Reproducing the analysis of Pfattheicher et al., (2020)

Kristina Arevalo[1]

[1] Brooklyn College of the City University of New York

Author Note

Kristina Arevalo, Department of Psychology, Brooklyn College of the City University of New York.

The authors made the following contributions. Kristina Arevalo: .

Correspondence concerning this article should be addressed to Kristina Arevalo, 1126 E 72nd St. E-mail: krisarevalo29@gmail.com

Abstract

A reproduction of the analysis for Study 4 from Pfattheicher et al., (2020).

Keywords: COVID-19, pandemic, face masks, empathy

Reproducing the analysis of Pfattheicher et al., (2020)

Pfattheicher, Nockur, Böhm, Sassenrath, and Petersen (2020) wanted to know if physical distancing and the wearing of face masks are due to empathy for people most vulnerable to the virus. In study 4, state empathy was assessed after each participant was assigned to either an empathy condition, an information-only condition, or a control condition. This was to prove empirically that higher levels of state empathy are directly related to the motivation to adhere to COVID-19 measures.

Methods

Participants

This study had a total of 1,526 participants; 47.2% female; age: M = 34.71 years, SD = 12.09) and was run in Germany between June 23 and June 26, 2020. Each participant was randomly assigned to one of three conditions: the information-only condition (n = 492), the empathy condition (n = 500), or the control condition (n = 534).

Procedure

Participants in the information-only condition read an informative text from the Robert Koch Institute detailing facts about the coronavirus, how it is transmitted, and that face masks can prevent the spread of the disease. Participants in the empathy condition read a text of approximately similar length, in which a woman with a rare immune disease reported having had a coronavirus infection, detailed how seriously affected she was, and stated that she did not like it when people met others without wearing a face mask. In the control condition, no text and information were given, resembling a situation of no intervention. After the condition manipulations, participants responded to three items assessing state empathy. The central dependent variable was motivation to wear a face mask, which was measured with one item: “During the coming days, I will wear a face mask as often as possible when I meet other people.”

Results

Read and Clean the Data

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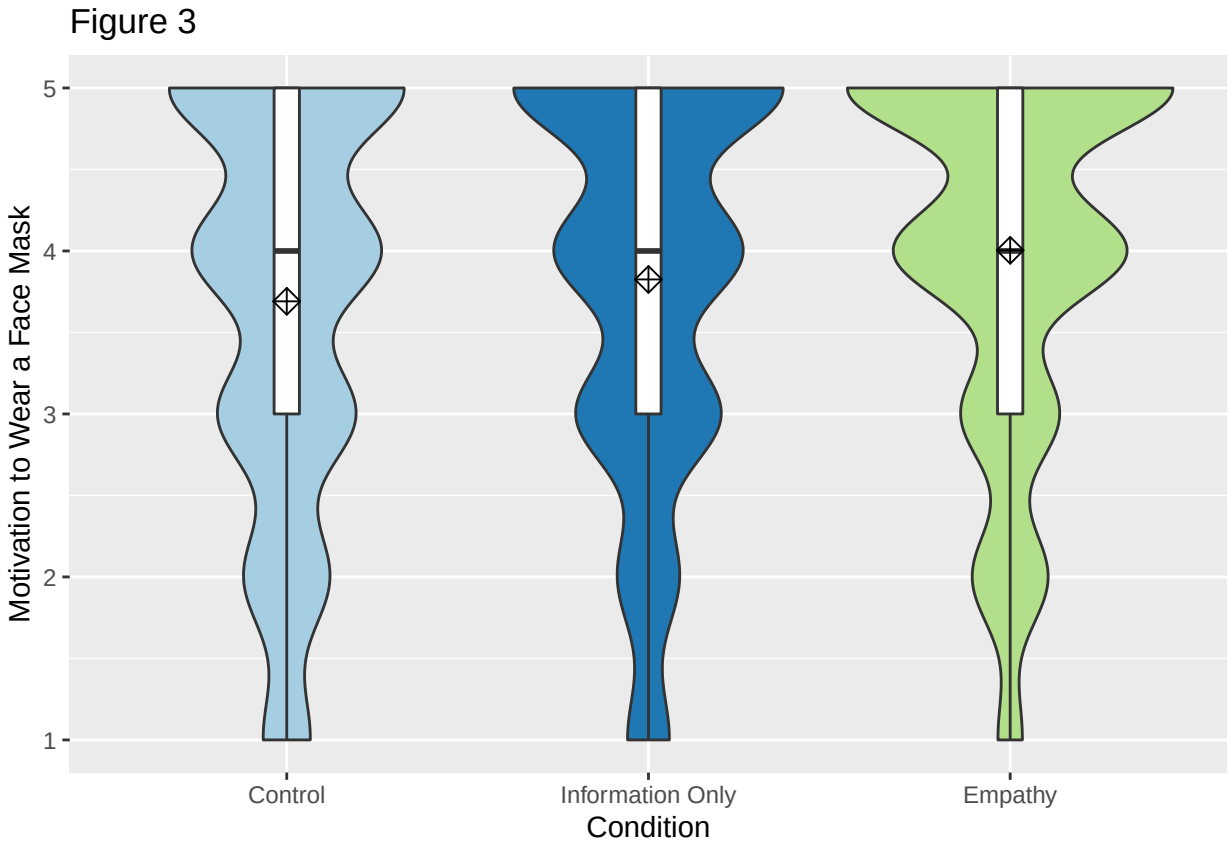
Independent Sample t-tests

