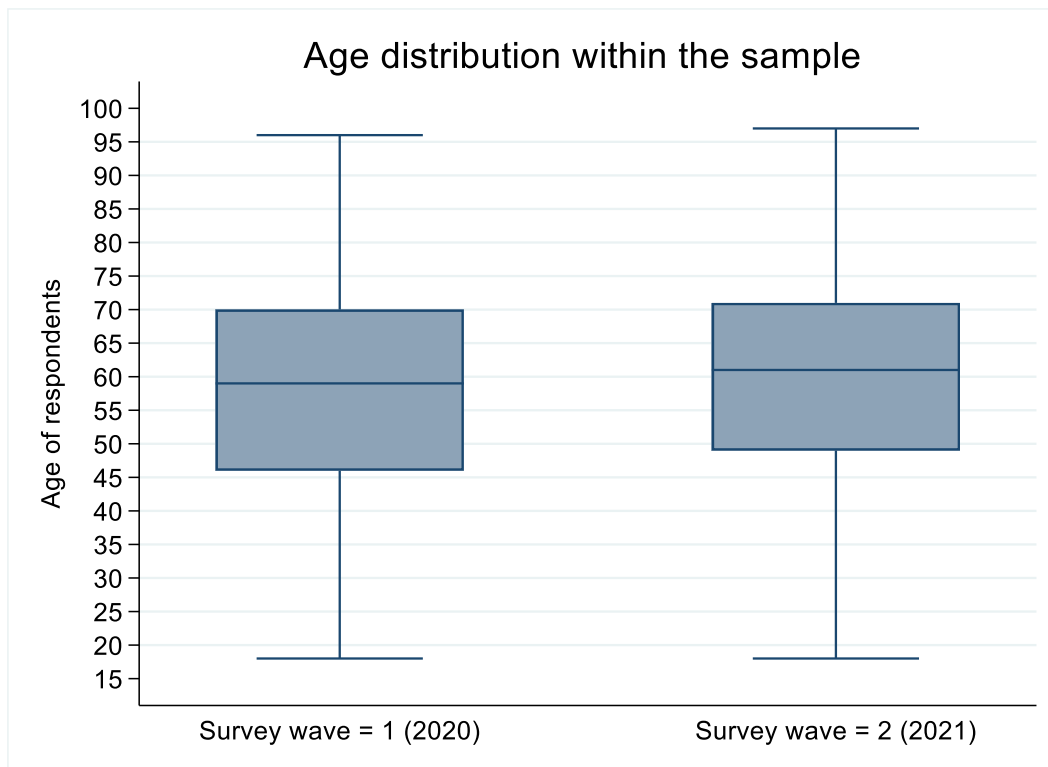
Response to RC2 – Submission NHESS-2023-64

Dear Reviewer,

Thank you for taking the time to review our manuscript *"Better prepared but less resilient: the paradoxical impact of frequent flood experience on adaptive behavior and household resilience."* We appreciate your evaluation and insightful comments to improve the quality of the manuscript. In the following section, we address each of your comments and suggestions point by point.

Comment: *What is currently missing, and what I would highly recommend adding, is a description of the sample. It is shown how the sampling was done but there is no information about the composition of the sample e.g. in terms of gender and age groups. Do the respondents represent a balanced relationship between different age groups? This information is important in the description of the method, but the information could also be important for the interpretation of the results and the discussion section (especially if not all age groups are equally represented in the sample). It would be also interesting to know if the analysis showed any differences among different age group and gender.*

Answer: The manuscript has a separate sample description for each survey wave (line 175). The described characteristics are demographic background (age, gender, tenure), the type of building people live in (share of people that live in single/semidetached/ apartment/ double houses), frequency of flood experience (share of people that have experienced none/one/two/ at least three floods), past adaptation (share of people that has undertaken building-level adaptation in the past), and the share of people that have been surveyed before/ after the flood event in western Germany in July 2021. However, what becomes not clear from the table is the age distribution within the sample. Therefore, we would add the following graph to the manuscript (section 3.2.2):

For the other characteristics, the distributions should become clear from the table. It can be seen that the sample covers a wide range of ages, with most people being between 45 and 70 years, but also includes people who are 18 years old or above 95 years.

Regarding the second part of your comment, it would be interesting to see if the relationship between FFE and behavior/resilience varies depending on the age group or gender. Same counts exemplarily for different educational backgrounds. However, this is not the scope of our paper. This study's research objective is to obtain a clearer picture of the influence of FFE on protective behavior and self-reported resilience. It would be worth another study to dive deeper into this relationship and see if other factors, such as age, gender, education, or economic background, influence it. This study would also demand an in-depth theoretical grounding to define factors that are assumed to influence the relationship and to draw conclusions on possible reasons. However, this would exceed the scope of this study but would be an interesting future project.

Comment: *I would suggest to better elaborate on the concept of household resilience and individual resilience. It is not always clear in the manuscript whether the focus is on individual or household resilience. From the title and what stated in line 40, RQ2, it seems that the unit of study is households, while elsewhere it is individual resilience (e.g. line 43/44). In the description of the methodology authors state that the questionnaires were addressed to individuals within specific households so it seams that the research unit is the individual level*

or did the questionnaire also cover the household level with specific questions? Since the paper claims to investigate the impact of multiple flood experience on household resilience, I would expect that household data (composition, presence of young children, persons with disabilities, etc.) would also have been collected and taken into account in the data analysis and discussion of the results.

Answer: Our paper aims to measure the influence of frequent flood experience on self-reported resilience. Here we asked, "How powerless did you feel during the last flood event?" "How helpless do you feel with regard to future flood events?" "How severe was the last flood event for you?" to measure the respondents perceived resistance during the last flood events and their expected capacity to resist future floods. The question "How much does the last flood experience still weigh on you today?" measures their perceived recovery. The underlying assumption for using the term household resilience instead of individual resilience was that an individual's resilience is possibly closely connected to a household's resilience and that protective measures are subject to household action rather than one individual alone. Additionally, the main interest of our study, the number of experienced flood events, is also affecting the household as a whole rather than one member individually. For example, a respondent would not say they recovered quickly if their household members or building had not done so. However, when rethinking our terminology to answer your comment, it becomes clearer that this assumption is pretty strong and that the individual perception can also be disentangled from the household members' perceptions and actual damage to the building. Therefore, we refrain from using the term "household" and replace it with "individual." However, to what extent the household's resilience influences the self-reported resilience of its members delivers a new interesting research question that could be worth investigating for a future project and could deliver insightful outcomes regarding the influencing factors on individuals' resilience. We also appreciate the idea of including household-level data in a model to measure household-level resilience.

Thank you again for your valuable input and critical assessment of our manuscript. Your comments and constructive feedback are valuable for further improving our manuscript.

Sincerely,

Lisa on behalf of the co-authors