

Interactive comment on “Exploring the change of Risk Perception and Adaptation Behavior among Varied Social Character Before and After Earthquake Disaster – A Case Study in Taiwan” by Tzu-Ling Chen et al.

Anonymous Referee #3

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This is an interesting study investigating risk perception and preparedness actions through surveys, pre and post an earthquake event. The findings are important and contribute to the growing body of research in this space. However, currently this manuscript requires significant revisions for those findings to be recognised clearly. Primarily, areas of research are missing in the introduction and discussion, that both can provide more context and help the authors interpret some of their findings. Second, there is a lack of clarity in a number of places, including the presentation of methodology, results, and figures. Thirdly, while I appreciate the challenge of writing in a

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second language (and acknowledge the privilege of being able to write in my first), the manuscript is currently very difficult to read and understand in places – which sadly detracts from the data within. I would recommend the editors consult a professional editing service, seek assistance from the journal if it offers that option, or seek an additional author to assist with the writing. My detailed recommendations follow below,

Some substantial areas of research are missing, including key preparedness and response literature. For example, discussion of the Protective Action Decision Model (Lindell & Perry, 2012; Lindell & Hwang 2008; Lindell & Prater 2002) and other hazard preparedness models (e.g., Paton et al., 2015), societal influences on household preparedness (Becker et al 2014), recent research on preparedness motivations (Becker et al 2017; Doyle et al 2018) which consider multiple-event risk perceptions (McClure et al 2016, Doyle et al 2018). Thus, the introduction and contextual discussion of the findings should explore some of the elements raised in this pre-existing literature, and how the results relate to those, including self- and collective-efficacy, outcome expectancy, responsibility, etc. Notably, the discussion omits a number of key texts investigating the relationship between gender and preparedness, and reasons for that difference (e.g., familial responsibilities), e.g. Dooley et al; Bateman and Edwards; Lindell & Prater; Olofsson & Rashid; Palmer; as well as texts exploring the barriers to preparedness (e.g., Blake et al 2018; Senkbeil et al 2014)

The Literature on attribution theory, and on trust in communications is also lacking.

The authors need to set the scene more in section 2.1 (Study Area) – what resilience building activities have been conducted in these regions, if at all? Some more information about the community, and previous events or resilience activities is needed.

Section 2.2 – ‘simple random sampling’ – of what? The phone records?

Section 2.2 – what do you mean by ‘some notifications’?

Section 2.2 – for the survey questions, why did you choose these particular factors

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(e.g., trust in government and responsibility attribution?). These factors need more detail explanation in the introduction, referencing the relevant literature (e.g., on trust and attribution theory for risk communication), such that in section 2.2 there is more rationale and explanation for their choice (and prioritisation over other potential factors).

I do not think the authors need to include the full description of the ANOVA in section 2.4, given it is a well know statistical test. Would recommend trimming, or if needed including in an appendix. Much of section 2.4 can be summarised much more briefly, as these are standard approaches.

The tale end of section 2.4, outlining the Likert scale of 1 to 7, should be moved to section 2.3 where the measures are discussed.

Lines 145 to 150, seems to contradict oneself on first reading – first you say that there is willingness to house retrofit, and then that it decreased. I think you mean pre/post earthquake, but this needs clarification.

In general the ANOVA results need clearer reporting, to standard (brief style) formatting including more clearly the F statistic and degrees of freedom, rather than just the P value. To that end, the P value isn't 0.000, but should be reported as $p < 0.0005$.

Line 140, explain why high school/blue collar might have less capability to adjust in the introduction, to set the context here.

Section 3.2 (Age) is hard to follow, and needs rewording completely, as currently it reads contradictory.

Line 190 – this should be explored in the discussion, in the context of how both resources (\$) and / or care responsibilities could be a possible interpretation of this finding.

Section 3.3 – does the higher education group correlate with income? Equally, could this group have less worry of buildings collapsing, because they could afford to have better buildings to start with (or were able to retrofit)? These nuances need further

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discussion.

Line 193 – This discussion of gender needs more explanation in context of the references listed previously.

Throughout the figures need more context and linking to the text (e.g., Figure 8 on line 200 – it's hard to link the text to the figure. The figures need more explanatory captions to guide the reader, and the text needs more explanatory linking to the figures.

Other issues (such as fatalism, or anxiety) need to be raised in the discussion in more detail – see e.g., McClure et al 2001 and Paton 2005, Wei & Lindell 2017

Line 227 – I'm not sure where the concept of bounded rationality came from in this paragraph. Needs better linking and explanation.

Line 229 – what do you mean by internal control?

Line 228-231 repeats exactly some sentences in the introduction – reword appropriately

The discussion needs some more explanation of the limitations – a limitation and future research section would be ideal. They are touched on in the conclusion (e.g., time limitation), but lack enough detail for the reader to evaluate and interpret.

General comments

The authors introduce the term 'subjective resilience' but need to define and explain this further. How does it relate to the various measures discussed?

The authors refer to 'sex' (see section 3.1 in particular), when I believe they need to be referring to 'gender' as the issues here relate to familial responsibilities and social roles relating to someone's gender – not their biological sex. See Rushton et al (2019) for more.

