Author's response to reviews

Title: Avoidance Behaviors and Negative Psychological Responses in the General Population in the Initial Stage of the H1N1 Pandemic in Hong Kong

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Author's response to reviews: see over
Dear Editor,

Re: **BMC Infectious Diseases** (MS: 1440217797299025; Title: Avoidance Behaviors and Negative Psychological Responses in the General Population in the Initial Stage of the H1N1 Epidemic in Hong Kong)

Thank you very much for considering our manuscript. Please find below our responses to individual comments from the Reviewers.

Thank you very much.

**In Response to Editorial Requests:**
1. Please remove page 3 from the manuscript, as a "Summary of conclusions" and "Biography of the first author" are not sections which we include in our manuscripts.

A: These 2 sections have been removed from the revised text.

**In Response to Comments from Reviewer 1:**

**Discretionary Revisions**

1a. The measures of distress that were used seem a little unconventional, although I note that they have been used successfully in several of the authors’ previous studies. Perhaps some of the unusualness is due to the translation of the items for the sake of this paper? For example, it seems a little odd to ask someone if they are feeling “emotionally disturbed,” or “panicking very much.” Do the authors have any data to show how these items perform when compared with more conventional questionnaires that are used to measures psychological distress? Are there any data about their psychometric properties that could be used to support their use? If not, I do not see this as a major weakness, but it might be something worth mentioning in the discussion [and possibly addressing in any future research].

A: We asked the respondents whether they feel panicking very much, emotionally disturbed due to H1N1. These questions have been used in a number of studies and hence allow for some comparisons. We now mention the lack of validation data as a limitation in
1b. A more important concern though, is the use of these items to categorise someone as not just ‘distressed’ but also as showing “signs of severe mental distress” (p9, first para & p11 second para) or “severe emotional distress” (p9, second para, and tables). If these items have not been validated against any previously validated scale, or against clinical assessments, then this statement seems a bit of a stretch. Perhaps it would be more in keeping with the actual questions used just to say “high levels of distress.”

A: We agree with the Reviewer and changes were made accordingly. We now used the term ‘emotional distress’ throughout the tables and the text.

2. The authors have pooled data together from three separate surveys spanning one month in order to conduct their analyses. During this time, I am sure there were many developments in the unfolding swine flu outbreak in Hong Kong, and in the way the Government and the media reacted to it. Are the authors confident that the associations between their independent and dependent variables did not change over time, from one survey to the next? They very possible did not, but it would be reassuring to have this checked and a short statement added to the text to confirm this (if true).

A: We consider the time frame too short for studying the large number of interaction terms between time and independent variables. We also add this point to the Discussion (Page 13 of the revised text).

3. I was surprised that 63.4% of the population reported avoiding visiting hospitals, and that 63.3% were avoiding travelling abroad. How exactly were these questions phrased? Presumably these were behavioural intentions, rather than actual behaviours? For example, I might say that I am currently avoiding hospitals – but this has nothing to do with swine flu, it is because I am not ill and do not have anyone in hospital who I need to visit. Equally, I am not going to be travelling abroad in the next few months, so it is hard to say if I am
‘avoiding travelling abroad.’

A: The questions specified avoidance of visiting different places “in order to avoid H1N1 infection”. The context of the questions is therefore very clear. Eye-catching warning signs about H1N1 were posted all over the local hospitals, train stations and the airport. Custom officers were wearing face masks and additional health officers were stationed at checkpoints. Travelers had to fill out declaration forms and underwent thermal checks etc. These measures may have cause anxieties to hospital visitors and travelers, giving an impression that visiting these places are associated with high risk for infection.

We now remove the item on traveling abroad from Table 3 of the original text, as suggested by Reviewer 2, as we did not include this item when constructing the dependent variable for logistic regression analysis. Please see response to Point 24 of Reviewer 2’s comment.

4. From my reading of the literature, and again the authors will know this research better than I do, one interesting aspect of the SARS outbreak was that use of hospitals fell because people were concerned about contracting the illness there. This may have had an impact on their health. It might be useful to work this point into the discussion, to suggest that avoidance has impacts that are not just economic?

