

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2  
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## Comment on nhess-2021-379

Anonymous Referee #2

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Referee comment on "The determinants affecting the intention of urban residents to prepare for flood risk in China" by Tiantian Wang et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-379-RC2>, 2022

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### NHESS review

This is an interesting paper asking the question of how we explain people's intentions to limit the impacts of flooding. Overall, I think the paper took several sensible choices. One top of the previous reviewers comments (many of which I also agree with), I would add the following (in no order of importance):

- What is the research gap that this paper is trying to fill? I ask because there is a large amount of research on behaviour intentions, and it is unclear in what direction the paper seeks to advance this literature. Is it for example is it, the application of this model to China[1, 2], or the application of a structural model of PMT to urban residents[3]? I raise this last paper as a comparison, as I think you follow a similar approach to those authors in that you start with PMT as a baseline model but greatly extend it into one that can start to be seen as moving towards the PADM[4], or other studies extending PMT[5].
  - Similarly, as the model contains more variables than the commonly used version of PMT used, is it that surprising that it has a better predictive capability? It would be strengthened if you could validate how much of a better predicative capability your proposed model has, and if the increased survey complexity is worth this trade-off?
- The statement made on page 3, lines 81-82. This is quite a strong statement to make, especially as you state that you can model the heterogeneity as differences in risk coping attitude, as you define from data collected in your survey. I would think this raises the question of how this can deal with the heterogeneity in a more complete way than previous studies, as are not the different responses to the questions also looking at heterogeneity in the respondents?
- The argumentation on page 4, I think this section needs more nuance introduced into it. This is because the relationship can also be explained by the temporal dynamics of adaptive actions being mismatched with the cross-sectional nature of the data commonly connected[6-13], which when accounted for can explain the relationships seen to be missing.- This could also be seen as explaining the positive relationships with coping approval as people can increase their perceived coping appraisal after

successfully implementing measures as well.

- The findings in relation to trust and social norms can also have additional nuance. This is because trust/social norm can impact multiple avenues of PMT both positively and negatively[14-17]. This has two further comments:
  - Be more careful in using the word “trust” as you are explicitly talking about trust in governmental investment in protective measures
  - Given that there is a literature explaining potential interconnections between “trust” and other social factors to coping appraisals, why is it not connected in your model as well?
- Could you place the 9.50 RMB incentive for completing the survey in the social context – is this a large incentive, was it reasonable to assume it would help people answer the survey.
- Following the information presented on the living conditions of the respondents described on page 10, I think you should mention the type of measures directly studied on the survey into the main paper itself. This is because if all the measures being asked for are not reasonable for employment by the households surveyed, I would question the fundamental validity of their stated intentions to employ the measures.
- I might be missing but for table 4, I only see that one of the variables has been defined elsewhere in the text.

- Noll, B., T. Filatova, and A. Need, *One and done? Exploring linkages between households' intended adaptations to climate-induced floods*. Risk Analysis, 2022. **n/a**(n/a).
- Huang, J., et al., *Affect Path to Flood Protective Coping Behaviors Using SEM Based on a Survey in Shenzhen, China*. International Journal of Environmental Research and Public Health, 2020. **17**(3): p. 940.
- Dillenardt, L., P. Hudson, and A.H. Thielen, *Urban pluvial flood adaptation: Results of a household survey across four German municipalities*. Journal of Flood Risk Management. **n/a**(n/a).
- Lindell, M.K. and R.W. Perry, *The Protective Action Decision Model: Theoretical Modifications and Additional Evidence*. Risk Analysis, 2012. **32**(4): p. 616-632.
- Botzen, W.J.W., et al., *Adoption of Individual Flood Damage Mitigation Measures in New York City: An Extension of Protection Motivation Theory*. Risk Analysis, 2019. **39**(10): p. 2143-2159.
- Hudson, A.H. Thielen, and P. Bubeck, *The challenges of longitudinal surveys in the flood risk domain*. Journal of Risk Research, 2020. **23**(5): p. 642-663.
- Bubeck, P., et al., *Using Panel Data to Understand the Dynamics of Human Behavior in Response to Flooding*. Risk Analysis, 2020. **n/a**(n/a).
- Bubeck, P., W.J.W. Botzen, and J.C.J.H. Aerts, *A review of risk perceptions and other factors that influence flood mitigation behavior*. Risk Analysis, 2012. **32**(9): p. 1481-1495.

- Osberghaus, D., *The effect of flood experiences on household mitigation – Evidence from longitudinal and insurance data*. Global Environmental Change, 2017. **43**: p. 126-136.
- Mondino, E., et al., *Exploring changes in hydrogeological risk awareness and preparedness over time: a case study in northeastern Italy*. Hydrological Sciences Journal, 2020. **65**(7): p. 1049-1059.
- Seebauer, S. and P. Babczyk, *(Almost) all Quiet Over One and a Half Years: A Longitudinal Study on Causality Between Key Determinants of Private Flood Mitigation*. Risk Analysis, 2020. **n/a**(n/a).
- Siegrist, M., *Longitudinal Studies on Risk Research*. Risk Analysis, 2014. **34**(8): p. 1376.
- Siegrist, M., *The necessity for longitudinal studies in risk perception research*. Risk Analysis, 2013. **33**(1): p. 50-51.
- Hudson, P., L. Hagedoorn, and P. Bubeck, *Potential Linkages Between Social Capital, Flood Risk Perceptions, and Self-Efficacy*. International Journal of Disaster Risk Science, 2020. **11**: p. 251-262.
- Babczyk, P. and S. Seebauer, *The two faces of social capital in private flood mitigation: opposing effects on risk perception, self-efficacy, and coping capacity*. Journal of Risk Research, 2017. **20**(8): p. 1017-1037.
- Lo, A.Y., *The role of social norms in climate adaptation: Mediating risk perception and flood insurance purchase*. Global Environmental Change, 2013. **23**(5): p. 1249-1257.
- Lo, A.Y., et al., *Social capital and community preparation for urban flooding in China*. Applied Geography, 2015. **64**: p. 1-11.