Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Personality and Individual Differences 187 (2022) 111413

Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

Does religion predict coronavirus conspiracy beliefs? Centrality of religiosity, religious fundamentalism, and COVID-19 conspiracy beliefs☆

Paweł Łowicki [a,*], Marta Marchlewska [b], Zuzanna Molenda [b], Adam Karakula [b], Dagmara Szczepańska [b,c]

[a] Faculty of Psychology, University of Warsaw, Warsaw, Poland
[b] Institute of Psychology, Polish Academy of Sciences, Warsaw, Poland
[c] Institute of Philosophy and Sociology, Maria Grzegorzewska University, Warsaw, Poland

ARTICLE INFO

Keywords:
Conspiracy beliefs
COVID-19 conspiracy beliefs
Religiousness
Centrality of religiosity
Religious fundamentalism
Freeriding
Non-adherence to safety guidelines

ABSTRACT

There has been an increasing interest in the relationship between religion and psychosocial functioning during the COVID-19 pandemic. Interestingly, emerging recent findings suggest that religiousness may have a Janus-face impact on how people cope with the pandemic, leading to both positive and negative social outcomes. In this project, we examine whether two types of religiousness (i.e., centrality of religiosity and religious fundamentalism) are associated with COVID-19 conspiracy beliefs and socially undesirable behavior during the pandemic. We suggest that only the most dogmatic and fundamentalistic type of religiousness could lead to conspiracy beliefs, while centrality of religiosity could be unrelated or even negatively related to this type of thinking. In a series of two studies ($N = 361$ and $N = 394$) conducted among Polish Roman Catholics, we demonstrate that religious fundamentalism, unlike centrality of religiosity, is positively related to coronavirus conspiracy beliefs, which, in turn, promote socially maladaptive behavior such as freeriding or non-adherence to safety guidelines.

1. Introduction

The COVID-19 pandemic has posed an unprecedented threat to both physical and mental health of numerous people worldwide. Scientists have rushed to study social and personal characteristics that could predict, and therefore prevent, the kind of behaviors that could have a detrimental effect on the society during the pandemic, such as the opposition to the COVID-19 mitigation measures or the surge in adherence to conspiracy beliefs regarding the origin and nature of the coronavirus pandemic (e.g., Kowalski et al., 2020; Zajenkowski et al., 2020). Among various factors analyzed, there has been an increasing interest in the role of religion and spirituality. Following that line of research, in this paper, we examine whether religiousness[1] in different forms is associated with COVID-19 conspiracy beliefs and socially undesirable behavior during the pandemic.

1.1. Religion and COVID-19 pandemic

Religiousness has been long believed to be increasing in times of hardship (e.g., Pargament, 2001; Weber, 1920/1993). Preliminary data accumulated during the current pandemic seems to corroborate this view. For instance, various media outlets informed about the booming sales of religious books, including the Bible, in the first weeks of the global pandemic (e.g., Coyle, 2020). Moreover, researchers found evidence that praying intensified during the current pandemic, including as much as 61% of Poles who reported spending more time on these activities (Bentzen, 2020; Boguszewski et al., 2020). Finally, according to a recent study, nearly three-in-ten Americans (28%) claimed to have

☆ This work was supported by Polish Ministry of Science and Higher Education (DIALOG Grant No. 0013/2019; financing period: 2019–2021) and National Science Centre, Poland under Opus grant (2019/35/B/HS6/00123) conferred to the second Author. The data that support current findings are openly available in Open Science Framework depository at https://osf.io/yk3dn/. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Ethical approval was granted by the Research Ethics Committee of the Institute of Psychology, Polish Academy of Sciences (number of approval: 18/XI/2019).

* Corresponding author at: Faculty of Psychology, University of Warsaw, Stawki 5/7, 00-183 Warsaw, Poland.
E-mail address: pawel.lowicki@psych.uw.edu.pl (P. Łowicki).

[1] Please note that hereafter we use the word "religiousness" as an umbrella term for any individual differences in attitudes toward religion (see Saroglou, 2014).

https://doi.org/10.1016/j.paid.2021.111413
Received 5 October 2021; Received in revised form 19 November 2021; Accepted 20 November 2021
Available online 27 November 2021

stronger personal faith because of the pandemic (Sahgal and Connaughton, 2021). Although we can observe that people increasingly turn toward religion when calamities occur, it remains an open question what kind of influence religiousness might have on their emotionality and behavior during such difficult times.

In general, both previous research and the emerging recent findings suggest that religion may have a Janus-face impact on how people deal with the pandemic (Kranz et al., 2020). On the one hand, a large body of prior evidence indicates a generally positive link between religion and mental health (e.g., Koenig, 2012), with some researchers describing religion as having salutary effects on physical and mental outcomes (Seybold & Hill, 2001). Next, religious individuals are also characterized by higher emotion regulation skills, which may prove particularly useful in coping with pandemic-related stress (Vishkin et al., 2019). Furthermore, previous studies have established a positive association between religiousness and agreeableness (Tsang et al., 2020) or submissiveness (Saroglou et al., 2009), both supposed to predict a higher degree of compliance with pandemic-related restrictions.

On the other hand, the popular narrative in public and scientific discussions is that there exists an unresolved conflict between religion and science (Evans & Evans, 2008), which could result in religious individuals being reluctant to follow the recommendations by public health experts and scientists (Plohl & Musil, 2021). This could also be related to the fact that religious individuals tend to score lower on intelligence and analytic thinking measures (Pennycook et al., 2016; Zuckerman et al., 2020). Further, in terms of mental health, religiousness may also involve maladaptive coping strategies that bring about depressive symptoms and decreased satisfaction with life (e.g., Bjorck & Thurman, 2007). Importantly, Szałachowski and Tuszyńska-Bogucka (2021) have recently found that religion can indeed serve as both a balm and a risk for well-being in times of a pandemic, with certain aspects of religiousness protecting against PTSD symptoms, while other aspects aggravating distress.

1.2. Religion and conspiracy beliefs

One particularly negative social outcome of the pandemic is a rise in various types of conspiracy beliefs (Stephens, 2020). Conspiracy beliefs or theories are typically characterized as attempts to explain the origins of significant social events with reference to mystery plots and secretive yet powerful agents working in their own favor at the cost of the society (e.g., Bale, 2007; Douglas et al., 2019). Thus, "most conspiracy beliefs can be framed in terms of beliefs about how a powerful and evil outgroup meets in secret, designing a plot that is harmful to one's ingroup" (van Prooijen & van Lange, 2014, pp. 238–239; emphasis added; see also Cichocka, Marchlewska, Golec de Zavala, & Olechowski, 2016).

Importantly, studies on conspiracy thinking are mainly focused on identifying an array of personality characteristics that are linked to a conviction that others are secretly conspiring against us. In other words, instead of analyzing whether a particular conspiracy theory is true or false, social scientists usually try to understand the role of adopting such beliefs in dealing with distress (e.g., Marchlewska et al., 2021), self-evaluation problems (Cichocka, Marchlewska, & Golec de Zavala, 2016) uncertainty (Marchlewska et al., 2018), or other types of psychological weaknesses (for a review see Biddlestone et al., 2021). They also explore potential consequences of adopting conspiratorial explanations (e.g., the relationship between vaccination conspiracy beliefs and lower support for voluntary vaccination policy; Cislak et al., 2021). In a similar vein, recent research has shown that the endorsement of conspiracy theories regarding COVID-19 is negatively related to the adherence to epidemiological safety guidelines (Kowalski et al., 2020). It also reduces social distancing over time (Bierwiaczonek et al., 2020) and is positively associated with resistance to other preventive actions, including vaccinations (Romer & Jamieson, 2020).