A: We added this point to the Discussion (Page 10 of the revised text).

5. The authors suggest (p11) that a vicious circle may operate, with avoidance of going out resulting in increased distress. I am not so sure – would it not result in decreased distress as people have taken effective action to reduce their likelihood of contracting the disease? Can the authors provide a supporting reference for their vicious circle argument?

A: I agree with the Reviewer and have now removed this point from the revised text.

6. The authors suggest that they expect the prevalence of negative psychological responses
to increase over the coming months as the number of cases rises. However, could the case not also be made that press coverage showing that the disease is actually relatively mild will assuage public concerns? Obviously only time (and more surveys!) will tell.

A: In fact, some data show that negative psychological responses did not increase over time, so my prediction has not been correct. I made some changes accordingly, saying that the direction was unclear (Page 10 of the revised text).

**Minor essential revisions**

1. The authors say (e.g. abstract and 2nd para of intro) that “panic” was prevalent in the Hong Kong community during the SARS outbreak. My understanding is that panic represents irrational, selfish behaviour that disobeys pre-existing social norms (see, e.g., Sheppard et al Terrorism and dispelling the myth of a panic prone public.J Pub Health Policy 2006;27:219-245). The authors are better informed than I am about how the Hong Kong public reacted during the SARS outbreak, but are they sure that ‘panic’ is a technically accurate term? For example, was avoidance of public areas really an irrational response to SARS that contradicted social norms? Panic seems a strong term to use in this context, and I am unconvinced if it is justified. I note that the authors did use the phrase “panicking very much” as one of the questions in their interview. However, our experience in the UK is that people interpret the word “panic” to mean just “fear.” As such, even if people say they are panicking, it doesn’t necessarily mean that they are behaving irrationally.

A: Panic is a common term in Chinese, implying irrational behaviors, which is very different from the term ‘fear’ in Chinese (which has little implications on behaviors). We see no problem in using this term.

2. I would suggest that authors are more explicit in the manuscript that descriptive data relating to the first 550 participants has already been published in the Journal of Infection. I am quite content that this does not constitute duplicate publication – it seems entirely justified in the circumstances for the authors to have put their first data into the public
domain as quickly as possible and to be presenting a more in-depth analysis (as in this manuscript) at a later date. However, I do think that it should be made clearer to readers what the link is between the J Infection paper and the current paper.

A: We now made it clear that the first paper was published in the Journal of Infection (Page 4 of the revised text).

3. The sampling strategy (taking random telephone numbers from the telephone directory) would be seen as relatively low quality if performed in the UK, because a large proportion of UK residents choose to be omitted from the directory – and those who make this choice differ from those who do not on several key socio-demographic (and presumably psychological) characteristics. I am not sure if this applies in Hong Kong, but UK readers, at least, will assume that it does. Could the authors clarify what percentage of the Hong Kong population are listed in the directory? I appreciate that 95% have a fixed line phone line, but are all of them in the phone book?

A: There is no statistics on what percentage of the fixed line phone number appears in the phone book, but phone numbers are listed unless you opt out and no cost is involved. Our sample is comparable to the Census data in terms of age and gender compositions. We also randomized the last 2 digits of the phone number selected from the phone book so that theoretically, some unlisted numbers could be covered. This is now elaborated in the text (page 5 of the revised text).

4. I am intrigued by the response rate calculation. The authors say that 1,345 eligible respondents were identified and 999 completed the interview, giving a response rate of 74.3%. This seems remarkably high for a telephone survey. Calculating response rates for telephone surveys is much more complex than it appears (see e.g. Galea & Tracy, Participation rates in epidemiologic studies. Ann Epidemiol 2007;17:643-653.) Can the authors provide a little more information in this section? In particular, how many phone numbers in total were called? How many attempts were made to contact each number? How many didn’t result in a conversation with someone at the other end? Of those which did
result in a conversation, how many people were ineligible? Of the 1345 eligible respondents who were identified, why did 346 people not go on to complete the interview. Adding this information may make the response rate seem lower, but that would not necessarily imply a problem with the sampling.

