**Author's response to reviews**

**Title:** Exposure and impact of a mass media campaign targeting sexual health amongst Scottish men who have sex with men: an outcome evaluation

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**Author's response to reviews:**

We are grateful for the comments of the reviewers and for the opportunity to revise the paper. Below, we indicate how we have addressed the points raised by each of the reviewers (with our responses indicated by asterisks).

1. Reviewer's report

Title: Exposure, reach and impact of a mass media campaign targeting sexual health amongst Scottish men who have sex with men: a pragmatic outcome evaluation

Version: 1  Date: 9 April 2013

Reviewer: Jesse Clark

Reviewer's report:

The manuscript presents what is described as a “pragmatic” approach to analysis of the reach and influence of a HIV prevention/sexual health promotion campaign for MSM in Glasgow, Scotland. The authors are open about the deficiencies and limitations of their post-test analysis of a health promotion intervention in which they were not part of the development process. However, given the large amount of space in the Introduction and Discussion sections devoted to discussing the importance of theory-based mass media interventions as well as the integration of mass media education with other components of a comprehensive HIV prevention strategy, and the limitations of non-RCT study designs in previous evaluations, it is odd that the research presented does not incorporate any of these issues.

*Response. We have revised both the Introduction and Discussion sections, such that the emphasis is not primarily on the limitations of non-RCT studies (see also responses to comments from the other reviewers).*
Major Compulsory Revisions

1) Specifically, additional information on the MYPC intervention itself is needed. As presented, the intervention appears to consist of posters displaying men interacting in sexual and non-sexual situations accompanied by a number (the reason for which is not explained), the logo, and the website for the intervention. Even though the authors were not involved in developing the intervention, additional detail about what was included (and, ideally, what the theoretical principles guiding the campaign) would be important.

*Response. We have provided more information on the intervention (see Methods, The Campaign), including as much information as we were able to adduce on the background and development. As we understand it, there was no explicit attempt to use any theoretical behaviour change techniques within the campaign development.

2) The sampling strategy for the evaluation of the campaign is questionable in terms of its representability for the larger community. Although delivery of the campaign was segmented according to “gay scene” and “non-gay scene” venues, only gay bars were used to recruit participants in the evaluation. In addition, the Time Location Sampling methods used do not appear to be based on a random selection process (e.g., random selection of Venue-Date-Time units based on a comprehensive survey of MSM/TW-associated sites). The fact that all attendees at the venue in the given recruitment time frame further limits generalizability.

*Response. We have briefly addressed the limitations of the sample and sampling strategy in the Discussion. We have removed the description of the sampling strategy as “time and location”.

3) The authors use multiple measures of intervention exposure (as well as of sexual risk behavior), which is helpful in providing a nuanced understanding of exposure. However, there could be more discussion of the different levels of exposure in the Discussion section. In particular, the fact that only 7% of respondents were able to name the campaign unprompted and 34% recognized the campaign name or logo suggest a fairly low level of actual exposure in the community.

* Response. We have added more to the Discussion section on different indicators of exposure.

4) As the authors note, the cross-sectional post-test evaluation is limited in
assessing causality of the association between the campaign and HIV/STI testing and sexual health behaviors among participants. It would help to specify whether the campaign included display of posters in HIV/STI clinics and other HIV testing sites. If so, the association between recent HIV testing and campaign exposure could be further undermined. The authors recognized this limitation and frame it as part of a pragmatic approach to evaluation in the context of limited funding resources, but additional consideration should be given to how much these limitations influence the ability to accurately evaluate mass media campaigns, and how to potentially overcome these limitations.

*Response. The campaign did in fact include display of posters in HIV testing sites. We have added a further table to show where posters were displayed and seen. However, exposure to posters and materials at HIV testing sites did not contribute to the overall measure of exposure for the reasons cited by the reviewer, and this point is made more clearly now in the manuscript. Having said this, it remains possible that those seeing the posters at HIV testing sites were then ‘primed’ to notice the campaign materials elsewhere, so the possibility of confounding remains. This point is made in the Discussion.

2. Reviewer's report
Title: Exposure, reach and impact of a mass media campaign targeting sexual health amongst Scottish men who have sex with men: a pragmatic outcome evaluation
Version: 1 Date: 9 April 2013
Reviewer: Garrett Prestage
Reviewer's report:
This is a very well-written paper that covers the topic area and reports the data very effectively. I have few reservations about this paper
Major Compulsory Revisions:
Given that participation in the 'gay scene' was associated with exposure to the campaign it is probably worth noting that men who are more highly engaged in gay community life may also be more likely to actively seek out this sort of material. Their awareness of the campaign may not be only because they were more likely to encounter it.