Somewhat contrary to the popular belief, however, the relationship between religion and conspiracy thinking is quite complex and not yet fully grasped (Jasinskaja-Lahti & Jetten, 2019). For example, some researchers draw close comparisons between conspiracy theories and institutionalized religions or even suggest that conspiracy beliefs are of quasi-religious character (Franks et al., 2013). From the cognitive perspective, there is, indeed, some significant overlap between conspiracy and a religious mindset. This includes, for instance, a tendency to detect agency, communication rituals, or a minimally counterintuitive nature of both religious and conspiracy beliefs (Franks et al., 2013). What is more, supernatural and conspiracy beliefs at times may co-occur, as in the case of the so-called "conspirituality" - a term coined by Ward and Voas (2011). Conspirituality refers to a politico-spiritual philosophy, characteristic of the New Age movement, in which beliefs in secret powerful agents are combined with the conviction that humanity is undergoing a shift in consciousness (Ward & Voas, 2011). On the other hand, some empirical investigations do report no significant associations between conspiracy theories and various aspects of religiousness (e.g., Jasinskaja-Lahti & Jetten, 2019; Ladini, 2021). For example, Marchlewska et al. (2019) found that it was defensive in-group identity (e.g., Catholic collective narcissism), and not religiosity per se, that predicted gender conspiracy beliefs (i.e., a conviction that gender studies represent an ideology designed to secretly harm traditional values and social arrangements). Furthermore, it has been suggested that religion can also serve as a buffer, having a preventive role against certain types of conspiracy beliefs that explicitly violate religious dogma (e.g., Ladini, 2021; Norman, 2021).

1.3. Religiosity and religious fundamentalism

To address these conflicting findings and predictions regarding conspiracy beliefs and religion, we suggest that general religiosity should be differentiated from more dogmatic and orthodox forms of religiosity, such as religious fundamentalism. In this view, only the most dogmatic and fundamentalistic types of religiousness would lead to conspiracy, while general religiosity would be unrelated, or even negatively related, to this type of thinking due to its positive link with agreeableness and prosociality (Tsang et al., 2020). A large and growing body of literature has investigated the specificity of religious fundamentalism (i.e., an unwavering belief in a set of absolute religious dogmas as expressed literally in sacred scriptures; e.g., Zhong et al., 2017). It has been demonstrated that religious fundamentalists are particularly prejudiced and prone to aggression toward out-group members (e.g., Vincent et al., 2011), have lower scientific literacy (Sherkat, 2011), and generalized negative attitude toward secular education (Sherkat & Darnell, 1999).

Importantly, similar effects have not been consistently observed for more general measures of religiousness, including the Centrality of Religiosity Scale, which describes the subjective importance of religious meanings within one's personality structure (Huber & Huber, 2012). For example, Yendell and Huber (2020) found that non-Muslim Swiss adults who scored higher on religion's centrality, unlike religious fundamentalists, had more positive attitudes toward Islam. Furthermore, a recent investigation showed that while high levels of religiosity are inconsistent with high valuation of science in some cultures, religiosity and science might be entirely compatible in other countries, such as Iran (Payir et al., 2021). Finally, new evidence suggests that, on average, religious people not only view science and religion as equally instrumental sources of knowledge, they also perceive less conflict between science and religion than non-religious people (Jackson et al., 2020).

Overall, this state of knowledge clearly highlights that studies on religion's link with the social response to the coronavirus pandemic should take into account both the general importance of religiosity in a personal system and the particular type of religious attitude that expresses itself in strong and exceptionless endorsement of an infallible set of beliefs.

1.4. Current research

Although there exist some findings linking religion with conspiracy beliefs (e.g., Franks et al., 2013; Galliford & Furnham, 2017; Ward & Voas, 2011), the relationship between these two is not evident and two opposing predictions could be made regarding the role of religion. In the current research, we decided to investigate the relationships between centrality of religiosity, religious fundamentalism and COVID-19 conspiracy beliefs. In Study 1, we recruited a nationwide sample of Polish adults to establish general links between the two types of religiousness and conspiracy beliefs regarding the coronavirus pandemic. Study 2 was intended to both conceptually replicate the findings from Study 1 and to extend the scope of the previous research by including measures of socially undesirable behavior, such as freeriding or non-adherence to COVID-19 prevention guidelines. It was hypothesized that religious fundamentalism, but not centrality of religiosity, would be positively associated with COVID-19 conspiracy beliefs (H1; Study 1 and Study 2). Additionally, we assumed that religious fundamentalism (but not centrality of religiosity) would be positively associated with freeriding during the COVID-19 pandemic (H2: Study 2) and negatively associated with compliance with safety and self-isolation guidelines (H3: Study 2). In such a way, we aimed to check whether COVID-19 conspiracy beliefs might account for the relationship between religious fundamentalism and socially undesirable behavior during the pandemic.

2. Study 1

2.1. Methods

2.1.1. Participants and procedure

This study involved a nationwide sample of Polish adults. A total number of 432 participants completed the survey: 183 women (coded as 0), 249 men (coded as 1), aged 18–84 ($M = 48.18$, $SD = 16.34$). Because we were interested in examining the links between conspiracy beliefs regarding the coronavirus pandemic and religious fundamentalism versus centrality of religiosity among Catholics, we excluded anyone who reported their religious affiliation as other than Catholic from further analyses ($n = 71$). Thus, the final sample consisted of 361 respondents (157 women; 204 men) between the ages of 18 and 84 ($M = 48.25$, $SD = 16.33$). Data was collected via an internet questionnaire (CAWI), by an external research company – Pollster Institute – a Polish online research platform that has been used in academic studies before (e.g., Kowalski et al., 2020).

Participants filled out measures of religious fundamentalism, centrality of religiosity, conspiracy beliefs regarding the coronavirus pandemic, as well as demographics among other variables.[2]

2.1.2. Measures

Religious Fundamentalism was measured using the Religious Fundamentalism Scale (Altemeyer & Hunsberger, 2004; 12-item Polish adaptation, Besta & Błażek, 2007). Respondents were asked to what extent they agreed or disagreed with statements such as "God has given mankind a complete, unfailing guide to happiness and salvation, which must be totally followed" and "The basic cause of evil in this world is Satan, who is still constantly and ferociously fighting against God" using a scale from 1 = *very strongly disagree* to 8 = *very strongly agree*, $\alpha = 0.89$, $M = 4.30$, $SD = 1.27$.

Centrality of Religiosity was measured using the Centrality of Religiosity Scale by Huber and Huber (2012; Polish adaptation by Zarzycka, 2011) consisting of 5 items referring to the intellect dimension (i.e., "How often do you think about religious issues?", on a scale from 1 = *never* to 5 = *very often*), the ideology dimension (i.e., "To what extent do you believe that God or something divine exists?", on a scale from 1 = *not at all* to 5 = *very much so*), the experience dimension (i.e., "How often do you experience situations in which you have the feeling that God or something divine intervenes in your life?", on a scale from 1 = *never* to 5 = *very often*), the public practice dimension (i.e., "How often do you take part in religious services?", on a scale from 1 = *never* to 7 = *more than once a week*), and the private practice dimension (i.e., "How often do you pray?", on a scale from 1 = *never* to 9 = *several times a day*), $\alpha = 0.86$, $M = 2.77$, $SD = 0.84$. For dimensions of public and private religious practice the response format was based on objective frequencies of a given activity. The objective frequencies were then recoded to subjective frequencies ranging from 1 to 5, according to the original instructions by Huber and Huber (2012).

