

Peer Review Comments

Article: Lok, I., et al. (2019). Can We Apply the Psychology of Risk Perception to Increase Earthquake Preparation? *Collabra: Psychology*, 5(1): 47.

DOI: <https://doi.org/10.1525/collabra.238>

Article type: Original research report

Editor: Joanne Chung

Article submitted: 22 February 2019

Editor decision: Accept submission

Revision submitted: 16 August 2019; 14 September 2019

Article accepted: 19 September 2019

Article published: 02 October 2019

Responses for Version 1

Reviewer E:

1) General comments and summary of recommendation

Describe your overall impressions and your recommendation, including changes or revisions. Please note that you should pay attention to scientific, methodological, and ethical soundness only, not novelty, topicality, or scope.

A checklist of things to you may want to consider is below:

- Are the methodologies used appropriate?
- Are any methodological weaknesses addressed?
- Is all statistical analysis sound?
- Does the conclusion (if present) reflect the argument, is it supported by data/facts?
- Is the article logically structured, succinct, and does the argument flow coherently?
- Are the references adequate and appropriate?:

The authors test whether intensions to prepare for earthquakes can be influenced by presenting emotionally evocative images rather than simple statistics. In a preregistered study, they assigned participants to two conditions: one showing an image of a destroyed school, the other showing earthquake statistics, and found that various measures of earthquake preparedness were higher in the former condition.

I think that the experiment is cleanly done and I like the fact that the methods and analysis were preregistered. To be honest I am not particularly surprised by the results, nor do I see much potential for impact on the field. However, from what I understand, these are not criteria for acceptance in *Collabra: Psychology*.

I do have some substantive comments regarding the experiment: I think the paper would be much stronger if it presented both the image and the statistics simultaneously in a third condition, and then measured subjective

beliefs about earthquake likelihood and impact (i.e. beliefs about the data presented in the statistics). This would help us understand exactly how quantitative data combines with affective imagery to influence judgments. It seems from the discussion that the authors have already conducted a variant of this experiment. Additionally, some of this analysis can be done with the existing data reported in the paper, by seeing the effect of the condition on the "likelihood estimate" variable. In general, more should be done to test how beliefs about the earthquake change as a function of the imagery.

It also may be better to consider statistics that are easier to interpret by participants. Currently, the statistics condition seems to present very technical information (table 2). It is not clear to me whether the documented results are caused by this feature of the design choice. In fact, the authors even consider recommend multiple conditions which vary the statistics presented (and perhaps even the images presented) in a systematic manner, to better understand the interaction of objective information and affective imagery in risk judgments. Such experiments can be conducted online, for convenience.

I also worry that the petition prompt may create explicit experimenter demand effects (which interact with imagery/statistics, to bias the results). I would recommend some other types of decision prompts as the primary dependent variable.

Is there a reason why "worry" is used as the primary mediator? There are a number of (well established) affect measures in psychology that could be used instead.

I feel that the title is a bit misleading. The paper does not really bridge the gap between reason and emotion in any substantial manner.

2) Figures/tables/data availability:

Please comment on the author's use of tables, charts, figures, if relevant.

Please acknowledge that adequate underlying data is available to ensure reproducibility (see open data policies per discipline of Collabra here).:

Tables 5 and 6 should have confidence intervals.

Everything else is fine.

3) Ethical approval:

If humans or animals have been used as research subjects, and/or tissue or field sampling, are the necessary statements of ethical approval by a relevant authority present? Where humans have participated in research, informed consent should also be declared.

If not, please detail where you think a further ethics approval/statement/follow-up is required.:

I couldn't find these statements in the manuscript (though possible that I missed them)

4) Language:

Is the text well written and jargon free? Please comment on the quality of English and any need for improvement beyond the scope of this process.:

The language is good.

