

Peer-review report of

Traberg, C. S., Morton, T., & van der Linden, S. (2024). Counteracting socially endorsed misinformation through an emotion-fallacy inoculation. *advances.in/psychology*, 2, e765332. <https://doi.org/10.56296/aip00017>

Round 1

Dear Authors,

Thank you for submitting the outcomes of your innovative inoculation experiment to our special issue at advances.in/psychology. I had the privilege of engaging two experts from the field of misinformation to review your manuscript. As part of our routine process, I also personally examined the paper prior to reviewing their assessments.

The collective assessment recognizes numerous strengths in your research, notably its innovative use of an inoculation procedure, the rigor of its pre-registered analyses, and the engaging and coherent structure of the manuscript. Therefore, the feedback from the reviewers and myself aims to further enhance what is already a substantial contribution.

Both reviewers have called for an expansion in the introductory section to include greater theoretical context and a more explicit articulation of the hypotheses at that stage. They also recommend providing more comprehensive details in the methods section and in the reporting of your findings. Their evaluations include several specific and constructive suggestions, which I will not duplicate here, given their clarity and constructive nature.

In addition to these points, I have noted some aspects that I would like you to address.

METHODS:

I observed that there was no assessment for the reliability of your measures within the manuscript. Could you provide an estimate of reliability for each scale developed? Should the reliability fall below the expected standard for measures comprising three items, an alternative/complementary approach might involve analyzing responses at the item level.

Please move the participants section before the procedures section.

For the constructs of Third-Person Media Effects and Third-Person Consensus Effects, please specify the elements subtracted from each other to formulate the respective scales.

Certain demographic variables, such as social media usage, were measured but their results seem not to be reported in the manuscript. Incorporating this information into the section detailing the participants would enhance the description of the sample.

Similar to Reviewer 1, I appreciated the concept of depicting the inoculation text as a figure accompanied by a graphical explanation of its various components.

STATISTICAL REPORTINGS:

Please provide 95% CIs instead of standard errors both for in-text statistics and for the figures.

It is commendable that you have presented effect sizes for the majority of analyses. Ensure that this practice is consistently applied throughout the manuscript, including but not limited to the analyses mentioned on lines 321-322, for Hypothesis 4, and in other relevant sections. Additionally, please include ranges of effect size estimates for the various experimental factors within the abstract.

Several measures start with 1, but the graphs start with 0. Please correct this discrepancy where applicable, unless the scores have been recoded. However, recoding would not be ideal as it can complicate the interpretation of the results. If my observation is incorrect, kindly provide clarification.

For Hypothesis 3, I recommend initially presenting the interaction analyses, possibly followed by the contrasts examined through *t*-tests, as the current sequence is reversed. Generally, the rationale behind conducting these *t*-tests appears somewhat unclear, particularly when the two-way interaction was found to be non-significant, which seems inconsistent with the argument for a different hypothesis presented on lines 379-380 later in the text. Furthermore, considering the possibility that both Hypothesis 3 and Hypothesis 5 depend on similar analyses, it might be prudent to consolidate the reporting for these hypotheses.

It is commendable that you assessed discernment abilities within your study. However, I would value a detailed report on the experimental effects concerning the perception of neutral news (not just as part of a difference score), as this topic represents a contentious issue within the field and important information may get lost when using difference scores.

Please verify whether the variables assessed in Hypothesis 6 were introduced prior to the experimental manipulation or remained unaffected by it. If they were unaffected, examining these scores as potential moderators of the experimental effects could offer intriguing insights and create a stronger link to the other analyses (see comment by Reviewer 1). Should these variables have been influenced by the experiment, this outcome warrants statistical reporting and consideration within the analysis (and would be interesting in itself).

FORMATTING (mostly minor):

You generally follow APA7 closely, but please make sure to consistently capitalize all words for headings, except for words with less than 4 letters. Also, don't end headings with “.”

Some heading levels are also not correctly formatted (i.e., lines 238 and beyond).

Please present scale endpoints (e.g., “*Not at all*”) in italics.

Please make sure DOI numbers are presented for all journal articles in the reference list (some are missing).

There is a missing “to” in line 86.

Make sure to ensure there is a spacing between statistical letters, = (or similar), and estimates.

Effects under $p < .001$ should be described as such (not as $p = 0.000$).

There is a missing word in line 275-276.

Line 118: please change to “(i.e., the ‘third person media effect’; Sherrick, 2016)”

Line 187: “Participants WERE randomly assigned” (instead of “was”)

I recognize that implementing the suggested modifications, particularly the expansion of the introduction, may necessitate additional space. This often places authors in a challenging position where they might need to omit other crucial sections of their manuscript. To accommodate these changes, I am willing to grant an additional 1000 words for the revision. Please ensure that your revised manuscript is submitted within a month's time, by April 18. In your revision letter, kindly include a detailed itemized overview with excerpts that highlight the specific amendments made to the manuscript in response to each comment.

Thank you once again for contributing this significant piece to our special issue. I extend my best wishes for a pleasant beginning to the upcoming week.