Conspiracy Beliefs were measured with an 11-item questionnaire, based on a scale previously used by Kowalski et al. (2020). We measured various types of conspiracy beliefs regarding the coronavirus pandemic such as "Coronavirus was created by ecologists to reduce population number and help the environment" or "Coronavirus was created by pharmaceutical organizations". Participants responded on a scale from 1 = *definitely disagree* to 5 = *definitely agree*, $\alpha = 0.95$, $M = 2.45$, $SD = 1.03$. For some initial psychometric evaluation of the scale, please see the Supplementary material (available online).

2.2. Results

2.2.1. Zero-order correlations

First, we computed correlations between all of the variables (see Table 1). Conspiracy beliefs were significantly and positively correlated with religious fundamentalism but non-significantly with centrality of religiosity. Religious fundamentalism was highly and positively correlated with centrality of religiosity.

2.2.2. Regression analysis

To test which form of religiousness predicts beliefs in conspiracy theories regarding the coronavirus pandemic, we included religious fundamentalism and centrality of religiosity as predictors in a multiple regression analysis. We also included age and gender as covariates (Table 2). The results showed a significant and positive effect of religious fundamentalism (but not centrality of religiosity) on conspiracy beliefs. We also found significant negative effects of gender and age on conspiracy beliefs. Please note that in the Supplementary material we also report all subsequent analyses without the inclusion of gender and age.

2.3. Discussion

Study 1 showed that religious fundamentalism, but not centrality of religiosity, was positively linked to coronavirus conspiracy beliefs. In such a way, Study 1 confirmed our basic prediction that not all types of religiosity are linked to adopting conspiracy explanations. These results suggest that only dogmatic and orthodox forms of religiosity, such as religious fundamentalism, may have a potential to increase beliefs in secret plots by powerful and malevolent groups. This is also in line with previous research showing positive links between religious

Table 1
Zero-order correlations between key variables (Study 1).

Variables	1	2	3
1. Religious fundamentalism	–		
2. Centrality of religiosity	0.69***	–	
3. Coronavirus conspiracy beliefs	0.18***	0.06	–

Note. $N = 361$.
*** $p < .001$.

[2] Beside the variables reported here, Studies 1 and 2 also involved measures of political engagement and a set of individual differences variables included for the purposes of different projects employing the same predictors (please contact the second author for details). This dataset was also used by Molenda et al. (2021).

Table 2
The effects of religious fundamentalism and centrality of religiosity on coronavirus conspiracy beliefs (Study 1).

Variables	β	*B* (*SE*)	95% CI
Intercept		2.57 (0.26)	[2.05, 3.09]
Religious fundamentalism	0.24***	0.20 (0.06)	[0.08, 0.31]
Centrality of religiosity	−0.11	−0.14 (0.09)	[−0.31, 0.03]
Gender (0 = female; 1 = male)	−0.13**	−0.28 (0.11)	[−0.49, −0.07]
Age	−0.14**	−0.01 (0.003)	[−0.01, −0.002]
R^2	0.08		
F	*F*(4, 356) = 8.009***		

*** $p < .001$.
** $p < .01$.

fundamentalism and out-group hostility (Vincent et al., 2011), since conspiracy theories have been likewise associated with angry and hostile reactions toward other people or groups of people (van Prooijen & van Vugt, 2018).

In Study 2, we aimed to replicate the pattern of results obtained in Study 1 and to explore the destructive correlates of adopting coronavirus conspiracy beliefs. Specifically, we examined whether the endorsement of coronavirus conspiracy beliefs might be responsible for the relationship between religious fundamentalism and risky behavior related to the coronavirus pandemic. In other words, we assumed that religious fundamentalism (but not centrality of religiosity) should be linked to an increase in freeriding behaviors during the COVID-19 pandemic (e.g., taking advantage of the fact that the streets were empty to carry out personal plans) and a decrease in adherence to safety and self-isolation guidelines (e.g., social distancing). We also hypothesized that these relationships would be accounted for by coronavirus conspiracy beliefs. Moreover, in order to target Polish religious believers more specifically, in Study 2 we used a different measure of religious fundamentalism, the one that corresponds more closely with the context of radical Catholicism (Czarnek et al., 2017). In terms of our study participants, we decided to focus on the sample of young adults because previous research has shown that individuals in this transformative period of life might be particularly prone to experience uncertainty and loss of control associated with the COVID-19 pandemic (e.g., Shanahan et al., 2020).

3. Study 2

3.1. Methods

3.1.1. Participants and procedure

Data for Study 2 was obtained in a 2020 online survey, conducted by the Ariadna research panel, which has been frequently used in academic studies (e.g., Marchlewska et al., 2019). The sample consisted of 558 respondents (272 women, coded as 0; 286 men, coded as 1) between the ages of 18 and 26 ($M = 23.30$, $SD = 2.12$). Same as in Study 1, we were interested in examining the links between conspiracy beliefs and religious fundamentalism versus centrality of religiosity among Catholics. Thus, we excluded from the analyses anyone who reported their religious affiliation as other than Catholic ($n = 164$). The final sample consisted of 394 respondents (195 women; 199 men) between the ages of 18 and 26 ($M = 23.46$, $SD = 2.05$). Participants filled out measures of religious fundamentalism, centrality of religiosity, coronavirus conspiracy beliefs, freeriding during the pandemic, adherence to safety and self-isolation measures, as well as demographics among other variables.

3.1.2. Measures

Religious Fundamentalism was measured using the Political Beliefs Questionnaire (Czarnek et al., 2017), in which 6 items measured religious fundamentalism. Respondents were asked to what extent they agreed or disagreed with statements such as "Christian values should be particularly protected in Poland" and "Poland should be a more Catholic country." using a scale from 1 = *definitely disagree* to 5 = *definitely agree*, $\alpha = 0.86$, $M = 2.97$, $SD = 0.89$. Considering the kind of questions within the scale, it might be also conceptualized as a measure of radical religious nationalism, or more specifically as a measure of Polish Catholic nationalism (see Al-Kire et al., 2021).

Centrality of Religiosity as in Study 1, was measured using the five-item Centrality of Religiosity Scale (Huber & Huber, 2012; Polish adaptation by Zarzycka, 2011), $\alpha = 0.84$, $M = 2.95$, $SD = 0.96$.

Conspiracy Beliefs were measured in a similar way to that in Study 1, based on a scale previously used by Kowalski et al. (2020). Participants responded on a scale from 1 = *definitely disagree* to 7 = *definitely agree*, $\alpha = 0.96$, $M = 3.25$, $SD = 1.49$.

Freeriding During the Pandemic was measured by a 3-item scale based on Molenda et al.'s (2020) negative behaviors during the pandemic scale. Participants were asked to what extent they agreed or disagreed with the following statements: "Taking advantage of the fact that the streets were empty, I willingly went out for walks.", "I was able to take the coronavirus protection recommendations with ease because other people followed them.", "I met with friends often and willingly" using a scale from 1 = *definitely disagree* to 7 = *definitely agree*, $\alpha = 0.78$, $M = 3.25$, $SD = 1.41$.