A: We agree with the Reviewer. We now do not use the term response rate to avoid misleading impressions. Many of the 346 people who refused to join the study stated that they were too busy whilst others did not give any reason for refusal, but no one mentioned about the topic of the study being a reason for refusal. This part is now rewritten as: “A total of 2,583 phone numbers were made and being answered by someone (2,906 calls were unanswered with at least 3 attempts made), out of which 1,345 were eligible households were identified and being invited to join the study. Of these 1,345 eligible respondents, 999 (74.3%) participated in the study” (Page 5 of the revised text).

5. The authors state (p11) that “avoidance behaviours were more likely to be psychological reactions associated with anxiety due to H1N1.” Again, I am not sure if the authors’ terminology is strictly accurate here. After-all, they controlled for anxiety in their multivariate analyses (well, distress at least) and yet the associations with e.g. gender, age etc remain despite this. So saying that these associations are mediated by anxiety isn’t actually supported by the data. It could be that they are mediated by other psychological variables however – e.g. perceived impact, perceived ability to cope etc etc. For example, research by our team (Rubin et al BMJ 2009;339:b2651) also identified associations between perceptions of swine flu and behavioural reactions, even when we controlled for anxiety about swine flu.

A: We are not claiming that avoidance behaviors and psychological reactions are mediated via anxiety (we did not go so far). We just wanted to point out that avoidance behaviors and psychological reactions are associated with each other. We now removed the misleading argument from the revised text.
6. p11 – the authors discuss “a few international studies documenting strong levels of anticipatory anxiety” at the early phase of human avian flu. However, several studies have now released results which show the actual responses of various international populations in terms of behaviour, perceptions, anxiety and the associations between them. I do feel that these studies would provide a much more concrete comparison for the author’s study, both in this paragraph and throughout the rest of the discussion (e.g. in preference to SARS or H5N1 studies when discussing the role of age (p12)). Examples include our own work showing the link between perceptions and behaviour in the UK (Rubin et al BMJ 2009;339:b2651), work by Robert Blendon in the US examining public perceptions of the outbreak (see www.hsph.harvard.edu/news/h1n1/ for a summary of their results, which as far as I know have not yet been formally published in the peer reviewed literature), and by Sandra Quinn, also in the US, also looking at perceptions of the outbreak (Quinn et al Biosecurity and Bioterrorism, 2009:7;3 fast track paper on-line doi:10.1089/bsp.2009.0041).

Other studies which specifically look at public reactions to H1N1 are also on-going and may have been published by the time the authors come to revise their manuscript; these might also be worked in. The authors themselves note that “similar data will be obtained from other countries and can be compared with ours:” the data are indeed already available, and there is nothing to stop the comparison being made!

A: We now updated the literature review.

7. I would recommend a read-through to make sure the English is ok (e.g. ensuring that tenses agree) – it isn’t too bad, but it does need a bit of polishing up before publication.

A: We have edited the English and thanks.

In Response to Comments from Reviewer 4:

Major compulsory revision

1. The results in table 4 show a contradiction which is not mentioned in the text but
warrants attention. Having at least one misconception about modes of transmission is in the multivariate analysis related to avoiding visiting crowded places, going out and hospitals. At the same time having all the knowledge items correct is also related to avoiding visiting crowded places and going out. This seems contradictory both misconceptions and having correct knowledge are related to unnecessary behaviours. It is important to discuss this and give some explanation for this result.

A: This apparent contradiction is now explained by the fact that both knowing correctly and having unconfirmed beliefs about modes of transmission would mean that H1N1 could be transmitted via more channels (some were correct and some were unconfirmed beliefs). Therefore, as pointed out by Reviewer 3, it was the higher number of potential modes of H1N1 transmission that explained the association between avoidance and correct knowledge and unconfirmed beliefs.