*Response. This is a fair point, and it is related to the issue of ‘priming’: those who see campaign materials at sites of HIV testing might be primed to notice the materials elsewhere, in addition to being more likely to actively seek out this material in the first place. These issues are raised in the Discussion section.
There is a broader issue about the capacity to evaluate the impact of a campaign of this nature in a context of high levels of knowledge and motivation that should be noted. The demand for more, and more rigorous, evaluative work usually fails to acknowledge this context and ignores the potential impact on maintenance of current levels of knowledge and motivation. Mostly, the expectation is for a positive outcome - a change in behavior or knowledge or attitude. However, this may not be feasible in some circumstances, but it may well be that in the absence of this sort of work, long-term, there may be some decline in these desired outcomes.

*Response. Again, this is a fair and important point. We were unable to examine existing levels of knowledge and motivation, long-term outcomes, or undesired or negative effects of the campaign, within this study. However, the point is raised in the Discussion section.

Minor Essential Revisions:
The term 'non-scene' appears before it is explained in the methods. A brief explanation should appear on its first mention.
*Response. This has been attended to.

The 'non-scene' locations for the campaign need a bit more clarification: Were these 'non-scene' locations city-wide or were they concentrated in venues and services that may nonetheless have had a large gay clientele?

*Response. This has been clarified and we have included an additional table detailing all of the sites that we were made aware of and that we included in the study. Some of the places where posters were displayed would be classed as public: e.g., transport systems, places of education and employment, pharmacies, and libraries.

Discretionary Revisions:
The background material to this paper is fairly comprehensive, and mostly it is quite relevant. Nonetheless, I did feel there were a few points that were not really essential for the argument in this paper. Perhaps a bit tighter focus on evaluating mass media campaigns would be warranted.

*Response. As noted above, we have revised both the Introduction and Discussion sections, such that the emphasis is not primarily on the limitations of non-RCT studies.

My second discretionary concern relates to the description of the sample as
'MSM'. Given that this is a sample recruited through gay venues and the interventions are evaluated relative to their gay scene and 'non-scene' deployment, the characterization of the sample as being broadly that of any man who has sex with men is misleading. It is a pity that you have not reported on the men's own sexual identity. Nonetheless, at the very least, it would be useful to acknowledge that the men in this sample are likely to be mostly gay-identified men who participate in gay community life.

*Response. We used the term ‘MSM’ because this was the term used by the campaign developers. This has been clarified in the section describing the campaign. However, we have also clarified our own use of the term, and have indicated that it includes gay men (and that the sample might include a large proportion identifying as gay).

3. Reviewer's report
Title: Exposure, reach and impact of a mass media campaign targeting sexual health amongst Scottish men who have sex with men: a pragmatic outcome evaluation
Version: 1 Date: 17 April 2013
Reviewer: Scott Geibel
Reviewer's report:
Major Compulsory Revisions:
 Clarification of intervention components, recruitment method, and possible revision of statistical analysis (see detailed comments).
Minor Essential Revisions:
  Reorganization of Background and Discussion.. overemphasis on overall mass media evaluation and less on the study itself (see detailed comments).
Discretionary Revisions:
 Overall this was well-written, and have included a few discretionary recommendations in the detailed comments below.

I think this paper can fill a gap in the literature regarding intervention evaluations for MSM. At the same time, my feeling is that there is more elaboration, discussion, and apology than necessary on the part of the authors regarding the gold standard requirements for mass media evaluation and the lack thereof in this paper. I feel some revision is needed here, as well in a need for a better intervention description, and I have some questions about the methods and statistical analysis:
Abstract:
I would suggest taking out the sentence “A pragmatic and opportunistic approach to outcome evaluation was adopted” and use the word count to put more detailed statistics in the Results paragraph. Without odds ratios and p-values, the abstract seems a bit weak to me. Also, the abstract states that MSM “engaging in high risk sexual behavior” were targeted, but it seems to me the Methods section says you interviewed anybody present in the gay bars. Isn’t the “high-risk” an assumption that’s not true in all cases in your sample?

*Response. The abstract has been rewritten to take account of these points.

Background:
1st paragraph- by “health psychologists” are you referring to “behavioral scientists” and the applied use of behavior change communication theory?

*Response. The text has been changed and now includes the term behavioural scientists.

I thought this section contained a very good summary of the evidence regarding mass communication effects. But it reads as though you are setting yourselves up—I got the impression that you were preparing the reader that you were about to fill a gap by presenting a more rigorous evaluation design, but in fact I was disappointed to find otherwise when I got to the Methods. There are a lot of shortcomings in mass media evaluations for reasons you cite, but you don’t discuss why this is the case. For example, sometimes when campaigns are funded, there are pressures to begin implementation quickly—and baseline pre-intervention evaluations may get delayed in protocol development and approval processes. Often funding for evaluations is not sufficient, and a compromise for a weaker design has to be made. You might consider these issues in the Background right before the last paragraph. Normally, I would expect more discussion of the literature related to MSM and interventions, and not such a large exposition on mass media evaluation methodology.

