

## Article

# Can Information about Pandemics Increase Negative Attitudes toward Foreign Groups? A Case of COVID-19 Outbreak

Piotr Sorokowski <sup>1,\*</sup>, Agata Groyecka <sup>1</sup>, Marta Kowal <sup>1</sup>, Agnieszka Sorokowska <sup>1</sup>, Michał Białek <sup>1</sup>, Izabela Lebuda <sup>1</sup>, Małgorzata Dobrowolska <sup>2</sup>, Przemysław Zdybek <sup>3</sup> and Maciej Karwowski <sup>1,\*</sup>

<sup>1</sup> Institute of Psychology, University of Wrocław, 50-527 Wrocław, Poland; agata.groyecka@gmail.com (A.G.); marta7kowal@gmail.com (M.K.); sorokowska@gmail.com (A.S.); mihalbialek@gmail.com (M.B.); izalebuda@gmail.com (I.L.)

<sup>2</sup> Institute of Education and Communications Studies, Silesian University of Technology, 44-100 Gliwice, Poland; malgorzata.dobrowolska@polsl.pl

<sup>3</sup> Institute of Psychology, University of Opole, 45-001 Opole, Poland; pzdybek@uni.opole.pl

\* Correspondence: sorokowskipiotr@yahoo.co.uk (P.S.); maciej.karwowski@uwr.edu.pl (M.K.)

Received: 16 April 2020; Accepted: 3 June 2020; Published: 16 June 2020



**Abstract:** Pathogen threat can translate into a willingness to distance oneself from others on a psychological level. Building on this notion, we predicted that the ongoing coronavirus pandemic can affect attitudes toward foreign nationalities. We explored the intergroup consequences of the current epidemiological situation in two studies involving a total of 652 participants. In correlational Study 1, we showed a positive relationship between media exposure in the United Kingdom (UK) and in Poland, and prejudice to four foreign nationalities. Study 2 showed that negative affect toward Italians (i.e., a nation struggling with the most severe COVID-19 outbreak at the time of the study) was indirectly predicted by exposure to news about coronavirus through the increase in anxiety, but this effect was not observed when a generalized measure of prejudice was considered. Overall, our studies revealed that prejudice and anxiety are sensitive to the current epidemiological situation, and our findings suggest that the outbreak of COVID-19 may translate into severe social consequences and increased psychological distancing to nations most affected by the pandemic.

**Keywords:** COVID-19; SARS-COV-2; coronavirus; pandemic; prejudice; attitudes; social consequences of coronavirus

## 1. Introduction

Technological progress transfers to environmental change, and directly impacts society and human health. It can also result in global outbreaks of infectious diseases; indeed, the world is currently witnessing an outbreak of a novel coronavirus, SARS-COV-2, causing the COVID-19 disease. The virus originated in Wuhan, China at the end of 2019 [1–4]. The COVID-19 pandemic has a number of global effects [5,6], and countries all over the world are seeking ways to mitigate its negative consequences by implementing an integrated sustainable-development approach. The pandemic is catastrophic for sustainable development [7] in all areas starting from the economy of each country, through decreased mobility and nonexistent tourism, and to the social aspects, including long-term health problems in those affected by the disease and losses of the loved ones. It is also likely that the COVID-19 outbreak has psychological consequences [8–13], and it seems crucial to identify them to properly address these problems in addition to directly tackling the disease spread.

Negative attitudes toward foreign groups, i.e., prejudice, can be predicted by various factors, including history of conflict, current competition over limited resources, or lack of knowledge about a certain group [14–16]. Prejudice relates to an affective component of attitudes and, along with stereotypes (cognitive components) and discrimination (behavioral component), describes barriers in intergroup relations [17]. Although prejudice is often shared and maintained for years, it is not necessarily resistant to sudden events or acute environmental changes [18], and we predict that the COVID-19 outbreak can be a significant enough factor to influence social attitudes toward outgroups.

According to behavioral-immunology theories [19–21], human attitudes and behaviors are likely to be shaped by pathogen stress. Authoritarianism or conformism can be seen as elements of the antipathogen behavioral immune system, just as aversive behaviors and attitudes toward “outgroups” can, especially if these individuals are seen as unhealthy [21]. In countries with low parasite stress, general openness to novelty (including foreigners) tends to be higher than in those with high parasite stress [22]. Moreover, experimentally primed disease salience can not only boost conformism [20,23], but also xenophobia and ethnocentrism [24–26]. In the study of Faulkner and colleagues [24], manipulation that involved the activation of thinking about disease in general elicited less favorable attitudes specifically toward unfamiliar (but not familiar) nationalities. However, another study [25] provided evidence for a link between pathogen stress, and general ingroup favoritism and ethnocentrism. All these studies clearly suggested a link between evolved disease-avoidance mechanisms and discriminatory attitudes.