Adherence to Safety and Self-Isolation Guidelines was measured with a 4-item scale created for the purposes of this study: "I try to my keep distance from others when I'm outside", "I go shopping wearing a mask", "I participate in big events (for example weddings, big house parties)"; reverse coded item, "I participate in mass events that are against the law"; reverse coded item. Participants were asked to determine whether the statement was true for them, using a scale from 1 = *definitely false* to 7 = *definitely true*, $\alpha = 0.73$, $M = 5.08$, $SD = 1.24$.

3.2. Results

3.2.1. Zero-order correlations

We computed correlations between all of the variables (see Table 3). Religious fundamentalism was significantly and positively associated with centrality of religiosity, freeriding during the pandemic and conspiracy beliefs. Centrality of religiosity was significantly and negatively correlated only with conspiracy beliefs. Coronavirus conspiracy beliefs were positively correlated with freeriding and negatively with adherence to safety and self-isolation guidelines. Freeriding and adherence to safety and self-isolation were negatively related to each other.

3.2.2. Regression analyses

First, we computed a hierarchical regression analysis to investigate the effects of religious fundamentalism and centrality of religiosity on conspiracy beliefs regarding the coronavirus pandemic (Table 4). We also included demographic variables, such as gender and age. Similarly to Study 1, we found a significant positive effect of religious fundamentalism on conspiracy beliefs. This time, however, the effect of centrality of religiosity on conspiracy beliefs was also significant and

Table 3
Zero-order correlations between key variables (Study 2).

Variables	1	2	3	4	5
1. Religious fundamentalism	–				
2. Centrality of religiosity	0.42***	–			
3. Freeriding during the pandemic	0.10*	−0.05	–		
4. Adherence to safety and self-isolation guidelines	−0.09	0.07	−0.47***	–	
5. Coronavirus conspiracy beliefs	0.20***	−0.13**	0.49***	−0.56***	–

Note. $N = 394$.
*** $p < .001$.
** $p < .01$.
* $p < .05$.

Table 4
The effects of religious fundamentalism and centrality of religiosity on coronavirus conspiracy beliefs (Study 2).

Variables	β	*B* (*SE*)	95% CI
Intercept		3.20 (0.89)	[1.46, 4.94]
Religious fundamentalism	0.31***	0.52 (0.09)	[0.35, 0.70]
Centrality of religiosity	−0.26***	−0.41 (0.08)	[−0.57, −0.25]
Gender (0 = female; 1 = male)	0.03	0.09 (0.14)	[−0.20, 0.37]
Age	−0.02	−0.01 (0.03)	[−0.08, 0.05]
R^2	0.10		
F	$F(4, 389) = 11.040$***		

*** $p < .001$.

negative. The effects of gender and age were non-significant.

Second, we computed another hierarchical regression analysis but this time we investigated the effects of religious fundamentalism, centrality of religiosity and conspiracy beliefs on freeriding behaviors during the pandemic (see Table 5). In the first step, we introduced religious fundamentalism and centrality of religiosity, together with the demographic variables. The effect of religious fundamentalism was significant and positive. Centrality of religiosity was a significant and negative predictor of freeriding during the pandemic. Age also resulted a significant and negative predictor of freeriding during the pandemic (but not gender). In the second step, we introduced coronavirus conspiracy beliefs. We found that conspiracy beliefs were a significant and positive predictor of freeriding during the pandemic. Importantly, after introducing conspiracy beliefs into the regression model, the effects of religious fundamentalism and centrality of religiosity became non-significant. We did not find a significant effect of gender but the effect of age remained significant, albeit weak.

In order to perform a full test of our hypotheses, we conducted a mediation analysis using model 4 with one mediator in Process (Hayes, 2018). The analysis displayed in Fig. 1 examined whether conspiracy beliefs mediated the path between religious fundamentalism and freeriding during the pandemic. As covariates we used the centrality of religiosity, gender, and age. The indirect effect of religious fundamentalism on freeriding during the pandemic via conspiracy beliefs of 0.240 was significant, with a bootstrapped 95% bias-corrected confidence interval of 0.143 to 0.348.

Then, we conducted a second mediation analysis (model 4) to test whether conspiracy beliefs mediated the path between centrality of religiosity and freeriding during the pandemic (see Fig. 2). As covariates we used religious fundamentalism, gender and age. The indirect effect of centrality of religiosity on freeriding during the pandemic via conspiracy beliefs of −0.188, was significant with bootstrapped 95% bias-corrected confidence intervals of −0.284 to −0.103.

Finally, we conducted another hierarchical regression analysis to investigate the effects of religious fundamentalism, centrality of religiosity, and conspiracy beliefs on an adherence to safety and self-isolation guidelines (see Table 6). First, we introduced religious fundamentalism, centrality of religiosity and the demographic variables. The effect of religious fundamentalism was significant and negative, while the effect of centrality of religiosity was significant and positive. The effect of age was non-significant, but gender was a significant and negative predictor of the adherence to safety and self-isolation guidelines. In the second step, we introduced coronavirus conspiracy beliefs. We found that conspiracy beliefs were a significant and negative predictor of the dependent variable. Moreover, the effects of religious fundamentalism and centrality of religiosity were no longer significant. Gender remained a significant and negative predictor, while the effect of age was still non-significant.

We conducted a mediation analysis using model 4 with one mediator in Process (Hayes, 2018) to examine whether conspiracy beliefs mediated the path between religious fundamentalism and adherence to safety and self-isolation guidelines (see Fig. 3). As covariates we used the measure of centrality of religiosity, gender, and age. The indirect effect of conspiracy beliefs on adherence to safety and self-isolation guidelines of −0.246 was significant, with a bootstrapped 95% bias-corrected confidence interval of −0.342 to −0.154.

Then, we conducted a second mediation analysis (model 4) to test whether conspiracy beliefs mediated the path between centrality of religiosity and adherence to safety and self-isolation guidelines (see Fig. 4). As covariates we used religious fundamentalism, gender, and age. The indirect effect of centrality of religiosity on adherence to safety and self-isolation guidelines via conspiracy beliefs of 0.193, was significant with bootstrapped 95% bias-corrected confidence intervals of 0.110 to 0.282.

3.3. Discussion

In Study 2, we replicated the results obtained in Study 1, suggesting that it is indeed religious fundamentalism, rather than centrality of religiosity, that positively predicts coronavirus conspiracy beliefs. Study 2 additionally revealed that religious fundamentalism was a positive predictor of risky behaviors during the coronavirus pandemic (i.e., higher freeriding and lower adherence to safety and self-isolation guidelines) and that these relationships were accounted for by coronavirus conspiracy beliefs. Moreover, the results of Study 2 also showed that centrality of religiosity predicted lower freeriding during the pandemic and higher adherence to safety and self-isolation guidelines. These relationships were also accounted for by coronavirus conspiracy beliefs.

These conclusions are in line with previous studies (e.g., Vincent et al., 2011; Yendell & Huber, 2020) showing the opposite effects of religious fundamentalism versus centrality of religiosity on intergroup relations, but also intragroup behaviors. Those high (vs. low) in religious

Table 5
The effects of religious fundamentalism, centrality of religiosity and coronavirus conspiracy beliefs on freeriding during the pandemic.

