

Response to Referee #1, Tim Harries RC1: nhess-2018-407-RC1, 2019

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We thank the reviewer for the helpful and constructive comments as well as the reasonable suggestions to improve the paper. Thus, we would like to follow many of the reviewer's hints, addressing all helpful comments.

Comments of the reviewer

Main point 1:

The clarity of the argument is often poor and the logic sometimes flawed/missing

- E.g. P3.29: "This suggests that..." Why does it? Surely there are other, alternative explanations? E.g. the social norms/networks mentioned earlier on the same page. What is the evidence/theory to suggest that psych factors might vary between flood types? Given that this is the main hypothesis of the paper, it requires careful justification.

Answer 1:

Thank you for the hint, we will elaborate more on the explanations, why psychological characteristics might have strong influences on the flood protection motivation and why they potentially vary among flood types. Suggested changes in the text:

"It has further been shown that the motivation to protect oneself from flooding cannot be solely explained by risk information, risk perceptions and socioeconomic factors such as income and homeownership (e.g. Baan and Klijn, 2004; Bubeck et al., 2012; Morss et al., 2016). Supportive evidence is given by Hopkins and Warburton (2015), who revealed that flash flood experience among UK citizens does not necessarily lead to higher risk perceptions. Yet, Harries (2012) shows that protective behaviour of flood affected UK citizens is significantly associated with the perceived probability to be flooded again while potential effects of protective behaviour such as feelings of safety;

anxiety, and the fear of uninsurable impacts are influenced by flood experience. Having analysed flood affected households in Germany and France, Bubeck et al. (2018) identified good social norms and networks as an important factor for better coping abilities after river floods. Especially the trust in its own abilities and the belief in a good measure effectiveness increase with the number of neighbours, who already implemented flood protection measures. Eventually, these results suggest that among influencing factors on protective behaviour, psychological characteristics might play a significant role."

(...)

"River floods usually occur after long-lasting rainfall or snowmelt within large catchment areas and result in slow-rising water levels. In contrast to river floods, flash floods emerge within (small) catchments where slopes are steep and defined, resulting in unpredictable flow dynamics that can be rough in terms of a high sediment transport, high flow velocities and forceful discharge (Borga et al., 2014). The forecast of such flood events is not yet reliable since they can develop with very short lead time. Apart from potentially high damage on buildings and infrastructure, flash floods can also cause serious injuries and fatalities (Gaume et al., 2009). Therefore it can be assumed that flash floods are perceived as a threat for personal health and property and induce negative psychological responses in flood experienced people.

~~This suggests that certain psychological impacts and characteristics may have an influence on the individual flood protection motivation and may vary with regard to different flood types.~~ After all, only few studies consider individual psychology in flood preparedness decisions although it can be expected that they contribute to the knowledge in that regard."

Main point 2:

The paper is not easy to read/understand E.g. (but there are numerous other instances):

- What is meant by "within the individual bounds of possibility" p2? This needs to be more precisely expressed
- P3 "In general" is too vague.
- Long sentences – e.g.11.

Answer 2:

We will check the manuscript again and increase the readability/clarity of the text at the suggested locations. We will further rewrite sentences and use better expressions to follow the reviewer's suggestions. Suggested changes in the text:

65 "As a consequence, the German Act on precautionary flood protection in 2005 (Act to Improve Preventive Flood Protection) requires residents in flood prone areas to undertake appropriate private precautionary actions ~~within the individual bounds of possibility.~~"

(...)

70 "It has been shown that private precaution measures can significantly reduce the mean damage ratio (flood damage in relation to the total building/content value) to households and household contents up to 53 per cent and thus play an important role in comprehensive flood management strategies (Kreibich et al., 2005; Thieken et al., 2008; Merz et al., 2010)"

(...)

75 "Here, evasion especially differs between people affected by weak flash floods and river floods. One reason could be the comparatively high frequency and severity of river floods in Germany which could lead to evasive behaviour of repeatedly affected residents"

80 **Main point 3 (point 1):**

Methods

- The methodology for classifying flash flood strength is opaque and potentially flawed. Was this done for individual homes or for entire areas? The former would be appropriate, but I can't see how it would be possible using online searches and press reports. The latter would be insufficiently fine-grained, because the intensity of impact often varies dramatically between homes in the same street/area. The authors need to justify their reliance on crude estimates of physical damage for an analysis that looks at psych impacts. Are they assuming a close correlation between the two? If so, they should present citations supporting this.