Except for China, the source of the COVID-19 disease was foreign in all countries. Therefore, we conducted two studies that addressed the psychological consequences of the current epidemiological situation in the context of intergroup relations. More specifically, we assessed whether the threat of SARS-CoV-2 affected prejudice toward different nationalities, as predicted by behavioral immunology. In correlational Study 1, we examined the relationship between media exposure and attitudes toward foreigners. In longitudinal Study 2, we tested whether the search for information about the pandemic predicted the level of prejudice. The present studies were preregistered, and materials used in both studies were placed at the project’s Open Science Framework (OSF) sites (see <https://osf.io/3xyuj> for the first study and <https://osf.io/9cjqx> for the second study). Access to our database is available via the following link: <https://figshare.com/s/e52afd0bad96e47f0de6>. Study protocols were approved by the Ethics Committee at the Institute of Psychology, University of Wrocław.

## 2. Study 1

We based Study 1 on two subsamples, Poles and Britons, to achieve a greater extent of generalizability of our findings. We did not expect differences between them in terms of the main effects of interest. Rather, we assumed that effects found in both samples, British (well-represented in psychological research) and Polish (much less represented), would be more reliable. We examined whether media exposure (with most news currently being related to the COVID-19 outbreak) predicted the level of prejudice toward four nationalities (i.e., Chinese and Italian, representing one culturally close (and thus familiar) and one culturally distant (unfamiliar) nation, currently identified as those struggling with a massive outbreak of the virus, and Hungarian and Mongolian, representing one culturally close and one culturally distant nation not affected by the epidemic to such a great extent as of the date of the conduction of the studies). The choice of the target nations followed the findings of Faulkner et al. [24] suggesting that the different effects of pathogen threat on countries depend on their (un)familiarity to the participants. China and Italy differentially vary from Britons and Poles by geographical location, predominant religion, and cultural norms [27–29]. Mongolians and Hungarians were chosen as their COVID-19-unaffected counterparts.

## 2.1. Materials and Methods

### 2.1.1. Participants

The survey sample consisted of 410 participants (204 Poles aged between 18 and 66 years old ( $M = 38.80$ ,  $SD = 11.91$ ), 53% women, and 206 Britons aged between 18 and 76 years old ( $M = 39.87$ ,  $SD = 12.94$ ), 50% women). Participants were recruited through an external survey company. Respondents in such survey panels are typically very diverse groups, differing in age, education, residence, etc., but in this study, we did not control for the representativeness of the employed sample. All participants provided informed written consent to take part in the study, and were compensated for participation.

### 2.1.2. Procedure

Subjects were invited to participate in two seemingly unrelated studies. In the first, they were presented with questions regarding the frequency of their mass-media attendance. Participants estimated how much time, on an average day, they spent on watching television, using the Internet, listening to the radio, browsing, and reading or listening to the news. We computed a single measure of news exposition (average mass-media-attendance time) and used it in all subsequent analyses.

In the second part of the study, we measured the participants' attitudes toward four nationalities (i.e., Hungarian, Italian, Mongolian, and Chinese), presented in a random order. We used the Bogardus social-distance scale [30,31], a measure commonly used to assess prejudice [32,33] that consists of three questions (i.e., whether participants would mind if a member of a given group was their co-worker, neighbor, and a part of their family). Participants responded to each question on a seven-point Likert scale (ranging from 1 = definitely would not mind to 7 = definitely would mind). We averaged the scores across the three questions about a given nationality to obtain four single measures of social distance toward Hungarians, Italians, Mongolians, and the Chinese.

## 2.2. Results

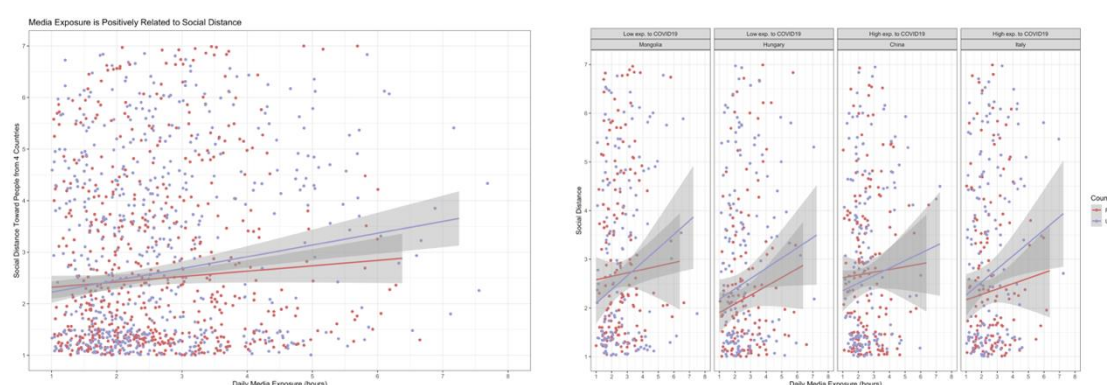
To examine possible differences in prejudice toward the four nationalities, we first conducted repeated-measures analysis of variance (ANOVA), with participants' country as a between-subject factor. We observed statistically significant differences in overall social distance,  $F(3, 1224) = 11.35$ ,  $p < 0.001$ ,  $\eta^2 = 0.027$ , as well as the interaction of participants' country  $\times$  assessed nationality,  $F(3, 1224) = 9.8$ ,  $p < 0.001$ ,  $\eta^2 = 0.022$ . More specifically, the declared social distance toward the Chinese ( $M = 2.66$ ,  $SD = 1.88$ ) was found to be higher ( $p < 0.001$ ) than the distance toward Hungarians ( $M = 2.33$ ,  $SD = 1.75$ ) and Italians ( $M = 2.51$ ,  $SD = 1.86$ ,  $p = 0.015$ ), but it did not significantly differ from the distance toward Mongolians ( $M = 2.62$ ,  $SD = 1.88$ ) ( $p = 0.50$ ). The distance toward Italians was significantly higher than that toward Hungarians ( $p < 0.001$ ). Poles and Britons did not differ in terms of their declared social distance ( $M = 2.49$ ,  $SD = 1.64$  and  $M = 2.57$ ,  $SD = 1.72$ , respectively,  $F(1, 408) = 0.28$ ,  $p = 0.60$ ,  $\eta^2 = 0.001$ ).