Variables	Model 1			Model 2		
	β	*B* (*SE*)	95% CI	β	*B* (*SE*)	95% CI
Intercept		4.71 (0.87)	[3.01, 6.42]		3.24 (0.78)	[1.71, 4.77]
Religious fundamentalism	0.13*	0.21 (0.09)	[0.04, 0.39]	−0.02	−0.03 (0.08)	[−0.18, 0.13]
Centrality of religiosity	−0.11*	−0.16 (0.08)	[−0.32, −0.001]	0.02	0.03 (0.07)	[−0.11, 0.17]
Gender (0 = female; 1 = male)	0.04	0.13 (0.14)	[−0.15, 0.41]	0.03	0.09 (0.12)	[−0.16, 0.33]
Age	−0.10*	−0.07 (0.03)	[−0.14, −0.005]	−0.09*	−0.07 (0.03)	[−0.12, −0.01]
Coronavirus conspiracy beliefs				0.49***	0.46 (0.04)	[0.37, 0.55]
Adjusted R^2	0.03			0.24		
F	$F(4, 389) = 3.499$**			$F(5, 388) = 25.537$***		
ΔR^2				0.21		
ΔF				$F(1, 388) = 109.779$***		

*** $p < .001$.
** $p < .01$.
* $p < .05$.

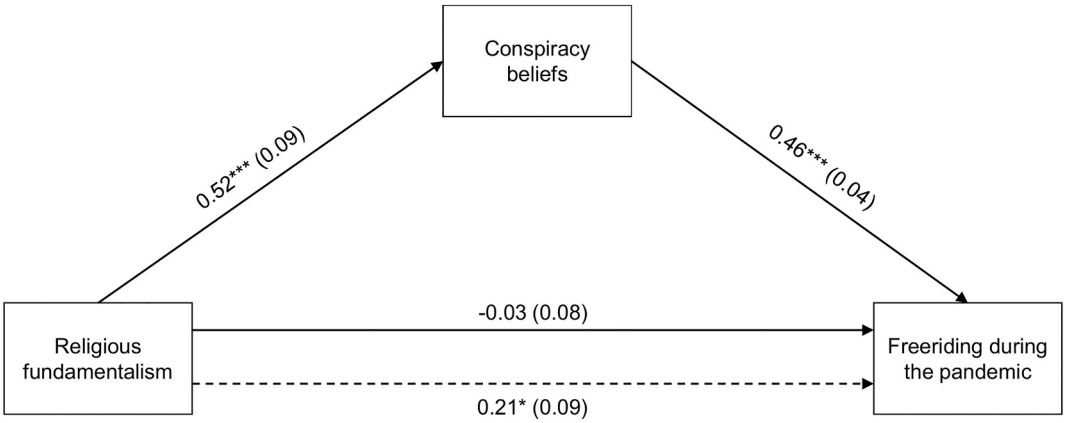

Fig. 1. Indirect effect of religious fundamentalism on freeriding during the pandemic via coronavirus conspiracy beliefs.
Note: Entries are unstandardized coefficients. Dotted line indicates total effect (not controlling for the third variable). *$p < .05$. **$p < .01$. ***$p < .001$.

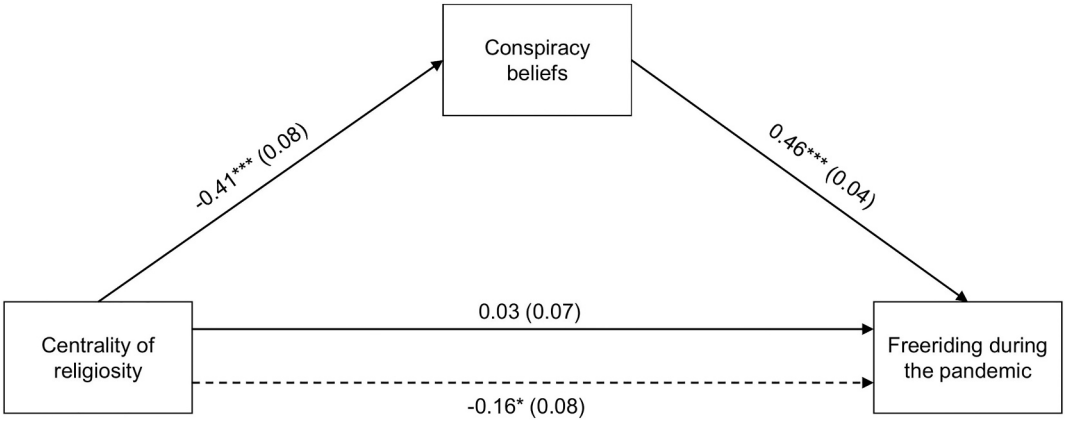

Fig. 2. Indirect effect of centrality of religiosity on freeriding during the pandemic via coronavirus conspiracy beliefs.
Note: Entries are unstandardized coefficients. Dotted line indicates total effect (not controlling for the third variable). *$p < .05$. **$p < .01$. ***$p < .001$.

Table 6
The effects of religious fundamentalism, centrality of religiosity and coronavirus conspiracy beliefs on adherence to safety and self-isolation guidelines.

Variables	Model 1			Model 2		
	β	*B* (*SE*)	95% CI	β	*B* (*SE*)	95% CI
Intercept		5.16 (0.76)	[3.66, 6.65]		6.67 (0.65)	[5.40, 7.94]
Religious fundamentalism	−0.13*	−0.18 (0.08)	[−0.34, −0.03]	0.04	0.06 (0.07)	[−0.07, 0.19]
Centrality of religiosity	0.12*	0.16 (0.07)	[0.02, 0.30]	−0.03	−0.03 (0.06)	[−0.15, 0.09]
Gender (0 = female; 1 = male)	−0.12*	−0.30 (0.12)	[−0.54, −0.05]	−0.10*	−0.26 (0.10)	[−0.46, −0.05]
Age	0.01	0.01 (0.03)	[−0.05, 0.06]	−0.001	−0.001 (0.02)	[−0.05, 0.05]
Coronavirus conspiracy beliefs				−0.57***	−0.47 (0.04)	[−0.54, −0.40]
Adjusted R^2	0.03			0.32		
F	$F(4, 389) = 3.799$**			$F(5, 388) = 38.008$***		
ΔR^2				0.29		
ΔF				$F(1, 388) = 168.309$***		

*** $p < .001$.
** $p < .01$.
* $p < .05$.

fundamentalism seem to engage in maladaptive behaviors both from the perspective of inter- (i.e., conspiracy beliefs) and intragroup (i.e., risky behaviors during the pandemic) relations. This, however, is not the case among those high (vs. low) in centrality of religiosity who reject conspiracy beliefs and, thus, are more prone to engage in protective behaviors during the pandemic.