Answer 3 (point 1):

90 The flash flood strength was assessed on a coarser area since we assume that impressions and effects of the flash flood severity are not particularly dependent on the intensity at the individual house. We rather believe that they are influenced by the overall appearance and effects of the flood within the village, which also includes impacts on neighbours, friends and infrastructure. For example, Bei et al., (2013) describe similar phenomena such as negative mental implications due to the disruption of daily routines with regard to an affected infrastructure. It makes sense that mental coping, especially after strong flash floods, is not solely influenced by the individually experienced damage but dependent on broader impressions.

Moreover, not only the impact, but also the potential to be harmed outside in case of sudden and strong flow forces may influence the mental coping in regions which can experience strong flash floods. Therefore it can be assumed that the mental impacts after a severe event are differing with regard to the severity within an affected area.

In addition, we cross-checked our classification with answers concerning the pathway the water entered the building (data are not shown in the paper). Overall, our classification captures weak flash floods (comprises pluvial flooding), medium flash floods and strong flash floods.

105 **Main point 3 (points 2-7):**

Methods

- Justification needed for the exclusion of moderate strength floods.
- The authors need to justify including ‘fatalistic thoughts’ in a group named ‘avoidance’ p7
- Is it justifiable to include information-gathering in the same category of response as physical adaptation? Some reflection is needed on this issue and the key concept of precautionary behaviour needs to be defined accordingly.
- It would be helpful to include a power analysis.
- It would be good to clearly label the research as ‘secondary analysis’, rather than leaving it to the reader to deduce this.
- The authors should discuss the implications of the three years that separate the two surveys.

115 **Answer 3 (points 2-7):**

Thank you for these suggestions. We will clarify the different steps of the analysis and discuss the data with regard to the time between the surveys. Suggested changes in the text:

"Thus, the aim of this work is to identify patterns of psychological impact with a focus on differences among people affected by either flash floods or river floods. In a next step, the psychological characteristics are related to the overall protective behaviour. Accordingly, the following hypotheses were raised:"

(...)

"The regions which were affected by the river floods in 2013 and flash floods in 2016 differ almost completely. Further, apart from an increase in insurance density regarding river floods, no specific developments concerning flood risk management and flood precaution are indicated during these years. Given the fact that both surveys also cover two different flood types, the time lag between the two surveys, i.e. three years, is not expected to cause any effect on the following analysis."

For clarification: The group in which ‘fatalistic thoughts’ is integrated is not named ‘avoidance’ but ‘Evasion’. See description in paper:

130 "Evasion comprises the variables "avoidance" and "fatalism" and can be seen as a measure for the effort to get the experience of a damaging flood out of one's mind in order to cope with the threat."

We will further define the concept of precautionary behaviour beforehand. Suggested changes in the text:

135 "The focus was shifted to a more integrated flood management, where also structural precaution measures (i.e. waterproof sealed cellars i.e. dry-proofing, wet-proofing, relocation of heating and electrical utilities) as well as non-structural flood protection measures (i.e. adapted interior fitting and flood-adapted use such as avoiding water-sensitive furniture in the cellar) became increasingly important (Kienzler et al., 2015; Thieken et al., 2016b; Laudan et al., 2017)."

140 For clarification: The category information-gathering and other adaptation measures are combined within the precaution indicator according to their potential to reduce physical damage. The calculation is based on weights that are assigned to each precaution measure that have been derived from analyses mainly done by Kreibich et al. (2005) and Thieken et al., (2005). See description in paper:

145 "Thus, the indicator of already implemented precaution measures and the indicator capturing planned precaution, which is used in this study, consist of single precaution measures that are weighted according to their damage mitigation potential as found in Kreibich et al. (2005), Thieken et al. (2005) and Büchele et al. (2006)."

Regarding the power analysis: We decided to describe the Dunn's test in greater detail instead of including a power analysis. The Dunn's test generally obviates the need for a power analysis and also helps to understand the related figure (figure 2).