Our main analysis examined if exposure to the media and more intense media attendance were related to the social distance to the four tested nationalities. Given that our dataset had a clustered structure (participants assessed the social distance toward four nationalities), we used multilevel regression. More specifically, the social distance toward others was regressed into participants' media exposure and their country, controlling for participants' sex and age. Additionally, to control for potential differences in the distance toward specific nationalities, the model included instrumental variables describing the nations toward which the social distance was measured (Mongolians served as a reference category). To facilitate interpretability, both continuous variables (media exposure and age) were included in the model in a standardized form, while dichotomous variables were introduced in a centered form. Therefore, in the case of media exposure and age, the reported coefficients might be interpreted as standardized regression coefficients (coefficients), while for the remaining variables, the coefficients might be interpreted as Cohen's  $d$ , i.e., a standardized difference between two groups (Table 1).

**Table 1.** Multilevel model summarizing predictors of social distance toward four tested nationalities.

Predictor	B (SE)	95% CI	p
Intercept	2.54 (0.09)	2.37, 2.70	<0.001
Media	0.18 (0.04)	0.10, 0.26	<0.001
Participants' country (0 = PL, 1 = UK)	0.07 (0.08)	−0.08, 0.22	0.336
Sex (0 = man, 1 = women)	−0.32 (0.10)	−0.53, −0.12	0.002
Age	0.006 (0.05)	−0.09, 0.11	0.90
Nation (Mongolians = reference category)			
Hungarians	0.29 (0.10)	0.09, 0.49	0.004
Chinese	−0.04 (0.10)	−0.16, 0.24	0.698
Italians	0.10 (0.10)	−0.09, 0.31	0.290

Consistent with our expectations, media exposure was positively correlated with social distance to foreigners (Figure 1, left panel). Women were found to be less distanced than men were. We did not observe a statistically significant effect of the nation toward which the distance was measured; nor exploratorily tested and omitted here is the interaction of participants' country (PL, UK) x nation (see Figure 1, right panel).

**Figure 1.** Media exposure was positively related to social distance toward four tested nationalities (left panel), and this effect was consistent across four tested nations.

### 3. Study 2

Study 1 provided evidence for the association between media attendance and prejudice; however, it did not ensure that this relationship could be attributed to coronavirus exposure, and the mechanism behind this relationship remains unknown. To extend these initial findings, we conducted Study 2, where we tested whether exposure to information about COVID-19 on Day 1 was positively related to anxiety level and feelings toward different nationalities on Day 2.

#### 3.1. Materials and Methods

##### 3.1.1. Participants

The sample consisted of 242 university students (88% women) recruited from two large cities (i.e., Wrocław, Warszawa) on Day 1 (T1), among whom 146 (85% women) completed the study on Day 2 (T2). All participants provided informed written consent to take part in the study, and were not compensated for their participation.

##### 3.1.2. Procedure

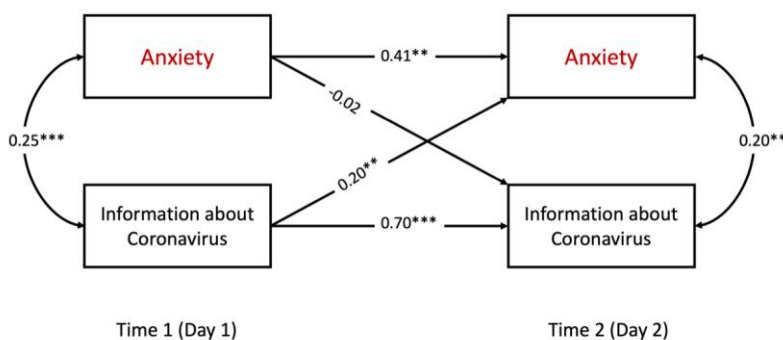
Participants were invited to participate in a diary study. On Day 1 (T1), participants were asked a number of questions regarding their activity during the university closure. Among these, there were two questions about their exposure to information about coronavirus: how intensively they