Best,

Jonas R. Kunst

Editor-in-Chief

advances.in/psychology

Reviewer 1:

Thank you very much for providing me with the opportunity to review the manuscript titled “Inoculation reduces susceptibility to socially endorsed misinformation, but even inoculated individuals are impacted by social proof”. This preregistered work underscores the potential of inoculation in its many forms to effectively protect against misinformation and gains complexity by combining the intervention with social susceptibility. The introduction offers a very rich and detailed insight into inoculation against emotional fallacies and why social cues might add to misinformation vulnerability. The choice of constructs and their analyses are sound and well done. I want to highlight the authors scrutiny in illuminating whether the intervention only enhances general susceptibility towards all headlines or only against misinformation by employing the discernment measure. The discussion critically discusses the potential of the intervention by comparing effect sizes with other forms of inoculation. I applaud the authors for this good work and see it as a promising candidate for publication in this special issue. However I see potential in improving the structure and the story of the manuscript to make it a more impactful piece.

Introduction:

I like the clarity and rich literature in the theory; it is well written!

I think the immediate intro could benefit from a real-world example, where social cues/ the social group play a large role in judging misinformation, e.g. Schaffner & Luks 2018. Atm, the manuscript starts a bit to technical for my taste. In the same vein, I would like to see more explanation on the constellation of constructs. Why combine social cue susceptibility with emotional fallacy, with inoculation?

General suggestion: restructure the theory part into a short intro, and then paragraphs on the social identity/ social cues as facilitators for misinformation susceptibility including the third person effect followed by countermeasures (inoculation) – in its current form, I tend to get a little bit lost in the theory part

Theoretical integration of social identity as a susceptibility factor should be deepened, starting line 92. Instead of building the argument solely on former studies, I would suggest to start with theories like social identity and the identity-based model of political belief (van Bavel & Pereira, 2018) to explain, why social cues play a role in the processing of (mis-)information

L 140 Deepening the emotion-fallacy inoculation : this can be placed better within the theory section (when detailing inoculation) and should be connected to the susceptibility factor, since you preregistered an interaction effect between social cues and inoculation.

It sounds like social cues are only a risk factor, but they can be a resilience factor too; I think this could be more acknowledged in the text. Expanding the argument for social cues, as social cues can be “bad and good” regarding misinfo susceptibility: line 105. You could also refer to studies showing that misinformation corrections by other user in the comment section of postings show promise (Martel et al., 2021), as well as social norm nudges (Gimpel et al., 2021)

Small:

In my opinion, there are too many sources cited e.g. 1st sentence of the intro. I would suggest to reduce to two/ three most significant works to improve the readability of the text.

Line 69/70: is this an established distinction? “In contrast to fact-checks, corrections or retractions,”

L 187 grammar mistake were instead of was

Methods:

Unfortunately, I have no access to the data with the osf link provided on the submission portal. I can only access the preregistered hypothesis with the link provided in the manuscript. Although I believe that the authors did a responsible job in documenting their research, being unable to access the data and SOM constitutes an obstacle in reviewing this work.

L245 In my opinion, the phrasing of the variable *Perceived representation of true events of misleading headlines* is not intuitive and could be improved. Maybe keep it simple and differentiate between headline reliability and headline accuracy? I stumbled across this name already in the abstract L39.

L223 Since its only 6 headlines; I would suggest to place them in a table within the main text. This would break up the text and therefore improve the reading flow. Also I think it's a super important information to judge the potential of the intervention.

L 193 Maybe a Screenshot/ the Qualtrics graph as a figure would be more comprehensible than the written text. I think it would help the reading flow to have graphical pieces that introduces breaks in the text.

L280 Social Media Use/ News Consumption: I would suggest to only report variables in greater detail with all response possibilities if you report them later. Otherwise I would put them in a supplementary material.

Results:

L 297 I am not convinced of structuring the result section with the hypothesis. Since they have (yet) not been stated before, they do not facilitate the reading of the text as they are of course very technical. I would structure it in three parts: Inoculation effects, Social Cue effect, Interaction of Inoculation & Social Cues...something like that. Also, I think the hypothesis could be better connected to their first mentioning at the end of the introduction, e.g. by numbering them.

L 395 Third person **media** effect: I don't see the relevancy of this exploratory analysis for your paper // the research question. I would suggest to drop it. In my reading, the additional examination of the third person effect feels a little bit disconnected from the main idea.

L301 onward: I would suggest to report the findings in the same order as within the hypothesis.

L324 fig 1 contains a measure that has not yet been discussed in the analysis (consensus), also the wording of measures is not the same as above, e.g. "truth". My suggestion is to explain shortened forms in a note below the figure

L 172 "in both social cue conditions..." there is only one, right? Paired with either inoculation or control. This could be misunderstood here.

Discussion:

General: I would like to read for about the applicability / scalability of the intervention, but also ideas on social cues and how to (not) address them.

L418-426 Role of emotions in evaluating news: I would suggest to shorten this and/or place it in the theory section.

L449 In my opinion, this is a good place to refer to studies that use social influence to correct misinformation (e.g. Gimpel et al., 2021; Martel et al., 2021).