150 Suggested changes in the text:

155 "The distributions of threat appraisal, coping appraisal, burden and evasion were further analysed using the Dunn's Test, which is based on the non-parametric Kruskal-Wallis rank sum test results. These tests are suitable for assessing the differences among the distributions of ordinal-scaled data, which does not fulfil assumptions of normality and equality of variance. Here, the Kruskal-Wallis rank sum test is preliminary to the Dunn's Test and calculates discrepancies among the rank sums of all values within the compared indicators. The derived Kruskal-Wallis statistic is then compared to the expected average difference among the sum of ranks via Dunn's Test. Similar to a power analysis, the effect size and significance are revealed for a given sample size. The outcome represents a measure for the disparity and shift of compared distributions. This approach reveals significant differences in psychological impacts which were predominantly caused by weak flash floods, strong flash floods and river floods."

160

Main point 3 (points 8-15):

Methods

- 6.25: “The indicators are combined according to literature...” Requires more explanation.
- The descriptions of the statistical methods, process and results need to be more accessible to readers not expert in stats or the particular methods used
- References needed for the justification for using Bayesian methods (p4)
- The Bayesian approach ‘offers advantages’. The authors need to be specific about what these are. P4
- Clearer and more precise language is needed. E.g. ‘the specific variable applicability’ – what does this (and the rest of the sentence) mean?
- The surveys were ‘equally designed’. This needs to be clearer – were they identical or were there differences?
- It makes no sense to speak of ‘an equal distribution of age and gender’. ‘Balanced’?
- It would be helpful to have more information about the samples. E.g. response rates; social class/occupation; household types; extent of flood damage – and/or some comparison of the German population to highlight ways in which the samples are/are not representative.

Answer 3 (points 8-15):

Thank you for these ideas. We will increase the clarity of our descriptions, justify the applied methods and rewrite certain parts of the text. We will further elaborate the explanation how indicators/items can be combined. Suggested changes in the text:

"The indicators are combined according to literature, i.e. Creamer et al. (2003), who suggest to combine items to create robust indicators. Further, Grothmann and Reusswig (2006) and Bubeck et al. (2012) describe the items that constitute the factors of the PMT, which are especially relevant as main psychological indicators. Subsequently, the four main indicators are defined as “threat appraisal”, “coping appraisal”, “burden” and “evasion”, which also show low intercorrelations and offer a certain comparability to other studies."

(...)

"The Bayesian approach has been frequently used in psychology (e.g. Wetzels et al., 2011) and other disciplines. It assesses the data uncertainty which is particularly helpful among studies that rely on relatively small data sets, while prior information independent of the data can be included (Van de Schoot et al., 2015). Since this study relies on small data sets, using the Bayesian approach as a supportive analysis helps to interpret main results. By revealing data and model uncertainties, the reliability of future prediction models that are based on these data sets can be evaluated in advance. Accordingly, this study considers Bayesian inference as a method to assess variable relations, that are based on conditional probabilities and related uncertainties. Preliminary assumptions such as e.g. linear variable coherences

are therefore not required. ~~Furthermore, this approach evaluates the specific variable applicability for a potential prediction of a response variable, in this case the “planned precaution” indicator.~~

(...)

"The dataset of the 2013 river flood comprises 1652 responses in total, the 2016 flash flood 601 cases with similar distributions of age (average 59 years) and gender."

Additionally, we will include a table in the appendix to provide more information about the samples (age, gender, education, type of housing).

Main point 4 (points 1 & 2):

The scene-setting needs to be done more carefully and the drafting of the hypotheses improved

- More careful use of terminology needed; and some terms need defining.
 - i. E.g. “flood protection” is more commonly used to mean property-level measures, but is not used in this way on p2. Perhaps “flood risk management” is a more appropriate term.
 - ii. On p2 “private precautionary measures” is used before it has been defined.
 - iii. P2: the terms ‘structural’ and ‘non-structural’ need defining
- 7.3: I think this should read “perceived cost of a protective measure...”

Answer 4 (points 1 & 2):

See Answer 3 (points 2-7): Important terms will be defined beforehand. As suggested, we will replace the term "flood protection" with "flood risk management". Suggested changes in the text:

"The focus was shifted to a more integrated flood management, where also structural precaution measures (i.e. waterproof sealed cellars i.e. dry-proofing, wet-proofing, relocation of heating and electrical utilities) as well as non-structural flood protection measures (i.e. adapted interior fitting and flood-adapted use such as avoiding water-sensitive furniture in the cellar) became increasingly important (Kienzler et al., 2015; Thieken et al., 2016b; Laudan et al., 2017)."