searched for information about coronavirus, and how much time they spent talking about coronavirus (the participants' used a seven-point Likert scale, ranging from 1 = I did not do it at all to 7 = I did it very intensively). We averaged the scores across the two questions to obtain a single measure of exposure to information about coronavirus (Day 1  $\alpha = 0.72$ , Day 2  $\alpha = 0.82$ ). Moreover, we measured participants' anxiety level (i.e., how often they felt afraid, nervous, and concerned on that day) using a seven-point Likert scale (ranging from 1 = not at all to 7 = very often). Again, we averaged scores across the three questions to obtain a single measure of participants' anxiety level (Day 1  $\alpha = 0.79$ , Day 2  $\alpha = 0.76$ ). The same questions were repeated on Day 2 (T2), during which participants additionally reported their feelings toward nine nationalities (i.e., Hungarians, Mongols, Italians, Germans, Chinese, Jews, Russians, Poles, and Americans). These nationalities expanded the variety of the target groups from Study 1 in an exploratory and arbitrary manner in order to gain a broader view of the effect of COVID-19 on prejudice toward outgroups. Feelings were reported using slider questions ranging from 0—"cold, negative", to 100—"warm, positive" (the so-called "feeling thermometer", a measure used to capture the affective component of intergroup relations [33–36]).

### 3.2. Results

#### 3.2.1. Anxiety and Information about Coronavirus

Exposure to coronavirus-related news and declared anxiety were correlated at both T1 and T2. We conducted cross-lagged regression to untangle whether this was (A) exposure toward information about coronavirus (T1) that translated into higher anxiety at T2, or (B) anxiety at T1 that made people search for coronavirus-related information more intensively at T2. Prior to our main analysis, we examined if missing data between Days 1 and 2 were missing at random using Little's (1988) missing completely at random test (MCAR). As this test was not statistically significant (MCAR  $\chi^2 = 41.77$ ,  $df = 2$ ,  $p = 0.41$ ), we conducted path analysis in R (package "lavaan", see Rosseel, 2012) using full information maximal-likelihood estimator. Consistently with our predictions, it was exposure toward coronavirus that built anxiety ( $\beta = 0.20$ ), rather than vice versa ( $\beta = -0.02$ ; Figure 2).



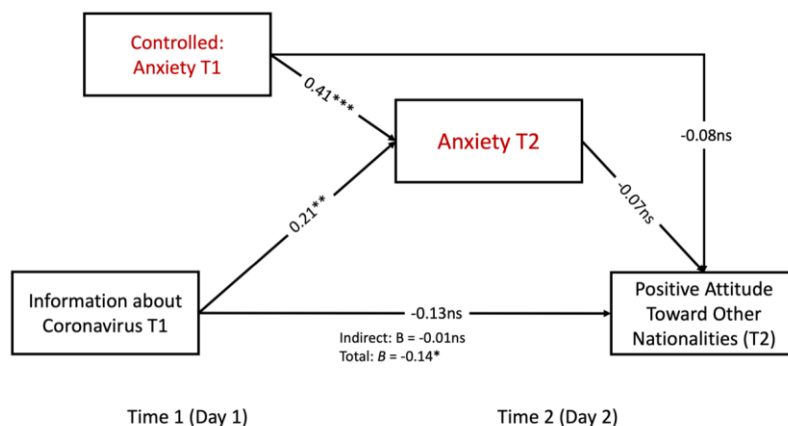
**Figure 2.** Cross-lagged regression with anxiety and information about coronavirus related to each other during two consecutive days of Study 2. \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ .

#### 3.2.2. Attitudes toward Foreigners—Mediation Analysis

Our initial correlation analyses showed substantial correlations between attitudes toward different nations. As overall attitudes toward others (with attitudes toward Poles excluded) were highly consistent ( $\alpha = 0.89$ ), we created a global "positive attitude toward other nationalities" index by averaging the assessments of separate nations. Our next step involved mediation analysis wherein a newly created variable was regressed on search intensity for information about coronavirus at T1 (independent variable) and anxiety declared at T2 while simultaneously controlling for anxiety declared at T1. As illustrated in Figure 3, the search for information about coronavirus at T1 predicted anxiety at T2 (even when controlling for anxiety declared at T1). However, there was no relationship between anxiety at T2 and the overall attitude toward other nationalities. Neither direct