Reviewer F:

1) General comments and summary of recommendation

Describe your overall impressions and your recommendation, including changes or revisions. Please note that you should pay attention to scientific, methodological, and ethical soundness only, not novelty, topicality, or scope. A checklist of things to you may want to consider is below:

- Are the methodologies used appropriate?
- Are any methodological weaknesses addressed?
- Is all statistical analysis sound?
- Does the conclusion (if present) reflect the argument, is it supported by data/facts?
- Is the article logically structured, succinct, and does the argument flow coherently?
- Are the references adequate and appropriate?:

In this paper, the authors presented participants with either statistical or visual information about earthquake outcomes. Participants were more likely to sign a petition for earthquake prevention policies when they saw the image (vs. statistics).

1. Although I appreciate the authors' efficiency in their exposition, I think they are overlooking a large body of literature in the persuasion and attitude change. The authors draw research from Slovic's model of risk perception, which is okay. However, their actual measures don't really tap into the risk perception, per se. The introduction could be improved by integrating ideas from classic models of attitude change (e.g., Petty & Cacciopo), which is similar to the dual-pathways of risk perception (central vs. peripheral routes), but may be more relevant to the authors' work at hand.

2. Page 10. The discussion of moderators was unexpected and was never mentioned in the introduction whatsoever. The authors should articulate why these moderators were examined and how they are relevant to the intervention.

3. I am concerned about the psychometric adequacy of the moderator measures (Personal and community self-efficacy). First, single item measures suffer from measurement error (Wanous & Hudy 2001), which will undermine the power of the study. Although not all single-items are bad, the items used in the paper are a bit wordy and the personal SE measure is double-barreled. Therefore, I think these items are unlikely to be good/reliable measures of the construct. Finally, assuming that the true effects are likely to be modest,

I am not convinced if the results can be reliably interpreted. At the very least, I would like to see a discussion of this limitation. Studies such as this are important for the society but using inadequate measures will undermine its ability to detect real effects.

4. Page 14. Mediation section. Please report cell mean and SD for anxiety between treatment groups in text. E.g.,

“Within the undergraduate sample, participants who were shown a vivid image reported greater feelings of worry ($M = xx$, $SD = xx$) compared to those who were shown statistics ($M = xx$, $SD = xx$)”

5. The authors ran separate mediation models for the two samples. I’m curious if the sample moderated the treatment effect: based on the effect sizes the directions, I would expect so.

6. The authors acknowledge that their study shows an effect of the treatment but does not explicate the psychological mechanisms underlying the effect. As I mentioned earlier, I think there is a large body of work in attitude change that can also inform their findings. The authors citations mostly come from works of Slovic and colleagues. I think the scientific contribution of the paper would be enhanced if it included a more diversified set of perspectives. This is especially important, in my view, on a practically relevant and important topic such as earthquake prevention.

References

Petty, R. E., & Cacioppo, J. T. (2012). *Communication and persuasion: Central and peripheral routes to attitude change*. Springer Science & Business Media.

Wanous, J. P., & Hudy, M. J. (2001). Single-Item Reliability: A Replication and Extension. *Organizational Research Methods*, 4(4), 361–375.

<https://doi.org/10.1177/109442810144003>

2) Figures/tables/data availability:

Please comment on the author’s use of tables, charts, figures, if relevant.

Please acknowledge that adequate underlying data is available to ensure reproducibility (see open data policies per discipline of Collabra here):

The tables and figures are adequate.

3) Ethical approval:

If humans or animals have been used as research subjects, and/or tissue or field sampling, are the necessary statements of ethical approval by a relevant authority present? Where humans have participated in research, informed consent should also be declared.

If not, please detail where you think a further ethics approval/statement/follow-up is required.:

Yes

4) Language:

Is the text well written and jargon free? Please comment on the quality of English and any need for improvement beyond the scope of this process.:

Yes. The paper is well-written for a generalist audience.

Editor Decision for Version 1

Editor: Joanne Chung

Affiliation: Tilburg University

Editor decision: Revisions required

Decision date: 23 June 2019

Dear Miss Iris Lok,

I would like to apologize for the delay in sending you this decision. I have now received two reviews of your manuscript from researchers with substantial expertise in risk perception and emotion. I also independently read the manuscript before consulting the reviews. The reviewers and I found strengths in your preregistration and in the societal relevance of your research question.