**Minor essential revision**

2. On page 11 in the second paragraph the authors write ' Whilst worry about the infection and severe mental distress may cause people to avoiding going out, the reverse may also be true to result in a vicious cycle.' It is not clear what is meant by the reverse. Is it not worrying and no mental distress of may be not going out resulting in more distress. This should be clarified as the vicious cycle is also mentioned in the third paragraph on this page.

A: The sentences have been deleted and rewritten.

**Discretionary revisions**

3. On page 4 the alert level 'Emergency Response Level'. For readers not familiar with the Hong Kong system it would be helpful to give some background information. Is this specifically for infectious diseases of for national security?

A: The Hospital Authority devised alert levels for emerging infectious diseases such as H5N1 and H1N1. These levels have implications on visitor policy, mask use and other operational policies in the hospitals. This is now clarified that these are alert levels put forth
by the local Hospital Authority in the text (page 3 of the revised text).

4. It may me helpful to update the number of cases of H1N1 when submitting the final version of the manuscript.

A: The number of H1N1-related deaths is updated in the revised text. We keep the June, 2009 figures as such figures reflect the context of the survey, which was conducted during May to June, 2009.

**In Response to Comments from Reviewer 2:**

**Major compulsory revisions:**

1. The terminology used in the paper is not always consistent, which sometimes makes things unclear for readers. I would propose that you use the following standard terminology throughout the paper:

   - “Different avoidance behaviours”: when you avoid going out you also avoid different places, thus the summary term is not clear. I propose that in stead you use “show (showing/showed) any avoidance behaviour” throughout the paper (including tables) to indicate the summary measure.

A: We agree with the Reviewer and have made such changes, using the term ‘avoidance behaviors’ accordingly throughout the text.

   - Unconfirmed beliefs: this is not clear, preferably use “misconceptions” throughout the paper/tables.

A: We are keeping the term unconfirmed beliefs as this study was done at the very initial phase of the H1N1 and little was know exactly about the modes of transmission; we now use this term consistently throughout the text. The term has also been used in other relevant publications (e.g., Lau et al., 2006).

References
Lau JTF, Tsui H, Kim JH, Griffiths S. Perceptions about status and modes of H5N1 transmission

- Perceived clinical properties: better to always use “severity” (as you do in the abstract)

A: We now used two separate constructs (perceived severity and perceived availability of treatment) to replace the term perceived clinical properties throughout the tables and the text.

2. The way concepts are handled in the analyses/tables is not always consistent, see specific comments on each table.

A: We made changes accordingly.

3. Abstract (and later also in the text): it is very unusual to summarize various odds ratios from a multivariate analyses into a range, e.g. “(OR=1.42 to 3.90, p<.05)”. This suggests a confidence interval to the readers. I propose that you leave out these numbers in the abstract. And describe it in the text as “odds ratios ranged from … to …”.

A: We made changes accordingly.

4. The conclusions in the abstract do not flow at all from the results.

A: The conclusion has been rewritten.

5. Summing up of Factors associated with avoiding different places (page 9): please mention the factors in the order as they appear in the table. “Those disagreeing with the statement... etc” => just call it “Those with correct knowledge”

A: Relevant changes have been made.
6. Having misconceptions as well as having correct knowledge on mode of transmission predicts avoidance behaviours. This apparent contradictory finding should be addressed in the discussion. The fact that correct knowledge predicts avoidance behaviours is not being paid attention to in the abstract.

A: Please see the explanation made earlier (Point 1 of Reviewer 4).

7. Description of factors associated with visiting hospitals (page 9 below): worry for oneself/family to contract H1N1 is not mentioned.

A: We now added this to the description (Page 9 of the revised text).

8. Page 10, line 6 “The reverse was true for those …” An odds ratio of below 1.0 should be not handled separately, but should be included in the summing up of the fist line “The results … showed that those… and those who perceived an inability of the government to control the epidemic, were more likely than others to be much worried that either they or their family would contract H1N1”

A: Changes have been made accordingly.