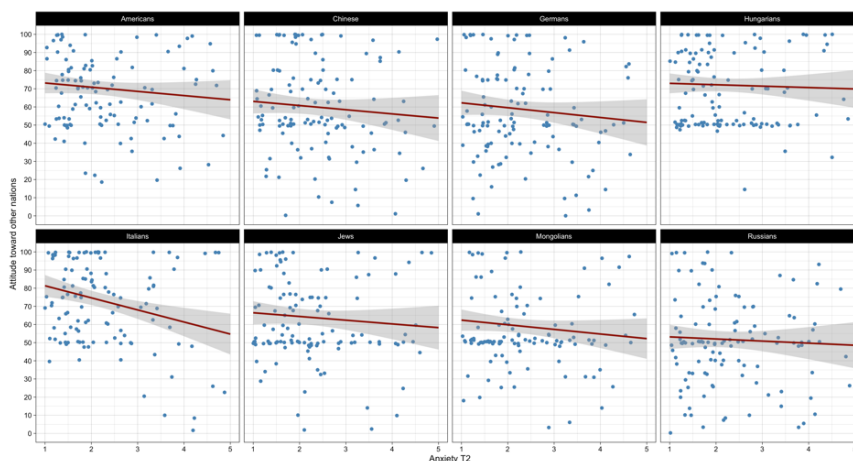


(information about coronavirus—attitudes toward other nations) nor indirect effect (information about coronavirus—anxiety—attitudes toward other nations) was statistically significant, but the total effect was negative and marginally significant ( $B = -0.14$ ,  $p = 0.05$ ).



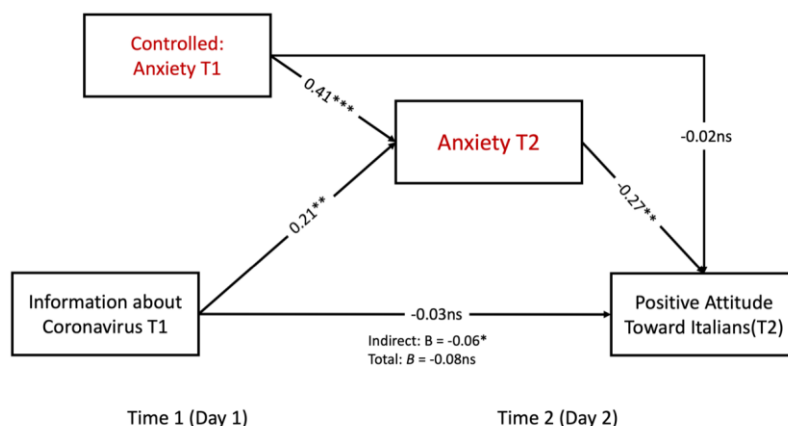
**Figure 3.** Mediation effect with information about coronavirus explaining negative attitudes toward other nations via anxiety.  $^{***} p < 0.001$ ,  $^{**} p < 0.01$ ,  $^* p < 0.05$ .

As the B path in the presented model was not significant, thus making the hypothesized mediation implausible, we exploratorily examined some relationships that were not originally preregistered, i.e., explored the possible mediation effects for each single nation included in our study. To this end, we first analyzed correlations between T2 anxiety and attitudes toward other nations in more detail. As illustrated in Figure 4, the overall tendency observed was similar across nations, yet visibly stronger for the attitudes toward Italians, the nation currently struggling with the most severe COVID-19 outbreak.



**Figure 4.** Relationships between anxiety on Day 2 (T2) and attitudes toward different nations.

Given the seemingly strongest effect observed for attitudes toward Italians, we repeated our mediation analysis, this time regressing attitudes toward Italians on anxiety (T1—control and T2—mediator) and the intensity of search for information about coronavirus at T1. As presented in Figure 5, there was a negative link between T2 anxiety and the positive attitude toward Italians, as well as a statistically significant, negative indirect effect. In other words, people who were exposed to or searched for more information about coronavirus at T1 were found to be more anxious and distancing themselves from Italians at T2.



**Figure 5.** Mediation effect with information about coronavirus explaining negative attitudes toward Italians via anxiety. \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ .

#### 4. General Discussion

Behavioral-immune-system theories [22,37] suggest that a pathogen-related threat can translate into a willingness to also distance oneself from others on a psychological level [24,25,38]. Building on this notion, we predicted that the ongoing pandemic of coronavirus can differentiate attitudes toward foreign nationalities. The correlational study in the UK and in Poland revealed that prejudice against foreign groups was positively related to media exposure, and thus to exposure to information about the coronavirus, regardless of the extent of COVID-19 outbreak in the assessed countries. These results were followed up with a short-term longitudinal study that showed that negative affect toward Italians (i.e., a nation struggling with the most severe COVID-19 outbreak at the time of the study) was indirectly predicted by exposure to news about coronavirus through the increase in anxiety. The fact that coronavirus-information exposure was not related to feelings about foreign groups other than Italians suggests that this effect may be of short duration and peak when the outreach of the pandemic in the given country is high and salient in media.