After review, we have reached a decision regarding your submission to Collabra: Psychology, "Bridging the gap between reason and emotion: Harnessing the psychology of risk perception to prepare for earthquakes". Our decision is to request revisions of the manuscript. These revisions may then undergo further peer review prior to acceptance.

The reviewers did an excellent job in providing feedback that I think will be useful for your revision. The full review information should be included at the bottom of this email. There may also be a copy of the manuscript file with reviewer comments available once you have accessed the submission account. A summary of the requested edits from the editorial team can be found below. Please carefully consider all of their points and revise the file accordingly:

Editorial Revision Requests:

In addition to the thorough reviews below, I would like to especially highlight the following points:

- The primary finding that those who see in a visual image of a school post-earthquake were more likely to sign a petition to accelerate seismic upgrades is important. Yet, after reading the manuscript a few times, I think the results show that using visuals can be seen as a first step for further examining how to best encourage people to engage in earthquake preparedness practices, but that further work needs to be done to examine the strength and duration of such effects. I also believe that the writing can be edited to better reflect this. In general, I encourage you to stick as close to the facts as possible when discussing your results. This can be done by: 1)

including the actual percentages in the images vs. statistics conditions in the Abstract, 2) discussing your effect sizes in the Results, and 3) talking about the practical significance of your findings in further detail in the Discussion (i.e., what does a difference of 9 percentage points really mean?). Relatedly, please consider Reviewer 1's point that the title could be revised to better reflect the content of your manuscript.

- Please carefully consider Reviewer 1's comment about the possibility of including the exploratory studies mentioned in the Discussion as an addition in the main manuscript.
- Please address Reviewer 2's comment regarding the psychometric limitations of the use of single-item measures, and provide evidence of their validity if possible.
- Additionally, as Reviewer 2 notes, please discuss the moderation analyses in the Introduction.

I also have some minor comments below:

- One criterion for exclusion is not seeming fluent in reading English – can you elaborate on how this was determined?
- In Table 2, please include all response anchors. In the Familiarity with School row, please provide numbers to stay consistent with the rest of the content in the table. Please also refer to α as coefficient alpha (vs. Cronbach's alpha).

To access your submission account, follow the below instructions:

- 1) login to the journal webpage with username and password
- 2) click on the submission title
- 3) click 'Review' menu option
- 4) download Reviewed file and make revisions based on review feedback
- 5) upload the edited file
- 6) Click the 'notify editor' icon and email the confirmation of re-submission and any relevant comments to the journal.

Please ensure that your revised files adhere to our author guidelines, and that the files are fully copyedited/proofed prior to upload. Please also ensure that all copyright permissions have been obtained. This is the last opportunity for major editing, therefore please fully check your file prior to re-submission.

If you have any questions or difficulties during this process, please do contact us.

Please could you have the revisions submitted by July 15, 2019. If you cannot make this deadline, please let us know as early as possible.

Kind regards,

Dr. Joanne M. Chung

Author's Response to Review Comments for Version 1

Author: Iris Lok

Affiliation: University of British Columbia

Revision submitted: 16 August 2019

Dear Dr. Chung,

My co-authors and I thank you and the two reviewers for your constructive feedback on our work. We found your suggestions on how to discuss our findings to be extremely valuable.

We have uploaded a copy of our revised manuscript. In our revision letter (attached here and in the supplementary materials), we summarize how we addressed each of the comments raised by you and the reviewers. We start by focusing on the issues highlighted in your decision letter and then on the additional comments provided by you and each reviewer.

Thank you again for your feedback on our manuscript. If you feel that we have misunderstood or inadequately addressed any of your comments, please do not hesitate to let us know.