(...)

“Flood risk management in Germany has a long history with several regulations and ongoing programs.”

Main point 4 (points 3-5):

- H1:

- i. 'riverine' refers to the river bank; the term more commonly/accurately used for flooding from rivers is 'fluvial'
- ii. some fluvial flooding is flashy, so the dichotomy presented is a false one. Are the authors talking about pluvial flashy floods only?
- iii. what does it mean to say that flash floods are 'more dynamic'? This needs explication.
- iv. is it an overgeneralisation to say that flashy floods are 'a bigger threat to life'? Where is the evidence for this assertion?
- v. what is the provenance of this hypothesis: e.g. in theory or the literature?

- H2: like H1, this hypothesis requires anchoring in the literature. It also requires nuancing; after all, some negative psych impacts prompt greater likelihood of precaution.

- H3:

- i. This is too vague. The reader needs to know which psych indicators are meant, and which psych characteristics
- ii. Some explanation needed of the distinction between 'indicator' and 'characteristic' (and, later, 'manifestations').

Answer 4 (points 3-5):

These are important suggestions to improve the paper. We suggest the following changes in the text to clarify our motivation and sharpen the hypotheses:

"In contrast to river floods, flash floods emerge within (small) catchments where slopes are steep and defined, resulting in unpredictable flow dynamics that can be rough in terms of a high sediment transport, high flow velocities and forceful discharge (Borga et al., 2014). The forecast of such flood events is not yet reliable since they can develop with very short lead time. Apart from potentially high damage on buildings and infrastructure, flash floods can also cause serious injuries and fatalities (Gaume et al., 2009). Therefore it can be assumed that flash floods are perceived as a threat for personal health and property and induce negative psychological responses in flood experienced people."

(...)

"H1: Flash floods, in comparison to slowly emerging river floods, show a different psychological impact on affected people in which negative effects such as stress and feelings of being helpless are more pronounced, since flash floods are rough, emerge suddenly and therefore represent an unpredictable danger for health and property.

H2: Negative psychological impacts are connected to a lower probability for precaution because negative feelings might hamper the individual energy and self-confidence as well as the overall motivation to implement precaution measures.

H3: Psychological indicators such as the level of stress and coping appraisals are suitable for explaining precautionary behaviour because those psychological characteristics are distinctly connected to the protection motivation."

(...)

260 "Thus, groups of similar psychological characteristics (psychological indicators) are created first."

Main point 4 (points 6 &7):

- 265 • How is similarity defined when grouping 'similar psych manifestations' p4?
- Lines 24-32 (p4):
- i. What is meant by 'an indicator'?
 - ii. How can an indicator 'estimate' something? (Did the authors mean 'predict'?)
 - iii. What is meant by a 'precaution level'?
 - 270 iv. The authors need to justify their assumption that a better understanding of psych factors can inform 'targeted info campaigns'. It seems a little simplistic to think that information will make much difference. Plus, how would target groups be identified given that there's no easy way of identifying people with different psych characteristics.

Answer 4 (points 6 & 7):

275 The phrase "manifestations" will be replaced with "characteristics" since it fits better within this sentence. We will rewrite the respective test passages as follows:

"•A good understanding of psychology and precaution motivation might result in a variable which indicates the probability for a good precaution and could be integrated into flood loss modelling and dynamic risk assessments as suggested by Aerts et al. (2018).

280

We will clarify our idea of targeted information campaigns. Indeed, the term is a little misleading and the targeting of specific societal groups seems challenging for the mentioned reasons. Here it is important that information campaigns also provide support and information for a broader audience and people who potentially need more help, support and specific info to match their needs. E.g. an information campaign with trained personnel might help to convince people with avoidant tendencies. We will therefore rewrite the respective text passage:

285

"•The outcome might be beneficial for ~~targeted~~ information campaigns that better support flood affected individuals in different flood prone regions. Various mental coping approaches could also be considered in such campaigns, since they may vary among different flood types and affected regions. The motivation to implement useful private flood precautionary measures could be strengthened according to the needs of individually affected people (e.g. Morss et al., 290 2016)."

Main points 5 & 6:

- 295 5. The paper would benefit from some critique of Precaution Motivation Theory and a more sophisticated justification of its selection over other theories.
6. The paper needs to draw on literature from outside Germany. E.g. there is much on this topic from the UK. If the situation in Germany is so unique as to make other literature nonsalient (p3), this needs to be explained.