4. General discussion

In the current research, we investigated the relationships between the two types of religiousness (centrality & fundamentalism) and the COVID-19 social response, including conspiracy beliefs and undesirable social behavior. We confirmed our hypothesis that religious fundamentalism is positively associated with coronavirus conspiracy beliefs. This effect can be explained within the framework of motivational underpinnings of religion. It has been argued that people are attracted to

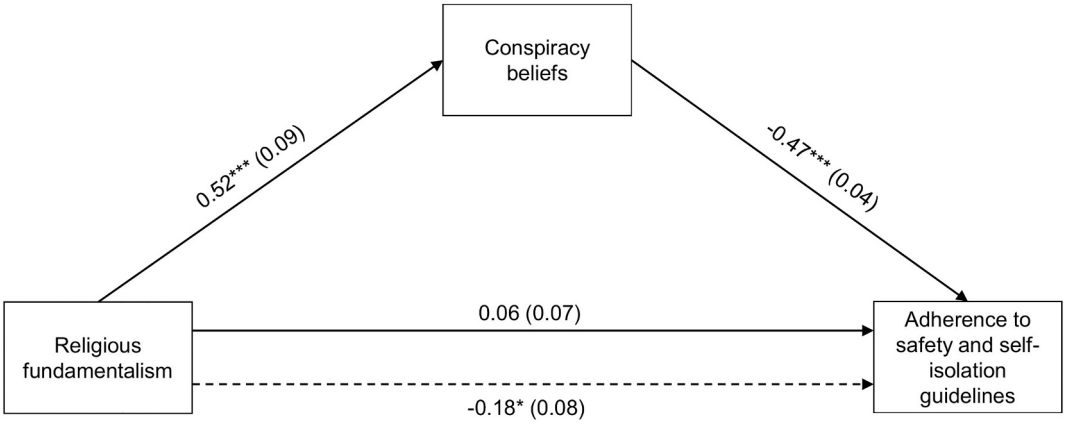

Fig. 3. Indirect effect of religious fundamentalism on adherence to safety and self-isolation guidelines via coronavirus conspiracy beliefs.
Note: Entries are unstandardized coefficients. Dotted line indicates total effect (not controlling for the third variable). *$p < .05$. **$p < .01$. ***$p < .001$.

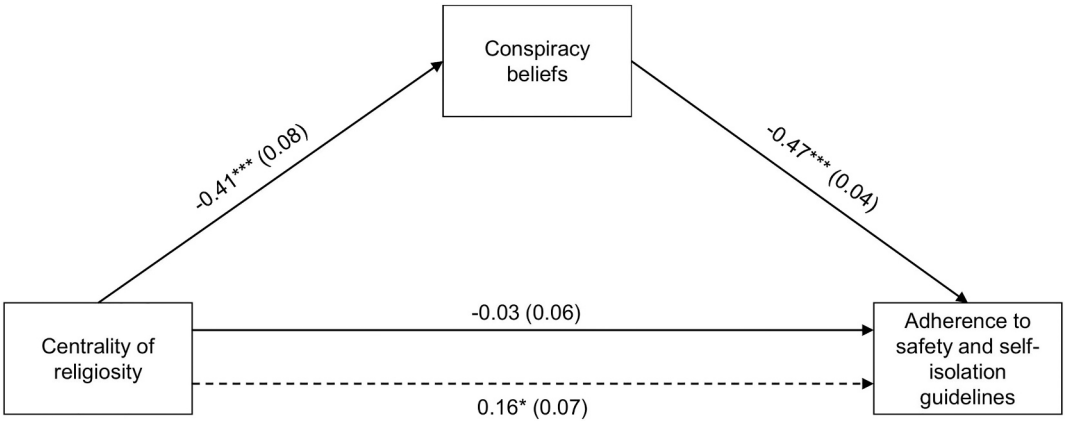

Fig. 4. Indirect effect of centrality of religiosity on adherence to safety and self-isolation guidelines via coronavirus conspiracy beliefs.
Note: Entries are unstandardized coefficients. Dotted line indicates total effect (not controlling for the third variable). *$p < .05$. **$p < .01$. ***$p < .001$.

religions because they provide opportunities to fulfill some fundamental human needs, such as the need to know, the need to belong, or the need for personal significance (Szumowska et al., 2020). Although these proclivities are shared by all individuals, people also typically differ in strength and extent of their needs. For instance, we all have a different scope of preference for firm, stable, and definite knowledge on certain topics, a phenomenon known as the need for cognitive closure (Webster & Kruglanski, 1994). Interestingly, religious fundamentalism understood as "a distinctive attitude of certainty as to the ultimate truth of one's religious beliefs" (Kossowska et al., 2018, p. 1) shares some core features with the need for cognitive closure and previous empirical work has established a positive association between both constructs (e.g., Brandt & Reyna, 2010). On the other hand, the need for cognitive closure has been also found to predict the endorsement of conspiracy theories (Marchlewska et al., 2018). Specifically, those high in the need for cognitive closure were found to seize on conspiratorial explanations under conditions of uncertainty. As conspiracy beliefs represent a closed, certain, and structured mode of thinking, they have a potential to provide closure (Marchlewska et al., 2018), which seems of great importance in times of the coronavirus. This would suggest that the need for cognitive closure may boost religious fundamentalism and further lead to conspiracy beliefs. This issue, however, requires further empirical investigation.

The impact of religious fundamentalism on conspiracy beliefs should be compared and confronted with the association between centrality of religiosity and conspiracy beliefs. In our research, we found that while centrality of religiosity was strongly and positively associated with religious fundamentalism across both studies, it was also either unrelated (Study 1) or negatively related (Study 2) to coronavirus conspiracy beliefs. The centrality of religiosity refers to the salience of religious meanings in one's personality; however, it does not tap into any specific contents of religion (Huber & Huber, 2012). In other words, while centrality describes whether religion occupies a central or a marginal role in the system of personal constructs, it does not directly determine the substance of religious beliefs endorsed by an individual (see Zarzycka et al., 2020). Therefore, depending on a specific case, high centrality of religiosity could be sometimes positively related to antagonistic and hostile beliefs (e.g., Hannover et al., 2018), but it also generally tends to associate with more prosocial and open-minded religious convictions (e.g., Łowicki & Zajenkowski, 2020; Yendell & Huber, 2020). This helps to explain why we observe that, on average, centrality of religiosity is a negative predictor of coronavirus conspiracy beliefs and socially undesirable behavior during the pandemic.

Importantly, Study 2 showed that conspiracy beliefs accounted for the link between a. high fundamentalism and b. low centrality of religiosity and socially undesirable behaviors during the pandemic (i.e., higher freeriding and lower adherence to epidemiological safety guidelines). These results are in line with previous findings linking conspiracy beliefs to negative societal outcomes (e.g., Kowalski et al., 2020). Future research would do well to further explore these relationships and investigate, for example, whether interventions aimed at attenuating religious fundamentalism may lower conspiracy beliefs and, as a result, boost positive social behaviors during a pandemic.

In terms of the social relevance of our findings, we suggest that

contrary to some people's beliefs (especially non-religious people), not every religious person has to be at odds with science and scientific explanations of extraordinary events such as a pandemic (e.g., Jackson et al., 2020; McPhetres et al., 2021). As our results are in line with previous findings regarding negative outcomes of religious fundamentalism (e.g., prejudice toward outgroups; Vincent et al., 2011), it is worth considering promoting less dogmatic and more healthy forms of religiosity among religious individuals in future interventions.

4.1. Limitations and future directions

Although our research sheds a new light on the role of two types of religiousness, coronavirus conspiracy beliefs and behavior during pandemics, it is not without limitations. First of all, both studies were cross-sectional and involved correlational designs, thereby limiting causal inferences. It is worth noticing that despite showing several significant indirect effects, our results do not provide evidence for the causal model because of the abovementioned cross-sectional nature of the studies. Future studies, employing experimental or longitudinal designs, are needed to establish the causality of the observed relationships. We also used a novel coronavirus conspiracy beliefs scale. Although this measure was used in previous research (Kowalski et al., 2020), its psychometric properties were not thoroughly investigated. Thus, future studies are crucial to fully examine the scale's validity, ideally on representative samples drawn from different populations. Furthermore, our research was conducted only among Polish participants, making our results less generalizable. While this investigation focused on Roman Catholics in Poland, our findings should be replicated in other cultural contexts, including non-WEIRD samples. Moreover, potentially fertile ground for future research would also be to investigate the relations between different forms of religiousness and not only acceptance but also the mere rejection of conspiracy explanations. In fact, there are many mysterious world events that may be difficult to explain in different than conspiratorial terms (e.g., Malaysia Airlines Flight MH370 plane disappearance). The fact that one does not accept a conspiracy explanation (i.e., scores low on particular scale measuring conspiracy beliefs) does not clarify whether they reject conspiracy theory ("I am sure that there was no conspiracy") or simply accepts uncertainty and a lack of knowledge related to a particular event ("I do not know what exactly happened"). These two answers are different, but scales used to measure conspiracy beliefs do not seem to address this issue precisely. Thus, further empirical investigation is needed to better understand the differences between those who accept uncertainty versus reject conspiracy explanations and seize on non-conspiratorial alternatives that are not necessarily based on facts. Finally, recent research has found that the effects of personal characteristics are less pronounced in strong situations such as the current pandemic (Zajenkowski et al., 2020). Future research on religion's role during the pandemic should, therefore, include situational perceptions as well as other types of social and cognitive factors that may influence the beliefs and the behavior of individuals in the wake of the COVID-19 pandemic.