Our study had some limitations that should be addressed in further research. First, in Study 1, we did not know whether the relationship between media consumption and prejudice was indeed related to information about coronavirus, as these media and attitudes were already shown to be linked [39]. This was, however, addressed in Study 2, in which we asked about explicitly receiving information about COVID-19. Second, although some data on initial levels of prejudice toward most of the target groups existed [40], we had no data that allowed direct comparisons of prejudice before and during the crisis. Because of that, no direct conclusions about the increase of prejudice (especially toward Italians) could be made. Further, longitudinal research is needed in order to assess the durability of these effects. Large-scale longitudinal comparisons could shed some light on whether the attitudes will be back at the status quo after the pandemic. In order to be informative, these comparisons should also control for various factors that may simultaneously affect prejudice to COVID-19, for instance, diversity policy in a given country [41,42]. We hope that future studies will deliver sufficient evidence that clarifies whether coronavirus-related attitude shifts are reversible or not.

In summary, the COVID-19 virus outbreak and the constant processing of information about it can certainly be perceived as highly arousing and eliciting anxiety [43,44], thus influencing the level of any potential prejudice. We found initial evidence for the effect of the pandemic on prejudice, yet the observed effect should be further controlled in longitudinal studies. Although our findings should be treated with caution as they only partly support our hypothesis, and we have to keep in mind several methodological limitations, similar findings were reported with regard to psychological correlations of media exposure [9], as well as to anxiety/fear [45] and prejudice [46] as an aftermath of COVID-19. While physical distancing from others [42] is highly recommended during epidemics and could significantly slow down the speed of virus expansion [47], the less favorable attitudes about

foreign groups with which social distancing usually goes along [33] can be dangerous and, in the long term, could increase discrimination and injustice.

**Author Contributions:** Conceptualization, P.S., A.G., M.K. (Marta Kowal), M.K. (Maciej Karwowski), A.S., M.B., I.L., M.D., and P.Z.; methodology, P.S., M.K. (Marta Kowal), A.G., and M.K. (Maciej Karwowski); formal analysis, M.K. (Maciej Karwowski); original-draft preparation, A.G., M.K. (Maciej Karwowski), P.S., M.D., M.K. (Marta Kowal), A.S., M.B., I.L., P.Z., and M.K. All authors have read and agreed to the published version of the manuscript.

**Funding:** The University of Wrocław granted funds to conduct the study. The publication was financed within the framework of the program titled “Dialogue” introduced by the Ministry of Science and Higher Education in 2016–2019.

**Conflicts of Interest:** The authors declare no conflicts of interest.

## References

1. Wu, Z.; McGoogan, J.M. Characteristics of and important lessons from the coronavirus disease 2019 (COVID-19) outbreak in China: Summary of a report of 72 314 cases from the Chinese Center for Disease Control and Prevention. *JAMA* **2020**, *323*, 1239–1242. [CrossRef] [PubMed]
2. Heymann, D.L.; Shindo, N. COVID-19: What is next for public health? *Lancet* **2020**, *395*, 542–545. [CrossRef]
3. Lipsitch, M.; Swerdlow, D.L.; Finelli, L. Defining the epidemiology of Covid-19—studies needed. *N. Engl. J. Med.* **2020**, *382*, 1194–1196. [CrossRef] [PubMed]
4. Liu, S.-L.; Saif, L. Emerging viruses without borders: The Wuhan coronavirus. *Viruses* **2020**, *12*, 130. [CrossRef]
5. McKibbin, W.J.; Fernando, R. The Global Macroeconomic Impacts of COVID-19: Seven Scenarios. 2 March 2020. Available online: <https://ssrn.com/abstract=3547729> (accessed on 10 April 2020).
6. Baldwin, R.; di Mauro, B.W. *Economics in the Time of COVID-19*; Centre for Economic Policy Research: London, UK, 2020.
7. Di Marco, M.; Baker, M.L.; Daszak, P.; De Barro, P.; Eskew, E.A.; Godde, C.M.; Harwood, T.D.; Herrero, M.; Hoskins, A.J.; Johnson, E. Opinion: Sustainable development must account for pandemic risk. *Proc. Natl. Acad. Sci. USA* **2020**, *117*, 3888–3892. [CrossRef]
8. Plohl, N.; Musil, B. Modeling compliance with COVID-19 prevention guidelines: The critical role of trust in science. *Psychol Health Med.* **2020**. [CrossRef]
9. Oosterhoff, B.; Palmer, C.A.; Wilson, J.; Shook, N. Adolescents’ Motivations to Engage in Social Distancing during the COVID-19 Pandemic: Associations with Mental and Social Health. *J. Adolesc. Health* **2020**. [CrossRef]
10. Šrol, J.; Mikušková, E.B.; Cavojsa, V. When we are worried, what are we thinking? Anxiety, lack of control, and conspiracy beliefs amidst the COVID-19 pandemic. *PsyArXiv Prepr.* **2020**. [CrossRef]
11. Erceg, N.; Ružojić, M.; Galic, Z. Misbehaving in the Corona Crisis: The Role of Anxiety and Unfounded Beliefs. *PsyArXiv Prepr.* **2020**. [CrossRef]
12. Gelfand, M.; Jackson, J.C.; Pan, X.; Nau, D.; Dagher, M.; Chiu, C.-Y. Cultural and Institutional Factors Predicting the Infection Rate and Mortality Likelihood of the COVID-19 Pandemic. 2020. Available online: <https://psyarxiv.com/m7f8a> (accessed on 10 April 2020).
13. Wang, C.; Pan, R.; Wan, X.; Tan, Y.; Xu, L.; Ho, C.S.; Ho, R.C. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int. J. Environ. Res. Public Health* **2020**, *17*, 1729. [CrossRef]
14. Esses, V.M.; Jackson, L.M.; Dovidio, J.F.; Hodson, G. Instrumental relations among groups: Group competition, conflict, and prejudice. *Nat. Prejud. Fifty Years Allport* **2005**, 227–243. [CrossRef]
15. Bilewicz, M. History as an obstacle: Impact of temporal-based social categorizations on Polish-Jewish intergroup contact. *Gr. Process. Interg. Relations* **2007**, *10*, 551–563. [CrossRef]
16. Zagefka, H.; González, R.; Brown, R.; Lay, S.; Manzi, J.; Didier, N. To know you is to love you: Effects of intergroup contact and knowledge on intergroup anxiety and prejudice among indigenous Chileans. *Int. J. Psychol.* **2017**, *52*, 308–315. [CrossRef] [PubMed]
17. Fiske, S.T. Stereotyping, prejudice, and discrimination. *Handb. Soc. Psychol.* **1998**, *2*, 357–411.
18. Butz, D.A.; Yogeeswaran, K. A new threat in the air: Macroeconomic threat increases prejudice against Asian Americans. *J. Exp. Soc. Psychol.* **2011**, *47*, 22–27. [CrossRef]