300 Answer 5 & 6:

Yes, such additions will improve the paper since the explanations and examples are currently too short. We therefore suggest following text changes/additions:

305 "Originally evolved in the health sector, the PMT gained attention in the domain of natural hazards over the years (Mulilis and Lipka, 1990; Grothmann and Reusswig, 2006; Bubeck et al., 2017). The model relies on two main cognitive processes - "threat appraisal" and "coping appraisal" – to describe the mental response to a specific threat. Threat appraisal is composed of the perceived consequences and probability of an event. Coping appraisal comprises the variables "self-efficacy" (perception of how well a person is able to carry out protection measures), "response efficacy" (how effective the measures are believed to be) and "response cost" (the perceived cost in terms of money and effort) (Rogers, 1975; Bubeck et al., 2012).

310 Main findings suggest that psychological factors – not only in terms of risk perception, but also avoidance and wishful thinking – can influence protective responses (Grothmann and Reusswig, 2006; Bubeck et al., 2012). Overall the PMT results in reliable estimations of protective behaviour, while particularly coping appraisal has been evaluated as a good predictor (Floyd et al., 2000; Milne et al., 2000; van Valkengoed et al., 2019). It has further been shown that the motivation to protect oneself from flooding cannot be solely explained by risk information, risk perceptions and

315 socioeconomic factors such as income and homeownership (e.g. Baan and Klijn, 2004; Bubeck et al., 2012; Morss et al., 2016). Supportive evidence is given by Hopkins and Warburton (2015), who revealed that flash flood experience among UK citizens does not necessarily lead to higher risk perceptions. Yet, Harries (2012) shows that protective behaviour of flood affected UK citizens is significantly associated with the perceived probability to be flooded again while potential effects of protective behaviour such as feelings of safety; anxiety, and the fear of uninsurable impacts

320 are influenced by flood experience. Having analysed flood affected households in Germany and France, Bubeck et al. (2018) identified good social norms and networks as an important factor for better coping abilities after river floods. Especially the trust in its own abilities and the belief in a good measure effectiveness increase with the number of neighbours, who already implemented flood protection measures. Eventually, these results suggest that among influencing factors on protective behaviour, psychological characteristics might play a significant role."

Main points 7 (points 1-4):

Findings

- 330 • I do not believe it's appropriate to report as 'findings' correlations that are nonsignificant e.g. 11.4.
- Interpretations of statistical findings should be less speculative i.e. justified from theory/the literature. Presently, much of the interpretation appears no more than supposition. E.g. p11
- Interpretations of statistical findings are best reported separately from the findings themselves.
- Explanation required of some key terms: 'flood adapted use', 'better interior fitting' and 'damage ratio of buildings'
- 335 (p8); 'coherence' (p9)

Answer 7 (points 1-4):

Thanks for the hints. We will rewrite the respective text passages and explain key terms. Suggested changes and additions in the text:

- 340 "A similar ~~finding~~ outcome is indicated when comparing the difference between strong flash floods and river floods, yet the results are not significant."
- (...)
- "The focus was shifted to a more integrated flood management, where also structural precaution measures (i.e. waterproof sealed cellars, relocation of heating and electrical utilities) as well as non-structural flood protection
- 345 measures (i.e. adapted interior fitting and flood adapted use such as avoiding water-sensitive furniture in the cellar) became increasingly important (Kienzler et al., 2015; Thieken et al., 2016b; Laudan et al., 2017)"
- (...)
- "It has been shown that private precaution measures can significantly reduce the mean damage ratio (i.e. the financial flood damage in relation to the total building/content asset value) to households and household contents up to 53 per
- 350 cent and thus play a significant role in comprehensive flood management (Kreibich et al., 2005; Thieken et al., 2008; Merz et al., 2010)."
- (...)
- "Yet, these results could be explained by the fact that people who were affected by strong flash floods believe similar events to be very unlikely to happen again in near future, resulting in lower feelings of threat. Although Hopkins and
- 355 Warburton (2015) showed that flash flood experience does not necessarily lead to higher risk perceptions, it is unknown, to which degree lower feelings of threat are caused by a lower flash flood experience itself. Since almost all surveyed households experienced a strong flash flood for the first time (82%), they may not believe to be affected

again. However, an analysis of threat appraisal with corrected data in terms of flood experience (all households that experienced a flood for the first time) reveals a similar picture, i.e. threat appraisal is significantly lower for people who were affected by a strong flash flood in comparison to people who were affected by weak flash floods and river floods (see appendix, Figure D). This again supports the findings of Hopkins and Warburton (2015)."