L455 I think the theory section on third person effect should be expanded a little more; especially in terms of introducing metacognition and its role in judging information (see e.g. Helen Fischer, Nadia Said)

L 462 I really like the comparison of effect sizes with other inoculation studies. This helps to understand the real potential & limitations of the intervention. However, I would like to see an improvement in terms of accessibility. Instead of just referring to other paper, what are the inoculation game effect sizes? Would be nice to have the sizes written there to be able to directly compare.

Reviewer 2:

The manuscript "Inoculation reduces susceptibility to socially endorsed misinformation, but even inoculated individuals are impacted by social proof" presents a novel exploration of how emotion-fallacy inoculation impacts susceptibility to misinformation, particularly in the context of social cues. By employing an experiment, the study explores the complex nature of emotional manipulation and social proof, uncovering the resilience and limitations of inoculation strategies against misinformation. This work offers a nice contribution to the field, expanding our understanding of the psychological defenses against misinformation in the digital age. However, several areas require refinement:

1. **Accessibility and Clarity:** The manuscript's introduction and discussions are, at times, not easily accessible, and the writing can be vague, complicating the reader's understanding of the study's core objectives and findings. I recommend being clear and direct about the research question and the place of this work in the literature.
2. **Research Question Elaboration:** The true research question is buried deep into the manuscript (until page 6) and is only briefly discussed. Expansion of this section is crucial to establish the study's purpose and significance.
3. **Emotions and Misinformation:** Given the pivotal role of emotions in the inoculation process, the discussion on how specific emotions influence misinformation discernment is surprisingly brief. A deeper analysis on this front would significantly bolster the manuscript's contribution to understanding emotional responses to misinformation. In fact, none of the dependent outcomes relate to emotions. If possible, adding an emotion-driven DV would enrich the findings.
4. **Inoculation Treatment Detail:** The manuscript provides an extensive and detailed account of the inoculation treatment, which might inadvertently prime readers about the inaccuracy of subsequent headlines. Comparative studies with similar-length treatments could validate this methodological approach.
5. **Misinformation items:** Detailed presentation of the headlines needs to be presented in the paper to explain how they relate to the treatments.

6. Finally, I recommend the authors revise the title to be more clear and cogent.

In conclusion, while the manuscript presents an interesting test of emotion-fallacy inoculation's effects on misinformation, addressing these areas would enhance its theoretical and empirical contributions.

Round 2

Dear Authors,

Thank you for your attention to the requested revisions. We believe the manuscript has significantly improved and is now suitable for publication. I suggest we change the title to "Counteracting Socially Endorsed Misinformation Through an Emotion-Fallacy Inoculation" to emphasize the novelty of your work and hope you agree with that. As noted by one reviewer, please ensure the analysis code and codebook are uploaded to the OSF. This must be completed before the manuscript can be published.

Congratulations on a commendable contribution to our special issue. I believe it will attract broad readership interest.

Best regards,

Jonas R. Kunst

Editor-in-Chief

Reviewer 1:

Thank you for the opportunity to review the revised manuscript "Counteracting Socially Endorsed Misinformation Through Inoculation."

Regarding my recommendations for the introduction, I am mostly satisfied with the revisions. I still believe the real-world example could be more tailored to the social nature of misinformation, but I will leave this to the authors' discretion.

The piece benefits significantly from the insertion of headlines. However, I suggest changing the order of the sections on emotional deception in misinformation and inoculation, so that the problem is stated first and the solution follows.

Overall, I greatly appreciate the changes made to the introduction. I am also very satisfied with the adaptations in the methods section. It is great to see the inoculation material and the headlines presented in a table. Additionally, I like the restructuring of the results section; it is much more comprehensible now.

I am satisfied with the changes made to the discussion, although there appears to be a small formatting error between the end of the discussion and the references. I was also happy to find the data in the open repository; however I would appreciate to see the analysis script and a codebook there too.

In conclusion, I believe this work makes a great contribution to the special issue of *Advances in Psychology*.

Reviewer 2:

I commend the authors for a great revised manuscript. The paper is in much better shape than before and clear on various grounds. I have a few final points before the decision of acceptance.

First, I am not sure where the figures are supposed to be located. The last two figures are at the very end but I don't think that that is where they are supposed to be.

Second, With regards to works that connect emotions and information processing, I recommend the authors to check out Suhay and Erisen (2018). This will be a nice contribution to the arguments provided on page 7.

Third, regarding my previous comment on the inoculation treatment, I meant the participants who could be potentially primed with the information provided in the treatments. As presented in Figure 1, the detailed information in the treatments are quite detailed and robust. I thus recommended including a few references that potentially had similar treatments (e.g., Carey et al. 2020).

References

Carey, John, et al. (2020) The effects of corrective information about disease epidemics and outbreaks: Evidence from Zika and yellow fever in Brazil. *Sci. Adv.* **6**, eaaw7449 [10.1126/sciadv.aaw7449](https://doi.org/10.1126/sciadv.aaw7449)

Suhay, E. and Erisen, C. (2018), The Role of Anger in the Biased Assimilation of Political Information. *Political Psychology*, 39: 793-810. <https://doi.org/10.1111/pops.12463>