9. Summing up of factors associated with severe emotional distress: deal with them in the same order as the table.

A: We made changes accordingly (page 9 of the revised text).

10. Discussion: start with repeating that 77% showed any avoidance behaviour.

A: We added a sentence accordingly (page 10 of the revised text).
11. Discussion, 2nd paragraph: the results quoted here are wrong, not consistent with the tables, please check.

A: We delete the argument about time trend, in response to the comment Point 5 of Reviewer 1.

12. Because the causality between avoidance behaviour and negative psychological responses is not clear (it can go in both directions as you indicate in your discussion), I propose that in table 5 you also include the summary measure for avoidance behaviour as a predictor in your analyses of negative psychological responses (just like you include neg. psych. Resp. as predictor in your analyses of avoidance behaviour).

A: We do not prefer adding this to the analysis as the point about associations between avoidance behaviors and negative psychological responses have already been made and the suggested addition would not bring much new information to the discussion.

13. Discussion, 3rd paragraph: You say it is understandable that the prevalence of avoidance behaviour decreased over time, but why did worry/distress then not also show a decrease over time?

A: It seems that the prevalence of avoidance behaviors was quite high and adjustment according to new information seems reasonable. The prevalence of worry/distress seems lower and therefore may have less room for decline over a short time period. This is now added to the Discussion (page 10-11 of the revised text).

14. Discussion, 3rd paragraph: You say it is expected that the prevalence of public negative psychological response will increase. I do not agree. Initially the case fatality of H1N1 was overestimated, not only by the general public but also by experts. Over time it became clear
that it is just a mild flue, comparable to the normal seasonal flue, and therefore one would expect less fear and less negative psychological responses.

A: We change this argument (see page 10 of the revised text). Please also see the response made to one of the comments made by Reviewer 1.

15. Page 12, upper paragraph: You say that females and the older people may be groups for primary prevention programs of H1N1. I am not sure; these are also the groups to show the correct behavioural response regarding preventive measures in the phase of the epidemic that you need people to take actions (such as hygiene behaviour, wearing a mouth cap, and even show avoidance behaviour). In that sense they are the groups that you do not need to target in the later phases!

A: We changed the argument – saying that attention should be given to avoidance behaviors and psychological responses in these subpopulations at times of pandemics (see page 11 of the revised text).

16. Page 12 below: You say that perceptions of severity of H1N1 were not evidence-based and may be a carry-over from the SARS experience. But initially, also experts overestimated the case-fatality rate of H1N1 because suddenly people were dying in Mexico, and it was not know initially how many people were carrying the disease without getting ill/dying. In other words, the numerator was known but not the denominator, which caused the idea that this was a very severe influenza type. So in hindsight we can say it was not evidence-based, at that point in time it actually was evidence-based!

A: We deleted the argument about evidence-based decisions.

17. Page 12 last line: 2 of the 3, in stead of 4 of the 5?!

A: We corrected the typo. There were 5 outcome variables in this study (Tables 4 and 5).
18. Page 14, 1st line: none of these remained significant; This is not true, for neg. psychological responses they remained sign.

A: Correction has been made (page 13 of the revised text).

19. Page 14, 2nd paragraph: a response rate of 74% is high!

A: We changed the sentence.

20. Page 15: anxiety and distress are likely to be even more common: I do not agree, H1N1 is more and more regarded as a mild flu, see comment above.

A: We changed the argument accordingly (see page 14 of the revised text).

21. Tables 1-3: The decimal in the percentages is not relevant/informative, I propose you round all percentages off in the table as well as the text. Additionally, in stead of mentioning the numbers (“n”) as well as the percentages, you can just give the percentages and mention the overall sample size in the titles. For example: “Table 1 Background characteristics of the respondents (n=999)”

A: We are keeping the decimal place for some precision. We agree with the sample size arrangement and made some changes in the tables.