*Response. As noted above, the Introduction and Discussion sections have been redrafted to take account of these points (and those made by the other reviewers).

Methods:
The campaign: If the research team was completely independent of the campaign, how do you know there was no attempt to ground the intervention in
behavior change theory? I think that the intervention description could use a bit more info—how many settings were targeted? How many website hits? More importantly, what were the mass media components… just a website? Radio? TV? Posters? How many? Brief discussion of a “campaign” based on “principles” really are not enough to give the reader a clear picture of what the actual components of the campaign were.

*Response. As noted above, we have included more information about the campaign and about the sites used to display the campaign materials.

Design and procedure: I’m not a big fan of your “pragmatic and opportunistic” terminology. I feel it weakens your case that the data has value. I also question whether true time-location methodology was used, as with TLS you would have created a sampling frame that contained times and numbers of eligible respondents, then systematically sampled from that sampling frame. Unless I’m wrong, your actual design description might read something like this: “We conducted a targeted cross-sectional survey of MSM at seven gay bars in Glasgow… any MSM present during the hours of… were asked to participate.”

Also, the methods section is not the appropriate place to explain why lack of funding undermined your design; that belongs in the discussion section.

Suggest moving the sentence “In total, 1313 men were approached and 822…” to the first sentence of the results section.

*Response. We have taken out ‘pragmatic and opportunistic’ and reference to time and location sampling, as noted above. We have moved the sentence relating to sample size to the Results. We took out the point about lack of funding from the Method section.

Statistical analysis:
I’m a bit confused with your statistical analysis and particularly the Table 3 structure. Looking at Table 3, I can’t really tell what the first row in each category means, and if the chi-square test only applies to that row. It looks like the first row always equals 100%, so is this just the denominator? The chi-square test is positioned on that row, so is it just testing the distribution of your denominator, or the distribution of the data below it? I suggest just putting the overall denominator at the top of the table, and then putting the data categories below so it is clearer. For data where it is a subsample, you could put find a way to clarify that denominator below.
*Response. Table 3 is now Table 4 (to accommodate an additional table showing sites of display of campaign materials). We agree that the original layout was confusing. We have removed the first row in each category – yes, it represented denominators, and those figures can actually be seen in Table 2, so were not strictly necessary here. The chi-square figures do relate to the distribution of data below and we hope this is clearer now.

If you used Pearson’s chi-square test of independence to test for significant differences in campaign exposure (no, low, medium, high) among each category in the Table 3, then this is not the appropriate non-parametric test to use. Hypothetically, you want to determine if the positive health-related outcomes increase according to increased levels of exposure to the campaign. The chi-square only tells you if there is variance in the distribution, but it’s not as sensitive to possible gradual trend changes. If you are using SPSS, then you should go by the Mantel-Haenszel Linear Association Test, or the “Linear-by-linear association” test which appears in SPSS chi-square results. If you did use this test, then it needs to be stated clearly.

*Response. This is a useful point and we have changed the figures to linear-by-linear tests, and added this in at the relevant points. Some of the figures have therefore changed but the overall pattern of results remains the same.

In your description of logistic regression, it looks to me in Table for that you are always running a “binary” logistic regression for all the outcomes… is that correct? Please clarify.

*Response. Yes, that is correct and the information has been added at relevant points.

Results
Some description of sample characteristics in the text is needed. Educated, mostly employed, and *very few engaging with multiple unprotected partners in past year.* Some of this is important to highlight. Definitely these men are not all “high-risk” as you say in the abstract!

*Response. More details have been added to the Results section and the reference to ‘high risk’ removed from the abstract. We had not meant to imply that all of the sample were at high risk, but agree that the original wording was not clear.

Reading the results, I could glean a few more details of exactly what the intervention components were, but this needs elaboration in the Methods.
*Response. This has been done, as indicated above.

Discussion:
The first paragraph of the Discussion section was already discussed in the Background… not necessary to revisit background here.

*Response. We agree and this has been removed.

There is discussion of observation of no linear relationship with exposure dose-response levels, but I’m not certain that your statistical analysis was appropriate (see notes above about table 3 and the chi-square test).

*Response. Agreed, and the point has been removed.

The sections of the Discussion on findings of similar MSM evaluations and need for RCTs are overly long, and in my opinion you are seriously undermining the value of this contribution to the literature by spending so much time saying how terribly deficient this study is. This study is what it is, and I recommend you reframe the Discussion sections to (a) highlight the significance of your findings, (b) what it means within the broader context, (c) succinctly explain the limitations of the study, and (d) conclude.

*Response. The Discussion has been revised.