19. Karwowski, M.; Kowal, M.; Groyecka, A.; Białek, M.; Lebuda, I.; Sorokowska, A.; Sorokowski, P. When in danger, turn right: Does covid-19 threat promote social conservatism and right-wing presidential candidates? *Hum. Ethol.* **2020**, in press.
20. Murray, D.R.; Schaller, M. Threat (s) and conformity deconstructed: Perceived threat of infectious disease and its implications for conformist attitudes and behavior. *Eur. J. Soc. Psychol.* **2012**, *42*, 180–188. [\[CrossRef\]](#)
21. Thornhill, R.; Fincher, C.L.; Aran, D. Parasites, democratization, and the liberalization of values across contemporary countries. *Biol. Rev.* **2009**, *84*, 113–131. [\[CrossRef\]](#)
22. Schaller, M.; Murray, D.R. Pathogens, personality, and culture: Disease prevalence predicts worldwide variability in sociosexuality, extraversion, and openness to experience. *J. Pers. Soc. Psychol.* **2008**, *95*, 212–221. [\[CrossRef\]](#)
23. Murray, D.R.; Trudeau, R.; Schaller, M. On the origins of cultural differences in conformity: Four tests of the pathogen prevalence hypothesis. *Personal. Soc. Psychol. Bull.* **2011**, *37*, 318–329. [\[CrossRef\]](#)
24. Faulkner, J.; Schaller, M.; Park, J.H.; Duncan, L.A. Evolved disease-avoidance mechanisms and contemporary xenophobic attitudes. *Gr. Process. Intergr. Relations* **2004**, *7*, 333–353. [\[CrossRef\]](#)
25. Navarrete, C.D.; Fessler, D.M.T. Disease avoidance and ethnocentrism: The effects of disease vulnerability and disgust sensitivity on intergroup attitudes. *Evol. Hum. Behav.* **2006**, *27*, 270–282. [\[CrossRef\]](#)
26. Prati, G.; Pietrantonio, L. Knowledge, risk perceptions, and xenophobic attitudes: Evidence from Italy during the ebola outbreak. *Risk Anal.* **2016**, *36*, 2000–2010. [\[CrossRef\]](#) [\[PubMed\]](#)
27. Nisbett, R. *The Geography of Thought: How Asians and Westerners Think Differently and Why*; Simon and Schuster: The Free Press: New York, NY, USA, 2003; ISBN 0743255356.
28. Xu, Y.; Farver, J.A.; Schwartz, D.; Chang, L. Social networks and aggressive behaviour in Chinese children. *Int. J. Behav. Dev.* **2004**, *28*, 401–410. [\[CrossRef\]](#)
29. Pew Research Center. Table: Religious Composition by Country, in Percentages. 2012. Available online: <https://www.pewforum.org/2012/12/18/table-religious-composition-by-country-in-percentages/> (accessed on 25 May 2020).
30. Bogardus, E.S. A social distance scale. *Sociol. Soc. Res.* **1933**, *17*, 265–271.
31. Wark, C.; Galliher, J.F. Emory Bogardus and the origins of the social distance scale. *Am. Sociol.* **2007**, *38*, 383–395. [\[CrossRef\]](#)
32. Groyecka, A.; Witkowska, M.; Wróbel, M.; Klamut, O.; Skrodzka, M. Challenge your stereotypes! Human Library and its impact on prejudice in Poland. *J. Community Appl. Soc. Psychol.* **2019**, *29*, 311–322. [\[CrossRef\]](#)
33. Soral, W.; Bilewicz, M.; Winiewski, M. Exposure to hate speech increases prejudice through desensitization. *Aggress. Behav.* **2018**, *44*, 136–146. [\[CrossRef\]](#)
34. Brener, L.; Von Hippel, W.; Kippax, S. Prejudice among health care workers toward injecting drug users with hepatitis C: Does greater contact lead to less prejudice? *Int. J. Drug Policy* **2007**, *18*, 381–387. [\[CrossRef\]](#)
35. Piston, S. How explicit racial prejudice hurt Obama in the 2008 election. *Polit. Behav.* **2010**, *32*, 431–451. [\[CrossRef\]](#)
36. Witkowska, M.; Beneda, M.; Čehajić-Clancy, S.; Bilewicz, M. Fostering Contact After Historical Atrocities: The Potential of Moral Exemplars. *Polit. Psychol.* **2019**, *40*, 565–582. [\[CrossRef\]](#)
37. Schaller, M.; Duncan, L.A. The behavioral immune system: Its evolution and social psychological implications. In *Evolution and the Social Mind: Evolutionary Psychology and Social Cognition*; Forgas, J.P., Haselton, M.G., von Hippel, W., Eds.; Psychology Press: New York, NY, USA, 2007; pp. 293–307.
38. Inbar, Y.; Westgate, E.C.; Pizarro, D.A.; Nosek, B.A. Can a naturally occurring pathogen threat change social attitudes? Evaluations of gay men and lesbians during the 2014 Ebola epidemic. *Soc. Psychol. Personal. Sci.* **2016**, *7*, 420–427. [\[CrossRef\]](#)
39. Shaver, J.H.; Sibley, C.G.; Osborne, D.; Bulbulia, J. News exposure predicts anti-Muslim prejudice. *PLoS ONE* **2017**, *12*, e0174606. [\[CrossRef\]](#) [\[PubMed\]](#)
40. Omyła-Rudzka, M. Stosunek Polaków do innych narodów. *Warszawa Cent. Badania Opinii Społecznej. Retrived Sept.* **2012**, *20*, 1–11. Available online: [https://cbos.pl/SPISKOM.POL/2019/K\\_017\\_19.PDF](https://cbos.pl/SPISKOM.POL/2019/K_017_19.PDF) (accessed on 5 April 2020).
41. Guimond, S.; Crisp, R.J.; De Oliveira, P.; Kamiejski, R.; Kteily, N.; Kuepper, B.; Lalonde, R.N.; Levin, S.; Pratto, F.; Tougas, F. Diversity policy, social dominance, and intergroup relations: Predicting prejudice in changing social and political contexts. *J. Pers. Soc. Psychol.* **2013**, *104*, 941. [\[CrossRef\]](#) [\[PubMed\]](#)