22. In tables 2 and 3, after all constructs the summary indicator “Any of the above” should be given. And for each construct, I propose that you only include this summary measure into the logistic regression analyses of tables 4 and 5. Now for some constructs you include the summary indicator (misconceptions, knowledge, government preparedness and performance)
while for other you include the individual items (perceived clinical properties, perceived susceptibility).

A: We added ‘any of the above’ items to relevant tables. We don’t always put the summary measures (any of the above) into the logistic regression models, as sometimes individual items represent different dimensions of the construct, and are hence more meaningful than the individual items. For instance, the questions on susceptibility are distinct from each other. It is more meaningful to know whether concern about oneself or one’s family being susceptible. The ‘weight’ is different from that of the general public so we do not think it is proper to use the any of the above summary measure. Similarly, fatality is more important that physical damages and there are quite different types of concern, so we do not use the summary measure of any of the above. We therefore, keep the original analyses.

23. Specific comments on Table 2:
- The (repeatedly used) three lines “Any one of above” “No” “Yes” should be replaced by one line “any of the above” followed by the outcome.

A: Changes have been made accordingly.

- The sub-heading “Modes of transmission” should read “Misconceptions about modes of transmission”

A: Changes made accordingly, but we now use ‘unconfirmed beliefs’ instead of misconceptions throughout the text as H1N1 was a new virus.

- For knowledge, before showing the summary measure “all items being correct” you should show “one item being correct” (because you use it later in the logistic regression analysis).

A: The original table read ‘at least one item being incorrect’ (reference category), we now changed it to ‘not all items being correct’ to avoid confusion.

- The heading “perceptions related to H1N1” is the same as the table title. I propose you
replace the heading by “Risk perceptions related to H1N1”.

A: We now revamp the subtitles.

- The sub-heading “Risk perception” should then read “Perceived relative susceptibility”, and I propose that you move this whole construct below the construct “Perceived susceptibility”.

A: We now revamp the subtitles and headings.

- The subheading “Perceived clinical properties of H1N1” should read “Perceived severity of H1N1”, conform terminology normally used to indicate this construct.

A: We now revamp the subtitles and analysis.

- For Severity as well as Susceptibility, you should end with “any of the above”, to be consistent with how you handle other constructs.

A: Please refer to a previous response.

24. Comments on Table 3:
- The title should read: “Prevalence of avoidance behaviour and negative psychological responses”

A: We made changes accordingly.

- The heading “Prevalence avoiding going to different places” should read “Avoidance behaviour”

A: We changed the heading accordingly.

- “Avoid traveling abroad” should be deleted, because it is not dealt with in the text, in the
logistic regression analysis of table 4, and is not included in the summary measure (showing any avoidance behaviour). In stead, the summary measure “Any one of the above” should be given.

A: We deleted it from the table and add ‘any of the above’ to the table.

- The summary indicator for worry should read “Any of the above” in stead of “Respondent worrying that either himself or his family …etc”

A: We made changes accordingly.

25. Comments on table 4:

- Correct knowledge: the footnote symbol is missing

A: Correction has been made.

- Correct knowledge: the correct reference category should be added, namely “None” (consistent with misconceptions)

A: The majority had some correct knowledge. Very few belong to the ‘None’ category. We are keeping the original category.

- Inadequacy of government preparation: “At least one of the two items”

A: We corrected category labels for the variable.

- Perceived clinical properties (which should be labeled “Perceived severity”): do not mention individual items but the summary measure “None” “At least one”.

A: Please see an earlier response.
- The heading “Severe emotional distress” should read “Negative psychological responses”

A: Changes were made accordingly.

- “Feeling much in panic.. etc” should be replaced by “Severe emotional distress” and the panic/depressed/disturbed should be mentioned in a footnote.

A: We now used emotional distress consistently throughout the text and the tables.

- Footnote 3 Correct Knowledge: three times the word “not” should be deleted.

A: Corrections have been made.

26. Comments on table 5:
- the words “indicating misconception/inadequacy/confidence” should be deleted.

A: Changes were made accordingly.