CRediT authorship contribution statement

Paweł Łowicki: Conceptualization, Methodology, Writing – original draft, Writing – review & editing. **Marta Marchlewska:** Conceptualization, Methodology, Writing – original draft, Writing – review & editing, Funding acquisition. **Zuzanna Molenda:** Methodology, Formal analysis. **Adam Karakula:** Formal analysis, Writing – original draft. **Dagmara Szczepańska:** Writing – review & editing.

Declaration of competing interest

The authors declare that they have no conflict of interest.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.paid.2021.111413.

References

Al-Kire, R. L., Pasek, M. H., Tsang, J. A., Leman, J., & Rowatt, W. C. (2021). Protecting America's borders: Christian nationalism, threat, and attitudes toward immigrants in the United States. *Group Processes & Intergroup Relations*. https://doi.org/10.1177/1368430220978291. Advance online publication.

Altemeyer, B., & Hunsberger, B. (2004). A revised religious fundamentalism scale: The short and sweet of it. *The International Journal for the Psychology of Religion, 14*(1), 47–54. https://doi.org/10.1207/s15327582ijpr1401_4

Bale, J. M. (2007). Political paranoia v. political realism: On distinguishing between bogus conspiracy theories and genuine conspiratorial politics. *Patterns of Prejudice, 41*(1), 45–60. https://doi.org/10.1080/00313220601118751

Bentzen, J. (2020). In crisis, we pray: Religiosity and the COVID-19 pandemic. In *, 20. Covid economics, vetted and real-time papers* (pp. 52–67). https://cepr.org/active/publications/discussion_papers/dp.php?dpno=14824.

Besta, T., & Błażek, M. (2007). Polska adaptacja skali fundamentalizmu religijnego autorstwa B. Altemeyera i B. Hunsbergera [Polish adaptation of the religious fundamentalism scale by B. Altemeyer and B. Hunsberger]. *Przegląd Psychologiczny, 50*, 347–365.

Biddlestone, M., Green, R., Cichocka, A., Sutton, R., & Douglas, K. (2021). Conspiracy beliefs and the individual, relational, and collective selves. Social and personality psychology. *Compass, 15*(10), Article e12639. https://doi.org/10.1111/spc3.12639

Bierwiaczonek, K., Kunst, J. R., & Pich, O. (2020). Belief in COVID-19 conspiracy theories reduces social distancing over time. *Applied Psychology: Health and Well-Being, 12*(4), 1270–1285. https://doi.org/10.1111/aphw.12223

Bjorck, J. P., & Thurman, J. W. (2007). Negative life events, patterns of positive and negative religious coping, and psychological functioning. *Journal for the Scientific Study of Religion, 46*(2), 159–167. https://doi.org/10.1111/j.1468-5906.2007.00348.x

Boguszewski, R., Makowska, M., Bożewicz, M., & Podkowińska, M. (2020). The COVID-19 pandemic's impact on religiosity in Poland. *Religions, 11*(12), Article 646. https://doi.org/10.3390/rel11120646

Brandt, M. J., & Reyna, C. (2010). The role of prejudice and the need for closure in religious fundamentalism. *Personality and Social Psychology Bulletin, 36*(5), 715–725. https://doi.org/10.1177/0146167210366306

Cichocka, A., Marchlewska, M., & Golec de Zavala, A. (2016). Does self-love or self-hate predict conspiracy beliefs? Narcissism, self-esteem, and the endorsement of conspiracy theories. *Social Psychological and Personality Science, 7*(2), 157–166. https://doi.org/10.1177/1948550615616170

Cichocka, A., Marchlewska, M., Golec de Zavala, A., & Olechowski, M. (2016). 'They will not control us': Ingroup positivity and belief in intergroup conspiracies. *British Journal of Psychology, 107*(3), 556–576. https://doi.org/10.1111/bjop.12158

Cislak, A., Marchlewska, M., Wojcik, A. D., Śliwiński, K., Molenda, Z., Szczepańska, D., & Cichocka, A. (2021). National narcissism and support for voluntary vaccination policy: The mediating role of vaccination conspiracy beliefs. *Group Processes & Intergroup Relations, 24*(5), 701–719. https://doi.org/10.1177/1368430220959451

Coyle, C. (2020, April 26). Booming bible sales offer salvation to booksellers. The Times. https://www.thetimes.co.uk/article/booming-bible-sales-offer-salvation-to-booksellers-26r82kz9n.

Czarnek, G., Dragon, P., Szwed, P., & Wojciszke, B. (2017). Kwestionariusz przekonań politycznych: własności psychometryczne [Political beliefs questionnaire: Psychometric properties]. *Psychologia Społeczna, 41*, 205–222. https://doi.org/10.7366/1896180020174108

Douglas, K. M., Uscinski, J. E., Sutton, R. M., Cichocka, A., Nefes, T., Ang, C. S., & Deravi, F. (2019). Understanding conspiracy theories. *Political Psychology, 40*(S1), 3–35. https://doi.org/10.1111/pops.12568

Evans, J. H., & Evans, M. S. (2008). Religion and science: Beyond the epistemological conflict narrative. *Annual Review of Sociology, 34*, 87–105. https://doi.org/10.1146/annurev.soc.34.040507.134702

Franks, B., Bangerter, A., & Bauer, M. (2013). Conspiracy theories as quasi-religious mentality: An integrated account from cognitive science, social representations theory, and frame theory. *Frontiers in Psychology, 4*, Article 424. https://doi.org/10.3389/fpsyg.2013.00424

Galliford, N., & Furnham, A. (2017). Individual difference factors and beliefs in medical and political conspiracy theories. *Scandinavian Journal of Psychology, 58*(5), 422–428. https://doi.org/10.1111/sjop.12382

Hannover, B., Gubernath, J., Schultze, M., & Zander, L. (2018). Religiosity, religious fundamentalism, and ambivalent sexism toward girls and women among adolescents and young adults living in Germany. *Frontiers in Psychology, 9*, Article 2399. https://doi.org/10.3389/fpsyg.2018.02399

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). Guilford Press.

Huber, S., & Huber, O. W. (2012). The centrality of religiosity scale (CRS). *Religions, 3*(3), 710–724. https://doi.org/10.3390/rel3030710

Jackson, J. C., Jasko, K., Abrams, S., Atkinson, T., Balkcom, E., Kruglanski, A., Gray, K., & Halberstadt, J. (2020). *Religion does not inhibit belief in science, but non-religious people think it does*. PsyArXiv. https://doi.org/10.31234/osf.io/536w7.