Since the results and interpretation are closely connected within this study, we prefer to keep the section of combined results and discussion.

Main points 7 (points 5-8):

- Figure 2 appears to add little and is hard to understand. I suggest that it be removed or more carefully explained.
- Fig 3 – the x-axis requires more explanation
- ‘JSD’ requires spelling out p12 etc
- Discussion of the hypotheses:
 - o H1: it needs to be made clearer how the suggested ‘focus on threat perception’ is justified by the findings. At present, the logical argument is weak/hazy.
 - o H2: the text is v hard to understand.

Answer 7 (points 5-8):

We will explain all figures in greater detail and also improve the explanation in the paper. We will further define the acronyms and describe the methods in a clearer way beforehand. Suggested changes in the text and within the figure descriptions:

"The distributions of threat appraisal, coping appraisal, burden and evasion were further analysed using the Dunn's Test, which is based on the non-parametric Kruskal-Wallis rank sum test results. These tests are suitable for assessing the differences among the distributions of ordinal-scaled data, which does not fulfil assumptions of normality and equality of variance. Here, the Kruskal-Wallis rank sum test is preliminary to the Dunn's Test and calculates discrepancies among the rank sums of all values within the compared indicators. The derived Kruskal-Wallis statistic is then compared to the expected average difference among the sum of ranks via Dunn's Test. The outcome represents a measure for the disparity and shift of compared distributions. This approach reveals significant differences in psychological impacts which were predominantly caused by weak flash floods, strong flash floods and river floods."

(...)

Figure 2 description: " Figure 2: Relative distributions of the combined psychological indicators for each flood type and Dunn's Test results. The results of the Dunn's Test reveal the direction shift of each distribution compared to the other distributions (negative means a shift towards lower values, positive a shift towards higher values), by also indicating the strength and significance of the shift (Z-statistic and p-value)."

(...)

Figure 3 description: "Figure 3: Relative distribution of the already implemented precaution indicator (left) and the planned precaution indicator (right) for weak flash floods (n=293), strong flash floods (n=116) and river floods (n=1366). The X axis represents the implementation of, or the intention to implement effective precaution measures. The higher the value, the more effective measures have been implemented, or will be implemented in near future. The indicator was based on results from Kreibich et al., (2005) and Thieken et al., (2005)."

Additionally, we will elaborate on the justifications regarding H1 and rewrite certain text passages regarding H2. Suggested changes in the text:

"Affected people perceive a strong flash flood event as less likely than people who have been repeatedly affected by river floods. Thus, future disaster risk management in Germany may also take into account that individual threat perceptions of affected residents may differ from evidence-based hazard estimations, potentially leading to higher damage. Therefore, information campaigns in flash flood prone regions should be promoted, especially if various studies suggest an increase in severe flash flood events due to climate change and a change in weather patterns (e.g. Murawski et al., 2015)."

(...)

"First, the assessment methods of psychological items as well as the items themselves do not follow established psychological assessment routines or surveys, what potentially decreases data consistency and accuracy. Second, subtle effects on precautionary behaviour that are caused by psychological aspects may be covered by incidental effects, due to the small sample sizes. This is particularly true for strong flash floods, leading to high uncertainties."

Main point 8:

- The aim seems incorrectly described (16.11). Wasn't it the connection to precautionary behaviour that was explored, not that to motivation? (See H3)
- It would help if the key findings were foregrounded so that they were easier to pick out.
- The authors should avoid making assumptions of causal direction (17.5). It's possible that preparedness influences frequency of remembering, rather than visa-versa (see Harries, 2008: "Feeling secure or being secure").

Answer 8:

425 Thanks for the suggestions and hints. We will adapt misleading descriptions. Further, the main results will be highlighted.
We will alleviate the description of the overall result regarding the causal direction that was assumed. Suggested changes in
the text:

"Further, the usefulness of psychological indicators and individual psychological variables to predict precaution
behaviour was evaluated."

430 (...)

"Overall it is indicated that, in particular, the frequency of remembering an event is positively connected to
preparedness intentions."