- Inadequacy of government preparation: “At least one of the two items”

A: Changes were made accordingly

- Perceived clinical properties (which should be labeled “Perceived severity”) and perceived susceptibility: do not mention individual items but the summary measure “None” “At least one”.

A: Please refer to an earlier response.

- Add the construct “Avoidance behaviour” “None” “At least 1 item”

A: Please refer to an earlier response (Point 22 of Reviewer 2).
Minor essential revisions:

1. Results, Evaluation of governmental preparedness etc: Discuss it in the same order as in the table, i.e. :”The majority (92%) …” should be switched till after the sentence “Around 30-40%…”

A: Some changes were made accordingly.

2. There are a lot of English grammar mistakes:

A: The paper has been further edited.

3. Last paragraph of Introduction, first line: “population in Hong Kong was”

A: Changes were made.

4. Last paragraph of Introduction, 4th line: “much worried about contracting H1N1 and their level of emotional distress (feeling much in panic, depressed or emotionally disturbed)”

A: Relevant changes have been made.

5. Last paragraph of Introduction, second last line “this report covers”

A: Changes were made accordingly.

6. Page 11 line 4: “potentially damages the economy and disrupts”

A: Changes were made accordingly.

7. Page 11 line 8: may cause people to avoid

A: Changes were made accordingly.
8. Page 13, 2nd line: one of the theory’s constructs. Next line: remains low

A: Changes were made accordingly.

9. Page 14, in the middle: The study was however anonymous.

A: Changes were made accordingly.

10. Conclusion 1st line: this study documented that

A: Changes were made accordingly.

In Response to Comments from Reviewer 3:

1. In the methods section the sample is reported as having been obtained on three different days over a one-month-period. At first sight the presentation rather gives the impression that different waves/cohorts will be looked at/compared. The results section, however, reports only data on the combined sample, while in the discussion section results from the separate cohorts are mentioned which did not appear in the results section. Apart from the fact that, in general, the discussion should not newly introduce empirical findings which have not been reported in the results section, the presentation should be made more consistent. So, the ”change perspective“ should either be explicitly introduced into the paper (and then also be reflected in the research questions and the data analysis) or else it should be consistently excluded and the initial, i.e. ’pre-community-outbreak’, phase should be looked at as a whole.

A: We now removed the change perspective from the Discussion as this is not a longitudinal study. The pre-community-outbreak phase is seen as a whole.

2. As the authors themselves point out, the non-responder rate (almost 25%) is, if not uncommon, substantial. Is there any (socio-demographic) information available on the non-responders which could indicate how systematic the non-response was?
A: No information is available from non-responders. Our data are however, comparable to the Census data.

3. The terminology used is not always consistent. Thus, on page 8 the authors describe their measures of risk perception as having asked for "higher or lower risk of having a large scale outbreak in Hong Kong" and of having asked the respondents to indicate the chance for himself/herself to contract H1N1. The corresponding table suggests that the authors actually also asked for the "chance" of an outbreak in Hong Kong, not for "risk". Common definitions of risk, such as the one chosen by the Health Belief Model to which the authors themselves refer, define perceived risk as the product of perceived chance/probability and perceived severity (measured for instance by fatality, which the authors also included, but labeled as "perceived clinical properties of H1N1"). To avoid confusion, I would suggest to change the description of the outbreak rating from "risk" to "chance" (always provided that the item wording given in table 4 is the correct one) and then to list both the items of chance/probability for outbreak and personal contraction as well as the fatality measures under the heading of "risk perception".

A: We agree with the Reviewer and have made some changes accordingly.

4. The description of the measures used in the study is partly done in the text, partly the respective information can be found in the tables. This should also be more consistent.

A: We have made some changes (see page 5 of the revised text).

