The relationship between trust in institutions and use of news media sources in the early phase of the COVID-19 pandemic

An analysis based on the GESIS Panel Special Survey on the Coronavirus SARS-CoV-2 Outbreak in Germany

R User

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Research question

We want to investigate whether the sources of information that people have used for getting current information about the Corona virus are related to their trust in different groups and institutions.

Methods

We used R version 4.1.2 (2021-11-01) (R Core Team, 2021) for all data wrangling and analyses.

Sample

The data we use comes from the *Public Use File (PUF) of the GESIS Panel Special Survey on the Coronavirus SARS-CoV-2 Outbreak in Germany* (GESIS Panel Team, 2020). The data set includes data for $N = 3765$ respondents, of which $n = 1832$ were female and $n = 1933$ were male.

Measures

The variables we are interested in for this analysis are the ones measuring trust in 1) the federal government, 2) the World Health Organization (WHO), and 3) scientists in dealing with the Corona virus as predictors, and the use of a) national public television or radio and b) Facebook as sources of current information about the Corona virus.

The predictors assessing trust were measured on a 5-point scale ranging from "1 - Do not trust at all" to "5 - Entirely trust," with the additional response option "Don't know" (those responses were excluded from our analyses). The two outcome variables were binary items. Respondents could either indicate that they used the respective source (in our case: national public television or radio and Facebook) for getting current information about the Corona virus or not. All data wrangling was done with the `dplyr` package (Wickham et al., 2021) which is part of the `tidyverse` (Wickham et al., 2019).

Results

Descriptive statistics

Table 1 shows the descriptive statistics for the trust variables.

Table 1: Descriptive statistics

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Pctl(75)	Max
Trust in federal government	2,761	3.66	0.99	1.00	3.00	4.00	5.00
Trust in WHO	2,731	4.03	0.91	1.00	4.00	5.00	5.00
Trust in scientists	2,728	4.26	0.76	1.00	4.00	5.00	5.00

Note: The table was produced with the `stargazer` package (Hlavac, 2018).

Correlations

Table 2 shows the correlations between the perceived personal risk variables. Correlations were computed using the `corr` package (Kuhn et al., 2020).

Table 2: Correlations between the trust variables

Measure	1	2	3
Trust in federal government	—	—	—
Trust in WHO	.47	—	—
Trust in scientists	.35	.44	—

Regression analysis

We use a logistic regression model to explore how the use of 1) national public television and radio and 2) Facebook as sources of current information about the Corona virus are predicted by trust in the federal government, the WHO, and scientists in general.

The general formula for a logistic regression model with three predictors is $Pr(Y_i = 1|X_i) = \frac{exp(\beta_0 + \beta_1 X_i + \beta_2 X_2 + \beta_3 X_3)}{1 + exp(\beta_0 + \beta_1 X_i + \beta_2 X_2 + \beta_3 X_3)}$

Accordingly, in our case, the formulas for the two models are:

$$\log\left[\frac{P(\text{info\_nat\_pub\_br} = 1)}{1 - P(\text{info\_nat\_pub\_br} = 1)}\right] = \beta_0 + \beta_1(\text{trust\_government}) + \beta_2(\text{trust\_who}) + \beta_3(\text{trust\_scientists}) \tag{1}$$

$$\log\left[\frac{P(\text{info\_fb} = 0)}{1 - P(\text{info\_fb} = 0)}\right] = \beta_0 + \beta_1(\text{trust\_government}) + \beta_2(\text{trust\_who}) + \beta_3(\text{trust\_scientists}) \tag{2}$$

Note: To create the formulas for our models, we used the `equatiomatic` package (Anderson et al., 2021).

Table 3 shows the results of the two logistic regression models.

Table 3: Results of the two logistic regression models

	Dependent variable:	
	Public broadcasting as info source	Facebook as info source
	(1)	(2)
Trust in federal government	0.528***	−0.193***
	(0.066)	(0.052)
Trust in WHO	−0.014	0.066
	(0.075)	(0.061)
Trust in scientists	0.167**	−0.133**
	(0.080)	(0.065)
Constant	−0.224	−0.467*
	(0.325)	(0.269)
Observations	3,027	3,027
Log Likelihood	−927.508	−1,459.690
Akaike Inf. Crit.	1,863.016	2,927.379
Note:	*p<0.1; **p<0.05; ***p<0.01	

Note: The table was produced with the `stargazer` package (Hlavac, 2018).

Discussion

Trust in the federal government and trust in scientists emerged as significant positive predictors of using national public broadcasting as a source of current information about the Corona virus, meaning that people

who show higher trust in these institutions are more likely to use this source of information. Contrarily, these two trust measures negatively predicted the use of Facebook as a source of information, meaning that individuals with lower levels of trust in the federal government and scientists are more likely to use Facebook as an information source. These results show that trust in institutions and information behavior are related.

References

Anderson, D., Heiss, A., & Sumners, J. (2021). *Equatiomatic: Transform models into LaTeX equations.* https://CRAN.R-project.org/package=equatiomatic

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Kuhn, M., Jackson, S., & Cimentada, J. (2020). *Corrr: Correlations in r.* https://CRAN.R-project.org/package=corrr

R Core Team. (2021). *R: A language and environment for statistical computing.* R Foundation for Statistical Computing. https://www.R-project.org/

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Reproducibility information

- R version 4.1.2 (2021-11-01), `x86_64-w64-mingw32`

- Running under: `Windows 10 x64 (build 18362)`

- Matrix products: default

- Base packages: base, datasets, graphics, grDevices, methods, stats, utils

- Other packages: corrr 0.4.3, dplyr 1.0.6, equatiomatic 0.3.0, forcats 0.5.1, ggplot2 3.3.3, purrr 0.3.4, readr 1.4.0, stargazer 5.2.2, stringr 1.4.0, tibble 3.1.2, tidyr 1.1.3, tidyverse 1.3.1

- Loaded via a namespace (and not attached): assertthat 0.2.1, backports 1.2.1, broom 0.7.6, cellranger 1.1.0, cli 2.5.0, colorspace 2.0-1, compiler 4.1.2, crayon 1.4.1, DBI 1.1.1, dbplyr 2.1.1, digest 0.6.27, ellipsis 0.3.2, evaluate 0.14, fansi 0.4.2, fastmap 1.1.0, fs 1.5.0, generics 0.1.0, glue 1.4.2, grid 4.1.2, gtable 0.3.0, haven 2.4.3, highr 0.9, hms 1.1.0, htmltools 0.5.1.1, httpuv 1.6.1, httr 1.4.2, jsonlite 1.7.2, knitr 1.33, later 1.2.0, lifecycle 1.0.0, lubridate 1.7.10, magrittr 2.0.1, mime 0.10, modelr 0.1.8, munsell 0.5.0, pillar 1.6.1, pkgconfig 2.0.3, promises 1.2.0.1, R6 2.5.0, Rcpp 1.0.6, readxl 1.3.1, reprex 2.0.0, rlang 0.4.11, rmarkdown 2.11, rstudioapi 0.13, rvest 1.0.0, scales 1.1.1, shiny 1.6.0, stringi 1.6.2, tidyselect 1.1.1, tools 4.1.2, utf8 1.2.1, vctrs 0.3.8, withr 2.4.2, xfun 0.23, xml2 1.3.2, xtable 1.8-4, yaml 2.2.1