors appear oblivious to the potential harms that may arise from misleading people about the risk of alternatives to cigarettes – namely that they will continue to smoke or start using cigarettes unaware that there are much lower risk alternatives that they could choose instead. It appears that the authors approach is to mislead subjects of the experiment in order to increase the subjects' aversion to using these products. On the basis of results showing that they are 'successful' in creating false perceptions of risk, they make a policy proposal to generalise this to a regulatory intervention.

The ethics of deceiving people with false or misleading information deserves greater scrutiny given the harm it can cause, and the individuals and institutions that engage in this disreputable practice should face professional sanctions [4].

I am surprised that this paper is published without some challenge on these themes from peer reviewers.

[1] Hajek P, Etter J-F, Benowitz N, et al. Electronic cigarettes: review of use,

content, safety, effects on smokers and potential for harm and benefit. Addiction 2014 [link]

[2] Lee PN. Summary of the epidemiological evidence relating snus to health. Regul Toxicol Pharmacol2011;59:197–214. doi:10.1016/j.yrtph.2010.12.002 [link][update]

[3] Lee PN, Hamling J. Systematic review of the relation between smokeless tobacco and cancer in Europe and North America. BMC Med 2009;7:36. [link]

[4] Kozlowski LT, O'Connor RJ. Apply federal research rules on deception to misleading health information: an example on smokeless tobacco and cigarettes. Public Health Rep;118:187–92. [PDF]

Carl Phillips has added more insights on this: New public health research: lying to people can affect them (as if they didn't already know) and has done his own peer review as a case study.