5. Some of the findings warrant more discussion than offered at present. Most importantly, table 4 seems to indicate that misconceptions about modes of transmission increase the risk for avoidance behaviours, but so do correct perceptions/knowledge, which seems contradictory at first glance. I suspect that in this case the issue is less whether people are correct or incorrect in their assumptions per se, but that a higher number of perceived
pathways of catching the virus (some of which are "real" or correct, others "imaginary" or incorrect) leads to more avoidance. While the authors correctly point out that rectification of misconceptions is important (page 12), some of the assumptions which seem to lead to more avoidance cannot be rectified as they are correct to begin with. These issues need further discussion.

A: We agree with the Reviewer and have added this argument to the text (see page 7 of the revised text and response to Reviewer 4).

6. With regard to the evaluation of governmental preparedness and performance in dealing with H1N1 the authors report that a large majority of 92.3% was confident that Hong Kong would be able to handle the H1N1 epidemic and (83.6%) that the government would be able to control an outbreak. However, when the questions got more detailed, it seems that skepticism became more pronounced, i.e. 36% believed that the health system did not have enough medication, 41% that there wasn’t enough vaccine. These differences in response should be discussed/commented on.

A: These points are not necessarily contradictory as this is a new disease and many people believed that medication and vaccines were not available, though they have confidence in the government. The lack of medicine and vaccine was not seen to be the fault of the government. Some elaborations are added to page 12 of the revised text.

7. On page 12 it is stated that females, older people and those who were unemployed were more likely to avoid visiting some places or show signs of severe mental distress. Tables 4 and 5, however, indicate a question for "full time employment" with the answer yes/no. Respondents who answered 'no' would thus not necessarily have to be unemployed (in the narrower sense of the word, i.e. out of work), but could be part-time employed, pensioners or homemakers. To avoid misunderstandings the term "unemployed" could thus be changed to "not full time employed".

A: We made changes accordingly (page 11 of the revised text).
8. The Health Belief Model is mentioned rather haphazardly in the discussion section and sounds more like a "theoretical afterthought". If the model is used it should also be introduced more deliberately, and it should also be stated that the study could test only parts of this model, as some of its core constructs, such as outcome expectancies and (in the newer version) self-efficacy have not been measured.

A: Since the HBM is not a central part of the study and it is not our intention to test the model, we now do not mention the model in the text.

9. On page 14, top it is stated that the univariate findings for a relationship between perceptions of government efficacy and avoidance were non-significant in the multivariate analysis and that this was due to them being mediated by socio-demographic characteristics, worry or perceived susceptibility. The socio-demographic characteristics should be taken off this list, as they are unlikely to have had a true mediator effect, but, if at all, might only have eliminated spurious associations between government efficacy ratings and avoidance and psychological response.

A: We removed the term socio-demographic characteristics from the list.

10. Though overall the article is well presented, the language should be checked, as some minor mistakes and/or ambiguities appear. A few examples (this is not an exhaustive list) include:

Page 5, 2nd paragraph: instead of "…their level of emotional distress related to panicking or much depressed or much emotionally disturbed" it should probably rather be something like "… their level of emotional distress, expressed by panicking, depression or emotional disturbance

A: Changes were made accordingly.
11.
- Page 5, 2nd paragraph, end: "evaluation of" and "The study period covers….”
- Page 9, 2nd paragraph, heading: "factors associated with avoid visiting different places”, rather: "factors associated with avoidance of visits to different places”.
- Page 9, 3rd paragraph, it should rather be either "those who believed H1N1 would cause …” or “those believing H1N1 would cause…”
- Page 11, 2nd paragraph: "such avoidance among large numbers in the population potentially damages the economy and disrupts daily lives”.
- Page 12, 2nd paragraph: The "nonetheless” which is leading the 2nd sentence seems misplaced, unless I misunderstood the following sentence. It seems as if the sentence led by "nonetheless” is an elaboration of the prior sentence, i.e. it confirms what is said by a specific example and does not contradict or limits/qualifies it.
- Page 14, 2nd paragraph: This should be: "The study is, however, anonymous. Fourth, Hong Kong went….”

A: The aforementioned editorial changes were made accordingly.

We would like to thank all Reviewers for their constructive comments and suggestions.