

## ***Interactive comment on “Responses to severe weather warnings and affective decision-making” by Philippe Weyrich et al.***

### **Anonymous Referee #2**

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Dear editorial team, please accept my apologies that I can not provide another review of this manuscript due to my contract ending in Leeds on July 10th. Please find my comments below on this, overall, very good paper. Thank you for choosing me as a reviewer. Kind regards, Astrid Kause

GENERAL COMMENT The study represents an important and timely contribution to communications of weather warnings. It contributes to understanding the effectiveness of different weather warning types and behavioural responses to these warnings. The non-hypothetical ‘field study’-approach is highly valuable when trying to understand responses to severe weather events which potentially cause high costs, and threaten lives. Also, the manuscript stands out because it is very easy to follow.

SPECIFIC COMMENTS INTRODUCTION. #1 In the introduction, I appreciate that the

authors try to draw on relevant theory from psychology and decision sciences. However, how the introduction stands now, it is long and in some parts confusing. I'd recommend to focus more on the applied value of this applied study and the factors varied in them, and what it adds to the current literature. The cited work of Casteel (2016, for example) or Andrea Taylor, University of Leeds, UK (2019) are excellent examples for how this could be done. If it is necessary to draw on several theories from cognitive and decision sciences, please clarify what are the precise predictions regarding the main independent variables explored here, based on these theories. This should be either based on theories, previous findings, or ideally integrate both. Regarding theory, I'd suggest narrow the theoretical focus and delineate precise predictions; and then pick these up again in the discussion and discuss whether and how they have been met, and why. If however, the aim of the authors is to review several theories rather than focusing on only one, please clarify why and how those were selected and relevant for IBW (for example construal level theory would then currently be missing).

#2 On a side note, I'd like to put forward that a dual systems-approach is widely accepted is not correct – the 'ecological rationality' approach (see reference to Gigerenzer & Gaissmaier, 2011 below) is an entire interdisciplinary research paradigm in psychology and decision sciences (in social sciences more broadly, a much wider range of theories exist). It contrasts the dual system-approach. In my view, the inherent problem of the latter is that it doesn't clarify, generally and also in potentially threatening situations where people may rely on weather warnings, what a 'rational' and therefore 'correct' decision actually is. Extreme weather leads to situations characterised by high uncertainty, where not all information is known and a 'rational' decision, based on all available information, is impossible to make. Also, quick and intuitive decisions could potentially be very helpful and adaptive in such uncertain emergency situations, if performed in the right decision context. While the introduction of the current paper is not the place to reflect this entire debate, the point I wish to illustrate is that the most important existing theories and predictions based on these need to be selected and described more carefully. #3 Having a more clear outline in the introduction would

also clarify from an applied viewpoint what type of behavioural response is actually adequate in the authors' view (and 'rational', though I'd recommend to skip this term overall) – this may be based on general recommendations by weather warning services, or insurances, or Table 2? If there is an adequate response, please describe it in the introduction. If not, that also needs to be clear, because then there isn't such a thing as a rational decision in this context. A more applied focus as mentioned above would help in clarifying this.

#4 This would also help re-structuring the abstract according to short background, research question, design, method and sample, main findings and a short comment on results. Currently, it doesn't precisely reflect what was done here – and lacks for example the impact-based weather warning manipulation, or introduces the term 'stress' which doesn't re-appear prominently anywhere else (as far as I can see).

METHODS. #5 P.5 l.10 says “we asked participants whether the weather described in the warning would pose a risk to them and whether it would affect them in carrying out their usual activities (e.g., commuting, working, shopping etc.). If they answered yes, they continued with the survey” – wouldn't this exclusion of people who don't change, be an explanation of why no effects were observed – if for example more people didn't react to a SW, compared to a IBW? #6 Page 5 l.34 reports that the regression is conducted on behaviour, but the regression table header indicates that it predicts behaviour 'change' – please clarify whether it predicted absolute behaviors or a difference score reflecting change (I don't think it did the latter). #7 Table 2: Please report a measure of dispersion for age, and a range. #8 Figure 2: I think this is not about likelihood (as the header implies) but a continuous score measuring actual behavior. I think the figure header should accordingly be something like “Mean self-reported behaviour in response to two warning types, ...”. Please avoid the use of acronyms or explain them again in the caption to allow the figure to stand on its' own. I'd also prefer to see the full scale that was presented to participants on the y-axis; to get an idea about effect magnitude. Please do also apply these points to all other figures where

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appropriate. #9 Table 3 and overall results section: The use of standard significance levels and \*\*\* has been widely criticized in psychology and decision sciences, and other fields (see for example <https://www.nature.com/articles/d41586-019-00857-9> or <https://journals.sagepub.com/doi/abs/10.1177/0959354302126005> for some context). Albeit still widely in use unfortunately, I'd thus refrain from marking results with \*\*\* and in bold, dependent on these levels; and follow reporting standards outlined in this literature; including for example confidence intervals where appropriate for all study results.

DISCUSSION. #10 As the authors note in line 27 on page 7, the study is based on self-reports and a self-selected sample. Please acknowledge the dearth of literature on samples and self-reports in psychology and social sciences more generally where this has been criticized, and provide a recommendation for future studies.

TECHNICAL CORRECTIONS #11 Please make sure that the wording is consistent – for example, 'survey' and 'questionnaire' are used interchangeably #12 Table A: Reports standard errors, not standard deviations. Please adjust the acronym in the header #13 P.5 l. 10 – this is actually subjective understanding – to measure actual understanding, you would conduct a test on recall or accurate reproduction of the communicated information, which I don't think has been done here. #14 I'd recommend to avoid somewhat jargon'y words, such as decision-making pathways. Not everyone in an interdisciplinary audience may understand what those are. Acronyms (and translations to understand what those mean) are not introduced everywhere; such as GVB Services AG on page 4. #15 I appreciate the comparison to the general population. Consider restructuring Table 2 and include the comparison to the Swiss population which is currently in the text on p. 4, l. 51, so that it allows more easily comparing the sample to the general population; this also avoids redundancy between text and table. #16 Table 3: rather than reporting for each predictor on which scale it has been measured, add a note and describe groups of factors that have been measured on 1-5 scales, 1-3 scales, and binary ones. #17 Some references use capitals for each title word, others don't (for example Potter et al. 2018).

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Reference Gigerenzer, G. & Gaissmaier, W. Heuristic decision making. *Annu. Rev. Psychol.* 62, 451–82 (2011).

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