

## ***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.***

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As the title indicates, the objective of this manuscript is to explain changes in seismic risk perception and adaptation behavior after an earthquake among different demographic groups. The literature review references a number of relevant citations but also cites tangentially related and outdated citations and overlooks two important reviews and some very relevant recent citations (see the list below). The Introduction fails to state specific research questions or research hypotheses. The data set appears to be excellent but the procedures for sampling cases and measuring items are inadequately

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described. The Results section is subdivided by the major demographic variables, but those headings don't accurately describe the presentation of results some of which are about pretest-posttest differences that appear to be unrelated to the demographic variables. Moreover, the results are presented in a series of unconventional figures that fail to provide the reader with adequate information about the effects sizes for the impact of the demographic variables on the dependent variables or correlations among dependent variables. The Discussion and Conclusions focus on the effects of the demographic variables on risk perception and adaptation behavior but ignore the pretest-posttest differences. This is a significant limitation because these sections fail to address a major part of the study's stated objective. In addition, systematic reviews of the disaster research literature indicate that demographic variables have small and inconsistent effects on adaptation behavior, so the authors are probably focusing on the least important part of their study's results. Finally, as a general comment, I know from personal experience how difficult it is to submit papers that is not written in my native language. Accordingly, I seek the assistance of a professional editor before submitting papers in other languages. The authors of this manuscript should have done this already and should definitely do so before resubmission.

Ans: Thanks for your general and specific comments, and they have great help on improving the research. Indeed English is not our native language, and many thanks for your recommendation. In fact, this paper has been submitted for English proofreading before submitting Natural Hazards and Earth System Sciences. We have transferred your valuable comments to American Journal Expert and the resubmission will be reedited again by native English speakers.

The followings are the point-by-point responses.

1. Line Comment 44 The section on risk perception cites literature that is either overly general (Eagly and Chaiken, 1993, is about attitudes rather than risk perception) or outdated (Sjöberg, 2000; Sjöberg, 1996). Moreover, although risk perception might be influenced by internal and external factors, it does not “sum up” those factors.

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Ans: Thanks for the comment. The purpose of this article is to explore the change of risk perception and adaptation behavior between the pre- and the post-earthquake. In order to identify main research topic, the revised version will improve both risk perception and the potential influence of disaster experience according to the comments.

2.64 The title makes it reasonably clear what are the study's research objectives, but there is no clear statement of research questions or research hypotheses at the conclusion of the Introduction. This might be why the Results and Discussion sections fail to adequately describe the changes in risk perception and adaptation behavior.

Ans: Thanks for the insightful comment. As a whole, this study contributes to the exploration of how earthquake disasters influence the risk perception and adaptation behavior of residents in Taiwan and further categorizes according to the social characters. Based upon past studies, the interactions of social characters could collectively affect responses to disasters. This study will then discuss the response from various social characters respectively to explore how social characters affect the pre- and the post- risk perception and adaptation behavior. The revised version will then improve the statement of research questions in the Introduction and to further improve the consistency between the title and the article.

3.78 Figure 1a is sufficient for a research article. Figure 1b, 1c, and 1d are only of interest to local authorities.

Ans: Thanks for the comment. In order to leave accurate information, the revised version will delete the rest figures in Figure 1 according to the comments.

4.89 It is unclear what it meant by "simple random sampling". Is this simple random sampling from a sample frame (i.e., a list of telephone numbers) or random digit dialing?

Ans: This study adopted voluntary response sampling within the study area. In order to examine the variation of risk perception and adaptation behavior, the paper conducted

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street survey before the earthquake and the telephone survey in the after. In order to clarify the sample collecting process, the revised version will improve the section of "data collection".

5.99 The section describing the measures should not be referring to the research literature. Those references should have already been cited in the Introduction's literature review. Instead, this section should specifically describe each item in the questionnaire and how it was measured. Thus, the description of the items "probability of an earthquake disaster occurring within ten years", "fear of earthquake", and "worry of building collapse" should list the exact English translation of those items and list the rating scale anchors that were used (e.g., "Not at all = 1 to Almost a certainty = 7" for the earthquake probability rating). The items measuring "the impacts they expected from the disaster" should be replaced by a statement of the specific impacts that were listed.

Ans: Thanks for the comment. The purpose of section 2.3 is to illustrate the survey questions in the study. In order to separate the data and literature review, the updated version has revised this section and focus on explaining the variables used. In addition, the revised version will add up new Table 1 to explain the measurement of questionnaires.

6.114 Most of the first paragraph in this section is, or should be, common knowledge among survey researchers. Consequently, all but the last sentence should be deleted as should Figure 2.

Ans: Thanks for the comment. The first paragraph in section 2.4 is to give a general concept of ANOVA to the readers. However, it is indeed a common knowledge among survey researchers. Therefore, the revised version has deleted the first sentence for it is too general but keep the second sentence regarding one-way analysis of variance. In addition, Figure 2 is deleted in the revised version as well.

7.142 Table 1 should also contain data for the distributions of gender, age, education, occupation, and homeownership for the study area so readers can assess the extent

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of sample bias.

Ans: Thanks for the comment. The table could be further improved to present the distributions of both sample and the study area. Therefore, the revised version will collect relevant data for readers to assess the extent of sample bias.

8.144 Section 3.1 is labeled sex but presents a number of results that appear to be unrelated to sex differences. Specifically, “the earthquake probability (the P value of 0.049), the fear –of earthquake (the P value of 0.000), and the willingness on house retrofit (the P value of 0.002) are statistical significance indicating a serious earthquake indeed increase awareness of disaster” seems to be a pretest-posttest comparison that is unrelated to sex differences. This problem continues throughout the rest of the Results section.

Ans: Thanks for the valuable comment. The purpose of this article is to explore the change of risk perception and adaptation behavior among varied social character between the pre- and the post- earthquake. Therefore, the revised version has emphasized such discussion in the result section.

9.148 Figure 3 presents the results in a format that is rather inventive, but extremely confusing and relatively uninformative, compared to the conventional method of presenting a matrix containing the variables' means in the first column, the standard deviations in the second column, and the intercorrelations in the remaining columns. In addition providing effect sizes for to the impact of the independent variables on the dependent variables, a correlation matrix allows the reader to see the correlations among the dependent variables (see Lindell & Hwang, 2008, for an example). Providing this correlation matrix will eliminate the need for Figures 4-7, as well.

Ans: Thanks for the comment. Due to the purpose is to compare the change between various social character and the time period, the arrows and the lines are used to express such outcome. However, like reviewer mentioned, the figure might not a perfect way to present the results and make it more confusing. Therefore, the conventional

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tables will be applied to show the overall results among social characters.

10.191 The Discussion section only addresses the effects of the demographic variables, ignoring the effects of changes in risk perception and their possible effects on risk reduction actions.

Ans: Thanks for the comment. Based upon past studies, the interactions of social characters could collectively affect responses to disasters. Therefore, the purpose of this article is to discuss the response from various social characters respectively to explore how social characters affect the pre- and the post- risk perception and adaptation behavior. The revised version will improve the discussion section of the potential impacts on the change of disaster perception and adaptive behavior from the interactions of social characters.

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

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