NHESS-2021-365 v3

Dear editor,

Hereby we resubmit our revised paper entitled *"Surveying the Surveyors to Address Risk Perception and Adaptive Behaviour Cross-study Comparability"* for publication in NHESS. The manuscript is an original piece of work that has not been submitted or published elsewhere.

We appreciate the positive evaluation of our paper and we have answered in the discussion to all questions raised by the reviewers. We have thoroughly reviewed our manuscript to implement the suggestions from the two reviewers as detailed in our answers.

We have revised the Introduction (Section 1) to more clearly explain the objectives of the paper and the significance of comparability of studies. We have expanded the Methods (section 2) and Discussion (Section 8) to further discuss the potential bias towards flood risk perceptions. In Section 4, we have further explained the differences between categories when they seem to overlap while clarifying that they are derived from multiple choice questions. In Section 5, we have expanded the discussion on the reasons for the prevalence of the demographic variables, revised Figure 9 by conducting a hierarchical cluster analysis and made more explicit the suggestion to survey communities that differ substantially in their hazard experience to obtain the requisite variation in experience at the household level. In Section 6, we have revised the statement on sample size and 'high data scattering'; we have also clarified that 'this observation is blurred' remains a speculative explanation. In section 8, we have included a broader risk perception literature to ensure this is more representative across the whole field of risk perception. We made other minor changes at the request of the reviewers, they are detailed in our answer in the discussion. When implementing in the manuscript substantial contributions from the reviewers, we have chosen to refer to their suggestions published in the discussion in NHESS-D.

We hope that our revised version is now ready for publication in NHESS.

Yours sincerely,
Samuel Rufat, on the behalf of all the authors

Answer to R1: Michael Lindell

We appreciate the positive evaluation our paper and would like to thank you for your helpful and comprehensive suggestions for improving it. We are particularly grateful to you for sharing that based on your own extensive experience the data are likely to generalize to other hazards and countries. Thank you also for suggesting additional references to help include a broader risk perception literature, we have implemented them throughout the manuscript and in particular in the Discussion (Section 8) to increase the representativeness across hazards. We have expanded the Introduction (Section 1) to distinguish between inconsistent findings and contradictory findings while more clearly explaining the significance of comparability of studies in particular with respect

to replication and meta-analyses. We have also clarified that the ‘minimal requirements’ are detailed and discussed in Section 8. In Figure 4, we report the categories as they were collected during the survey. While we comment in Section 4 that grouping some items might change the ranking, we also demonstrate – for example – that respondents do not equate worry with fear. As a result, we feel more comfortable to report in Figure 4 the results as they were collected during the survey and leave interpretation as open as possible to foster discussion. We took however the liberty of adding your analysis of Figure 4 in Section 4, thank you for suggesting this categorization based on theoretical distinctions. Similarly, in Figure 6 and Figure 7, we report the categories as they were collected during the survey. We have clarified that they are based on multiple choice questions. Although some categories may appear to overlap, we have clarified the difference between ‘from the literature’ and ‘from other studies’. Which also led us to clarify that while the majority of respondents reported relying on literature reviews (in general) only a minority considered direct comparison with previous studies (tables and data). In retrospect we realize that our attempt at humour in the title of Section 5 was misplaced and we have refrained from using the term ‘panic’ to avoid confusion. Thank you for pointing this out. In Section 5, we have expanded on the link you suggested between research experience and coordination efforts. In our sample, we had 44% of respondents with less than 3 studies and 21% with more than 5 studies (Table 1). We further took the liberty of adding your suggestion of another possible reasons for the prevalence of the demographic variables, thank you for highlighting that their inclusion requires no knowledge of the theoretical perspectives we collected. We have also added your recommendation to survey communities that differ substantially in their hazard experience to obtain the requisite variation in experience at the household level – this was implicitly one of our main goals in fostering cross-study comparability. Based on your suggestion, we have revised Figure 9 by conducting a hierarchical cluster analysis and then rearranging the variables in the resulting clusters. As for Figure 11, we have clarified that it is based on the questions presented in Figure 8. Similarly, we clarified the comparison of contextual factors use between interviews and survey designs. In Section 6, we have revised the statement on sample size and ‘high data scattering’. We have clarified that we did find regional difference in risk perception and behavior assessment between different regions of Europe. We have also clarified that ‘this observation is blurred’ remains a speculative explanation. In section 8, we have clarified that flood experience was used as an explanatory variable for risk perception and hazard adjustment earlier than the introduction of the availability heuristic. We have also implemented your other suggestions and references, as well as your sensible point on research questions, thank you for bringing all these up. We have further clarified that beyond the derivation of constructs from a theoretical framework we are also raising the issue of the operationalization of those constructs in terms of indicators. Thank you for bringing up the ‘file drawer problem’, we took the liberty of adding this to our discussion (Section 8.2). Thank you for highlighting one limitation to the recommendation for emphasizing the currently most frequently used questions and explanatory variables. We have clarified that – as the results also reveal that one third of surveyors did not rely on a particular theoretical model or framework to guide their design – more systematic efforts must be made to integrate the constructs from the main frameworks beyond the currently most frequently used questions and variables. As for your final point that the issue of regional differences can be addressed very effectively in statistical meta-analyses, we have clarified that this is indeed one of the aims of the discussion we hope this study has contributed to launch: we need more convergence between studies to improve comparability to

enable robust and comprehensive statistical meta-analyses. Thank you again for your comprehensive and insightful suggestions which helped considerably improving the paper.

Answer to R2: Lara Mani

We appreciate the positive evaluation our paper and we thank you for your helpful suggestions for improving it. We have revised the Introduction (Section 1) to more clearly explain the objectives of the paper and the significance of comparability of studies in particular with respect to replication and meta-analyses. We have expanded the Methods (section 2) and Discussion (Section 8) to further discuss the potential bias towards flood risk perceptions. We take confidence however in R1's (Michael Lindell) comment on this particular point: "In the absence of a census of researchers and hazards in the field of risk perception and adaptive behavior, it is unknown whether these sample characteristics are representative of the field's researchers. Nonetheless, the authors have identified and summarized problems that I have seen repeatedly during my 50 years studying floods, volcanic eruptions, hazardous materials releases, earthquakes, hurricanes, tornadoes, and tsunamis in the US and other Pacific Basin countries. Consequently, their data are likely to generalize to other hazards and countries." We have also followed Michael Lindell's comprehensive suggestions to help include a broader risk perception literature throughout the manuscript and in particular in the Discussion (Section 8) to ensure this is more representative across the whole field of risk perception. For Figure 6 (Section 4), we have clarified that it is based on a multiple choice question. Even though some categories may appear to overlap, we have clarified the difference between 'from the literature' and 'from other studies', as for 'colleagues in my field' and 'people in different countries' they were designed to capture different behaviour. As for the impact of COVID-19 on perception research, this was an open and optional question in the survey. As reported in Section 7, some colleagues did detail a change in their approach, methods or study designs – mostly online interviews and online surveys – fewer, however, than those who reported having to postpone their studies. We do not feel their small numbers allow for a more detailed estimation or quantification of the impact of the pandemic on perception research. Based on your other comments, we have made other ad hoc clarifications in Section 2 (interdisciplinary), Section 5 (socio-demographic characteristics), Figure 8 (formatting) and Section 8 (share of studies). Thank you again for your detailed and useful comments which helped improving the paper.