Sincerely,

Iris Lok, Evan Eschelmuller, Terje Haukaas, Carlos Ventura, Armin Bebamzadeh, Paul Slovic, Elizabeth Dunn

Attached document:

<https://s3-eu-west-1.amazonaws.com/ubiquity-partner-network/ucp/journal/collabra/238-3491-1-SP.docx>

Editor Decision for Version 2

Editor: Joanne Chung

Affiliation: Tilburg University

Editor decision: Revisions required

Decision date: 03 September 2019

Dear Miss Iris Lok,

I appreciate your careful consideration of the reviewers' comments in your revision. After review, I have reached a decision regarding your submission to *Collabra: Psychology*, "Bridging the gap between reason and emotion: Harnessing the psychology of risk perception to prepare for earthquakes". My decision is to request revisions of the manuscript prior to acceptance for publication.

Please consider the minor points below and revise the file accordingly.

Editorial Revision Requests:

- In your discussion of examining the psychometric limitations of single-item measures, you say, "We collected additional data to assess the reliability of our single-item measures." I think that also mentioning that you are assessing validity will help the reader to avoid confusion when reading about the correlations you conducted.
- You discuss conducting additional analyses at the request of the reviewers in your reply letter in points 8 and 16. I do think that the fact that you conducted these additional analyses and their results are important, even though they are null. Please include them as footnotes or in a supplementary file. For the sake of transparency (and to distinguish these analyses from what you had preregistered), it may be useful for you to write something like, "At a reviewer's request, we examined..."
- Please rewrite the concluding paragraph of your manuscript to be more matter-of-fact.

To access your submission account, follow the below instructions:

- 1) login to the journal webpage with username and password
- 2) click on the submission title
- 3) click 'Review' menu option
- 4) download Reviewed file and make revisions based on review feedback
- 5) upload the edited file
- 6) Click the 'notify editor' icon and email the confirmation of re-submission and any relevant comments to the journal.

Please ensure that your revised files adhere to our author guidelines, and that the files are fully copyedited/proofed prior to upload. Please also ensure that all copyright permissions have been obtained. This is the last opportunity for major editing; therefore please fully check your file prior to re-submission.

If you have any questions or difficulties during this process, please do contact us.

Please could you have the revisions submitted by September 17, 2019. If you cannot make this deadline, please let us know as early as possible.

Kind regards,

Dr. Joanne M. Chung
joanne.m.chung@gmail.com

Author's Response to Review Comments for Version 2

Author: Iris Lok

Affiliation: University of British Columbia

Revision submitted: 14 September 2019

Dear Dr. Chung,

My co-authors and I thank you for your thoughtful feedback on our revisions. We have uploaded a copy of our revised manuscript. In our revision letter (attached here and in the supplementary materials), we describe the changes we have made in response to your feedback. Please let us know if you feel that we have misunderstood or inadequately addressed any of your comments.

Thank you again.

Sincerely,

Iris Lok, Evan Eschelmuller, Terje Haukaas, Carlos Ventura, Armin Bebamzadeh, Paul Slovic, Elizabeth Dunn

Attached document:

<https://s3-eu-west-1.amazonaws.com/ubiquity-partner-network/ucp/journal/collabra/238-3557-1-SP.docx>

Editor Decision for Version 3

Editor: Joanne Chung

Affiliation: University of Toronto

Editor decision: Accept submission

Decision date: 19 September 2019

Dear Miss Iris Lok,

After review, we have reached a decision regarding your submission to Collabra: Psychology, "Bridging the gap between reason and emotion: Harnessing the psychology of risk perception to prepare for earthquakes", and are happy to accept your submission for publication, pending the completion of copyediting and formatting processes.

As there are no further reviewer revisions to make, you do not have to complete any tasks at this point. The accepted submission will now undergo final copyediting. You will be contacted once this is complete to answer any queries that may have arisen during copyediting and to allow a final chance to edit the files prior to typesetting. If you wish to view your submission during this time, you can log in via the journal website.

The review information should be included in this email.

Kind regards,

Dr. Joanne M. Chung
joanne.m.chung@gmail.com
University of Toronto, Mississauga