

Replication of a Research Claim from Gerhold (2020) from PsyArXiv Preprints

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OSF Project Link: <https://osf.io/a7h9n/>

Preregistration Link: <https://osf.io/ms2ra/>

Final Report

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Replication of a research claim from Seaton et al. (2010), from the Journal of Environmental Psychology

Claim Summary

The claim selected for replication from Gerhold (2020) is that women are more concerned about COVID-19 than men. This reflects the following statement from the paper's abstract: "Women are more concerned about COVID-19 than men." This claim was tested by comparing agreement to the statement "The COVID-19 (Coronavirus SARS-CoV-2) worries me" between men and women, measured using a 5-point Likert Scale. Further details are not described in the original manuscript. The authors found that women are more worried about COVID-19 in general than men (women=68.2%, men=55.7%, $p < .01$). We attempt to replicate the focal claim made by Gerhold (2020) by using data collected by Fetzer et al. (2020). Fetzer et al.'s data set also contains information on worries, as well as gender, age, and other demographic information. The focal claim was tested using a Student's independent samples t-test. Given that the original article did not propose a directional hypothesis, the replication attempt replies on a two-tailed test.

Replication Criteria

Criteria for a successful replication attempt for the SCORE project is a statistically significant effect ($\alpha = .05$, two tailed) in the same pattern as the original study on the focal hypothesis test (H^*). The hypothesis to be tested is: Women will express more concern about COVID-19 than men. As such, the inference criteria that will be used to assess whether the focal claim replicates will be the p -value derived from a t-test that examines if females and males differ with regard to "mh_anxiety_1" scores. Specifically, a p -value less than .05 will indicate that a gender difference exists. The respective female average score must also be greater than the respective male average score.

Replication Result

The replication included 10,071 individuals (5,138 males and 4,933 females) in the analytic sample to reach the requirements for Stage 1 data collection (see Section 13 of preregistration form at <https://osf.io/ms2ra/>). An independent samples t-test revealed that the 4,933 females (M

$M = 3.08$, $SD = 1.11$) exhibited significantly higher concern regarding COVID-19 than the 5,138 males ($M = 2.89$, $SD = 1.14$), $t(10,069) = 8.2527$, $p < .001$ ($p = 1.742986e-16$). Thus, this replication of the claim was successful according to the SCORE criteria.

Unfortunately, we are unable to produce a Cohen's d for the original result due to sparse reporting in the original article. Specifically, because respective men and women averages were not reported in the original article and the replication team does not have access to the original study's raw data, a Cohen's d that captures the men versus women mean difference with regard to "mh_anxiety_1" cannot be estimated. However, according to the power analysis conducted by the SCORE team (see "POWER_Gerhold_covid_Azg9.md" at <https://osf.io/aynsm/>), the estimated Cohen's d for the original study's focal claim is $d = 0.1464$., which indicates that women experienced greater worry than men. The replication yielded a positive Cohen's d in the focal test ($d = 0.164609$), corresponding to an effect in the same pattern compared to the original study.

Methods & Materials

The following materials are publicly available on the OSF site (see <https://osf.io/a7h9n/>):

- The completed and approved **preregistration form** that describes all aspects of the replication attempt, downloaded from the OSF, and provided as a PDF file. Filename:
 - Gerhold_covid_Azg9_0948 (Tagat & Kapoor_Field) Preregistration.pdf
- The **preregistration form with commentary** from the author of the original study, Lars Gerhold. This file is provided as .docx file. Filename:
 - Gerhold_0948_prereg_commentary.docx
- The **power analysis** materials, provided as a zip file. Filename:
 - POWER_Gerhold_covid_Azg9.zip
 - This zip folder contains three separate file, which together can be used to replicate the required sample size estimation for the replication attempt.

The filenames are:

- Gerhold_covid_Azg9_power_vars.tsv
- POWER_Gerhold_covid_Azg9.md
- POWER_Gerhold_covid_Azg9.Rmd

- A **data analysis script**, provided as a text file. This STATA script accesses the Fetzer et al. (2020; see <https://osf.io/3sn2k/>) data set and prepares the replication data set.
Filename:
 - code_replicate.txt
- The **replication data set**, provided as a .csv file. Filename:
 - data_gerhold.csv
- A **data dictionary** for every variable in the replication dataset, provided as an Excel file.
Filename:
 - DataDictionary_Gerhold.xlsx
- A **data analysis script**, provided as an .R file. This file conducts the replication analysis.
Filename:
 - Gerhold_covid_Azg9_0948_final.R
 - The entire replication analysis can be replicated by running this data analysis script.
- A **data analysis script**, provided as an .R file. This file conducts the replication analysis that was piloted on a random 5% sample of the replication data set. Filename:
 - Gerhold_covid_Azg9_0948_test.R
 - Note that this script is *not* intended to replicate the focal claim.

Deviations from the Original Study

The main deviation from the original study is that the data on worries in Fetzer et al. (2020) does not explicitly ask for worries regarding COVID-19. In the original study, the question asks to what extent respondents agree with the statement: “The COVID-19 (Coronavirus SARS-CoV-2) worries me.” In the replication dataset, respondents were asked the extent to which the following statements apply to them: (1) “I am nervous when I think about current circumstances” and (2) “I am worried about my health.” Apart from this, there is no other deviation from the original study.

Deviations from the Preregistration

NA

Replication Dataset Access/License Information

We are thankful to Fetzer et al. for making their data set, which facilitated the current replication analysis, freely available via their OSF repository (see <https://osf.io/3sn2k/>). According to the repository, researchers can download and use the data set if they agree to comply with the European Union's GDPR requirements and a set of other requirements outlined on the repository homepage. In addition, according to the Fetzer et al.'s <https://covid19-survey.org/> website, the anonymized data is available for non-commercial research use (License: CC-By Attribution 4.0 International). Thus, the data can be shared on our project page (see <https://osf.io/a7h9n/> with attribution to Fetzer et al.

Data Overlap Disclosure

This statement confirms that there was no overlap between the original and replication datasets. Specifically, the two datasets were independent.

Citations

Fetzer, T., Witte, M., Hensel, L., Jachimowicz, J.M., Haushofer, J., Ivchenko, A., Caria, C., Reutskaja, E., Roth, C., Fiorin, F., Gomez, M., Kraft-Todd, G., Goetz, F., & Yoeli, E.. Global Behaviors and Perceptions in the COVID-19 Pandemic.

<https://doi.org/10.31234/osf.io/3kfmh>

Fetzer, T., Witte, M., Hensel, L., Jachimowicz, J., Haushofer, J., Ivchenko, A., ... Yoeli, E. (2020, April 16). Perceptions of an Insufficient Government Response at the Onset of the COVID-19 Pandemic are Associated with Lower Mental Well-Being.

<https://doi.org/10.31234/osf.io/3kfmh>

Gerhold, L. (2020, March 25). COVID-19: Risk perception and Coping strategies.

<https://doi.org/10.31234/osf.io/xmpk4>