Reviewer's report

Title: Defensive reactions to threatening health messages

Version: 2 Date: 6 August 2012

Reviewer: Stephen Brown

Reviewer's report:

This research tests the hypotheses that people make the assumption that threat-inducing health messages represent a viable method of persuading people to cease or reduce drinking and smoking, and that this assumption can be challenged by an intervention. In an innovative study, university student participants’ predictions as to whether a message accompanied by distressing imagery would be more effective than the same message accompanied by less distressing images were compared to the outcomes of actual experiments in a student population. We learn that participants do make the assumption that distressing messages are more effective, but that an intervention does not affect predictions. The study is well-conducted, but I have some reservations that could potentially be addressed.

Major compulsory revisions

1) The intervention seems fairly weak to me, and the cognitive dissonance explanation may be familiar to psychology students (who were excluded) but less so than to others. I suspect that a stronger intervention may be effective, and it would be unwise to emphasise that the pro-threat bias resists intervention or is defensive. indeed, there was no control group, making it difficult to tell if the intervention had any effect (without the intervention, it is possible, if unlikely, that the predictions would have become more pro-threat over time).

2) The introduction should be more specific about the logic of the paper. There are two interesting phenomena in the literature. First, members of the general population believe that threatening messages are effective (this is not mentioned in the paper, but is relevant because public expectation can influence policy). Second, as the authors point out intervention developers also believe this (by the way, it would be helpful to devote more time to justifying the claim that intervention developers default to threat-based interventions - I think that this may be the case but suspect that the reality may be nuanced). However, the sample used is university students, who represent neither of these populations. The link between this research and what the authors are trying to say about the above populations should be spelled out. I assume that a university sample is used because it represents a similar population to that used in the Brown et al studies, which enables comparison. You would then need to explain that the processes you observe are likely to drive the views of the public and intervention developers.
3) The Brown et al studies examine a specific type of threat, distressing imagery. The mechanisms behind defensiveness may differ or be absent for other forms of threat. This should be noted.

4) Relating to this, beyond a vague reference to intuition, no attempt was made to find out why participants believed that the distressing messages were believed to be more effective. We do know that personal involvement in the behaviours described is not responsible for the effect (although in the case of smokers it strengthens it). This is a public health journal, and readers may not be overly interested in psychological speculations, but some sort of account is important to make a convincing argument that the effect you get in university students is generalisable to other populations.

Minor Essential Revisions

The abstract claims that the Brown studies show evidence that threatening messages cause defensive reactions. This is not quite true, the claim is that distressing, or emotive, imagery causes defensive reactions.

It is claimed, in the last sentence of the abstract, that the participants in this study engaged in defensiveness. There is no evidence that their responses are defensive, and they may merely be attributable to a decision heuristic that emphasises emotional meaning.

I don’t remember reference 10 being a brain imaging study as is claimed in the opening paragraph.

The term ‘guy’ (page 9) doesn’t really belong in an academic paper.

Discretionary revisions

Two design features make the test conservative. First, the control conditions in the Brown et al studies represent active controls, as the images in the control conditions could feasibly be seen to be persuasive in their own right. Second, the Brown and Locker paper claimed a defensive effect on behavioural decisions, not risk perceptions. Both militate against the probability of H0 being rejected and enhance the importance of the effect. These could be mentioned.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.