Figures need improving for clarity. Figure 1a-d need to be larger as the keys are hard

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to read, Figure 2 would be better in an appendix. All figures would benefit from more explanatory extensive captions that enable them to be read and interpreted more easily. Figures 3, 4, 5, 6 & 7 are not in a format I am familiar with. It took a while to interpret them, I feel they need some much clearer captions and further explanation to facilitate interpretation.

Some of the tables are a bit unclear, e.g., Table 2: it is hard to follow which of the rows in column 1 apply to which rows in the other columns. Can they be reformatted to aid comprehension?

References =====

Rushton A, Gray L, Canty J, & Blanchard K (2019) Beyond binary: (re)defining “gender” for 21st century disaster risk reduction research, policy, and practice *Int J Environ Res Public Health*, <https://doi.org/10.3390/ijerph16203984>.

McClure J, Allen MW, & Walkey F (2001) Countering fatalism: Causal information in news reports affects judgments about earthquake damage *Basic Appl Soc Psych*, https://doi.org/10.1207/S15324834BASP2302_3.

Paton D, Smith L, & Johnston D (2005) When good intentions turn bad: promoting natural hazard preparedness *Aust J Emerg Manag* 20(1) 25–30.

Wei H-L, & Lindell MK (2017) Washington households’ expected responses to lahar threat from Mt. Rainier *Int J Disaster Risk Reduct* 22 77–94, <https://doi.org/10.1016/J.IJDRR.2016.10.014>.

Senkbeil JC, Scott DA, Guinazu-Walker P, & Rockman MS (2014) Ethnic and Racial Differences in Tornado Hazard Perception, Preparedness, and Shelter Lead Time in Tuscaloosa *Prof Geogr* 66(4) 610–620, <https://doi.org/10.1080/00330124.2013.826562>.

Blake D, Marlowe J, & Johnston D (2017) Get prepared: Discourse for the privileged? *Int J Disaster Risk Reduct* 25 283–288, <https://doi.org/10.1016/J.IJDRR.2017.09.012>.

Olofsson A, & Rashid S (2011) The White (Male) Effect and Risk Perception: Can Equality Make a Difference? *Risk Anal* 31(6) 1016–1032, <https://doi.org/10.1111/j.1539-6924.2010.01566.x>.

Lindell MK, & Prater C (2002) Risk area resident' perceptions and adoption of seismic hazard adjustments *J Appl Soc Psychol* 32(11) 2377–2392.

Palmer CGS (2003) Risk perception: Another look at the “white male” effect *Heal Risk Soc* 5(1) 71–83, <https://doi.org/10.1080/1369857031000066014>.

Dooley D, Catalano R, Mishra S, & Serxner S (1992) Earthquake Preparedness: Predictors in a Community Survey *J Appl Soc Psychol* 22(6) 451–470, <https://doi.org/10.1111/j.1559-1816.1992.tb00984.x>.

Bateman JM, & Edwards B (2002) Gender and Evacuation: A Closer Look at Why Women Are More Likely to Evacuate for Hurricanes *Nat Hazards Rev* 3(3) 107–117, [https://doi.org/10.1061/\(ASCE\)1527-6988\(2002\)3:3\(107\)](https://doi.org/10.1061/(ASCE)1527-6988(2002)3:3(107)).

Lindell MK, & Perry RW (2012) The Protective Action Decision Model: Theoretical Modifications and Additional Evidence *Risk Anal* 32(4) 616–632, <https://doi.org/10.1111/j.1539-6924.2011.01647.x>.

Becker JS, Paton D, & Johnston DM (2014) Societal Influences on Earthquake Information Meaning-Making and Household Preparedness *Int J Mass Emerg Disasters* 32(2) 317–352.

Lindell MK, & Hwang SN (2008) Households ' Perceived Personal Risk and Responses in a Multihazard Environment , <https://doi.org/10.1111/j.1539-6924.2008.01032.x>.

Lindell MK, & Prater C (2002) Risk area resident' perceptions and adoption of seismic hazard adjustments *J Appl Soc Psychol* 32(11) 2377–2392.

Becker JS, Paton D, Johnston DM, Ronan KR, & McClure J (2017) The role of prior experience in informing and motivating earthquake preparedness *Int J Disaster Risk*

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Reduct 22 179–193, <https://doi.org/10.1016/J.IJDRR.2017.03.006>.

McClure J, Henrich L, Johnston DM, & Doyle EEH (2016) Are two earthquakes better than one? How earthquakes in two different regions affect risk judgments and preparation in three locations Int J Disaster Risk Reduct 16 192–199, <https://doi.org/10.1016/j.ijdr.2016.03.003>.

Paton D, Anderson E, Becker J, & Petersen J (2015) Developing a comprehensive model of hazard preparedness: Lessons from the Christchurch earthquake Int J Disaster Risk Reduct 14 37–45, <https://doi.org/10.1016/j.ijdr.2014.11.011>.

Doyle EEH, McClure J, Potter SH, Becker JS, Johnston DM, Lindell MK, Johal S, Fraser SA, & Coomer MA (2018) Motivations to prepare after the 2013 Cook Strait Earthquake, N.Z. Int J Disaster Risk Reduct 31 637–649, <https://doi.org/10.1016/j.ijdr.2018.07.008>.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2019-422>, 2020.

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