One-way ANOVA

Figure 3 Replication



Papaja Reporting

I found that participants in the empathy condition reported significantly higher state-empathy levels compared with the information-only condition,$\Delta M = 1.89$, 95% CI

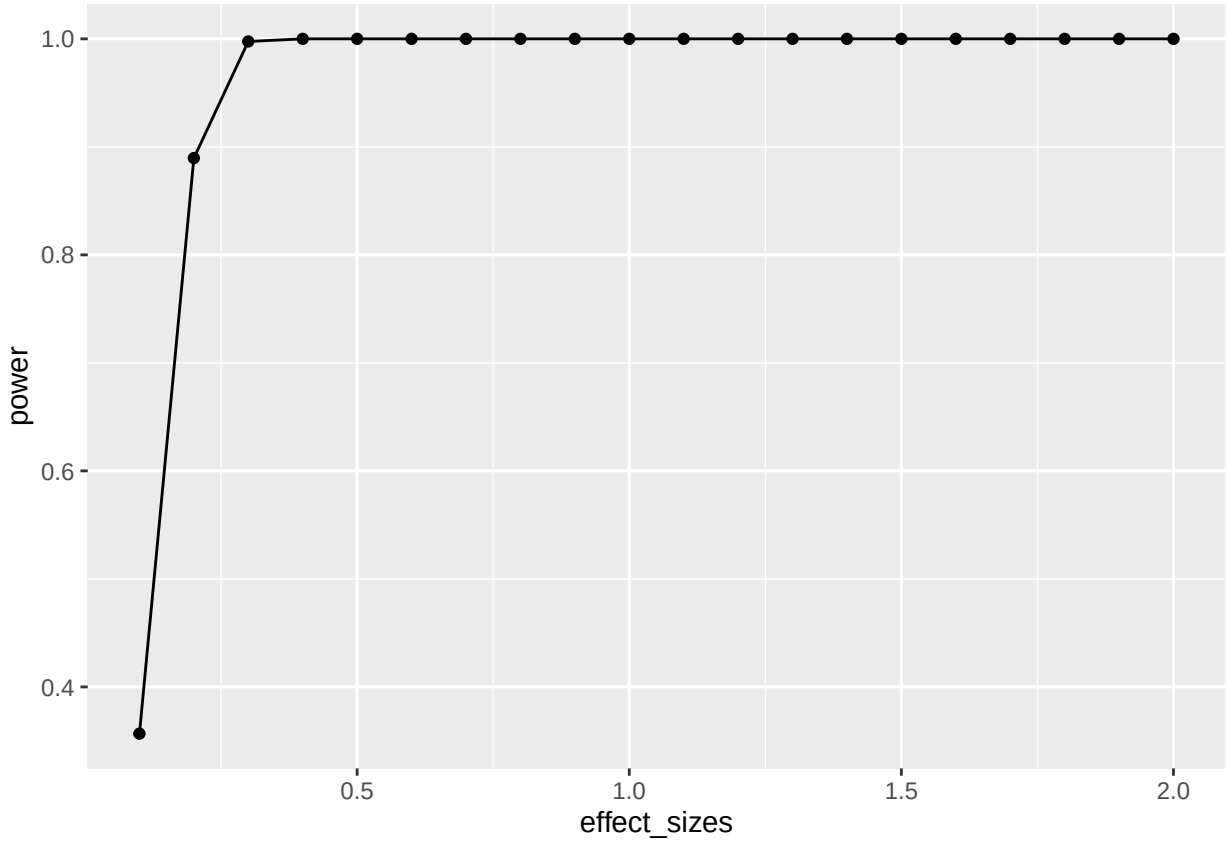
[1.77, 2.00], $t(990) = 31.22$, $p < .001$, and compared with the control condition $\Delta M = 1.93$, 95% CI [1.82, 2.05], $t(1,032) = 32.41$, $p < .001$. The information-only and the control conditions did not differ significantly, $\Delta M = -0.05$, 95% CI [−0.17, 0.08], $t(1,024) = -0.76$, $p = .448$. A one-way ANOVA showed that the motivation to wear a mask also differed between conditions, $F(2, 1,523) = 8.97$, $MSE = 1.41$, $p < .001$, $\hat{\eta}^2_G = .012$

Discussion

The re-analysis successfully reproduced the analysis reported by Pfattheicher et al., (2020). In study 4 of their experiment, they conducted several t-tests and a one-way ANOVA which were all successfuly reproduced. In the following section, I show an example of completing a simulation based power analysis for this design.

Simulation-based power analysis

The design was a between subject design with 1,526 subjects. This power curve applies for independent-sample t-tests with n=508. Because the groups were unbalanced, a harmonic mean of 508 was computed. Pfattheicher et al. (2020) reported “With this sample size, we are able to detect effects (fs) greater than .09 with high statistical power (power = .90; alpha = .05, two- tailed).” I believe that based on this power analysis, their study was not under powered.



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66 ## References

67 Pfattheicher, S., Nockur, L., Böhm, R., Sassenrath, C., & Petersen, M. B. (2020).
68 The emotional path to action: Empathy promotes physical distancing and wearing of face
69 masks during the COVID-19 pandemic. *Psychological Science*, *31*(11), 1363–1373.