42. Schlueter, E.; Meuleman, B.; Davidov, E. Immigrant Integration policies and perceived Group Threat: A Multilevel Study of 27 Western and Eastern European Countries. *Soc. Sci. Res.* **2013**, *42*, 670–682. [[CrossRef](#)]
43. Ki, M. What do we really fear? The epidemiological characteristics of Ebola and our preparedness. *Epidemiol. Health* **2014**, *36*, e2014014. [[CrossRef](#)]
44. Al-Rabiaah, A.; Temsah, M.H.; Al-Eyadhy, A.A.; Hasan, G.M.; Al-Zamil, F.; Al-Subaie, S.; Alsohime, F.; Jamal, A.; Alhaboob, A.; Al-Saadi, B.; et al. Middle East Respiratory Syndrome-Corona Virus (MERS-CoV) associated stress among medical students at a university teaching hospital in Saudi Arabia. *J. Infect. Public Health* **2020**. [[CrossRef](#)]
45. Mertens, G.; Gerritsen, L.; Salemink, E.; Engelhard, I. Fear of the coronavirus (COVID-19): Predictors in an online study conducted in March 2020. *PsyArXiv Prepr.* **2020**. [[CrossRef](#)]
46. Xu, C.; Liu, M.Y. Social Cost with No Political Gain: The “Chinese Virus” Effect. 2020. Available online: <https://psyarxiv.com/j4t2r> (accessed on 10 April 2020).
47. Wilder-Smith, A.; Freedman, D.O. Isolation, quarantine, social distancing and community containment: Pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *J. Travel Med.* **2020**, *27*, taaa020. [[CrossRef](#)]



© 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).