Jasinskaja-Lahti, I., & Jetten, J. (2019). Unpacking the relationship between religiosity and conspiracy beliefs in Australia. *British Journal of Social Psychology, 58*(4), 938–954. https://doi.org/10.1111/bjso.12314

Koenig, H. G. (2012). Religion, spirituality, and health: The research and clinical implications. *International Scholarly Research Notices: Psychiatry, 2012*, Article 278730. https://doi.org/10.5402/2012/278730

Kossowska, M., Szwed, P., Wyczesany, M., Czarnek, G., & Wronka, E. (2018). Religious fundamentalism modulates neural responses to error-related words: The role of motivation toward closure. *Frontiers in Psychology, 9*, Article 285. https://doi.org/10.3389/fpsyg.2018.00285

Kowalski, J., Marchlewska, M., Molenda, Z., Górska, P., & Gawęda, Ł. (2020). Adherence to safety and self-isolation guidelines, conspiracy and paranoia-like beliefs during COVID-19 pandemic in Poland-associations and moderators. *Psychiatry Research, 294*, Article 113540. https://doi.org/10.1016/j.psychres.2020.113540

Kranz, D., Niepel, C., Botes, E., & Greiff, S. (2020). Religiosity predicts unreasonable coping with COVID-19. *Psychology of Religion and Spirituality*. https://doi.org/10.1037/rel0000395. Advance online publication.

Ladini, R. (2021). Religious and conspiracist? An analysis of the relationship between the dimensions of individual religiosity and belief in a big pharma conspiracy theory. *Italian Political Science Review/Rivista Italiana di Scienza Politica*. https://doi.org/10.1017/ipo.2021.15. Advance online publication.

Łowicki, P., & Zajenkowski, M. (2020). Empathy and exposure to credible religious acts during childhood independently predict religiosity. *The International Journal for the Psychology of Religion, 30*(2), 128–141. https://doi.org/10.1080/10508619.2019.1672486

Marchlewska, M., Cichocka, A., Łozowski, F., Górska, P., & Winiewski, M. (2019). In search of an imaginary enemy: Catholic collective narcissism and the endorsement of gender conspiracy beliefs. *The Journal of Social Psychology, 159*(6), 766–779. https://doi.org/10.1080/00224545.2019.1586637

Marchlewska, M., Cichocka, A., & Kossowska, M. (2018). Addicted to answers: Need for cognitive closure and the endorsement of conspiracy beliefs. *European Journal of Social Psychology, 48*(2), 109–117. https://doi.org/10.1002/ejsp.2308

Marchlewska, M., Green, R., Cichocka, A., Molenda, Z., & Douglas, K. M. (2021). From bad to worse: Avoidance coping with stress increases conspiracy beliefs. *British Journal of Social Psychology*. https://doi.org/10.1111/bjso.12494. Advance online publication.

McPhetres, J., Jong, J., & Zuckerman, M. (2021). Religious americans have less positive attitudes toward science, but this does not extend to other cultures. *Social Psychological and Personality Science, 12*(4), 528–536. https://doi.org/10.1177/1948550620923239

Molenda, Z., Marchlewska, M., Górska, P., Michalski, P., Szczepańska, D., Furman, A., & Malinowska, K. (2020). *Koronawirus w Polsce: Perspektywa psychologii społecznej Wyniki pierwszej fali badania podłużnego przeprowadzonego na reprezentatywnej próbie Polaków i Polek [Coronavirus in Poland: A social psychology perspective. Results of the first wave of longitudinal study conducted on a representative sample of Poles]*. Political Cognition Lab, Institute of Psychology, Polish Academy of Sciences & Center for Research on Prejudice, University of Warsaw. http://politicalcognition.psych.pan.pl/images/Raporty/raport_koronawirus.pdf.

Molenda, Z., Marchlewska, M., Rogoza, M., Michalski, P., Górska, P., Szczepańska, D., & Cislak, A. (2021). *What makes an Internet troll? On the relationships between temperament (BIS/BAS), Dark Triad and Internet trolling [Manuscript submitted for publication]*. Institute of Psychology, Polish Academy of Sciences.

Norman, A. (2021). *Mental immunity: Infectious ideas, mind-parasites, and the search for a better way to think*. HarperCollins Publishers.

Pargament, K. I. (2001). *The psychology of religion and coping: Theory, research, practice*. Guilford Press.

Payir, A., Davoodi, T., Cui, K. Y., Clegg, J. M., Harris, P. L., & Corriveau, K. (2021). Are high levels of religiosity inconsistent with a high valuation of science? Evidence from the United States, China and Iran. *International Journal of Psychology, 56*(2), 216–227. https://doi.org/10.1002/ijop.12701

Pennycook, G., Ross, R. M., Koehler, D. J., & Fugelsang, J. A. (2016). Atheists and agnostics are more reflective than religious believers: Four empirical studies and a meta-analysis. *PLoS One, 11*(4), Article e0153039. https://doi.org/10.1371/journal.pone.0153039

Plohl, N., & Musil, B. (2021). Modeling compliance with COVID-19 prevention guidelines: The critical role of trust in science. *Psychology, Health & Medicine, 26*(1), 1–12. https://doi.org/10.1080/13548506.2020.1772988

Romer, D., & Jamieson, K. H. (2020). Conspiracy theories as barriers to controlling the spread of COVID-19 in the US. *Social Science & Medicine, 263*, Article 113356. https://doi.org/10.1016/j.socscimed.2020.113356

Sahgal, N., & Connaughton, N. (2021, January 27). *More Americans than people in other advanced economies say COVID-19 has strengthened religious faith*. Pew Research Center. https://www.pewforum.org/wp-content/uploads/sites/7/2021/01/01.27.21_covid.religion.report.pdf.

Saroglou, V. (2014). Introduction: Studying religion in personality and social psychology. In V. Saroglou (Ed.), *Religion, personality, and social behavior* (pp. 1–28). Psychology Press.

Saroglou, V., Corneille, O., & Van Cappellen, P. (2009). "Speak, Lord, your servant is listening": Religious priming activates submissive thoughts and behaviors. *The International Journal for the Psychology of Religion, 19*(3), 143–154. https://doi.org/10.1080/10508610902880063

Seybold, K. S., & Hill, P. C. (2001). The role of religion and spirituality in mental and physical health. *Current Directions in Psychological Science, 10*(1), 21–24. https://doi.org/10.1111/1467-8721.00106

Shanahan, L., Steinhoff, A., Bechtiger, L., Murray, A. L., Nivette, A., Hepp, U., Ribeaud, D., & Eisner, M. (2020). Emotional distress in young adults during the COVID-19 pandemic: Evidence of risk and resilience from a longitudinal cohort study. *Psychological Medicine*. https://doi.org/10.1017/S003329172000241X. Advance online publication.

Sherkat, D. E. (2011). Religion and scientific literacy in the United States. *Social Science Quarterly, 92*(5), 1134–1150. https://doi.org/10.1111/j.1540-6237.2011.00811.x

Sherkat, D. E., & Darnell, A. (1999). The effect of parents' fundamentalism on children's educational attainment: Examining differences by gender and children's fundamentalism. *Journal for the Scientific Study of Religion, 38*(1), 23–35.

Stephens, M. (2020). A geospatial infodemic: Mapping Twitter conspiracy theories of COVID-19. *Dialogues in Human Geography, 10*(2), 276–281. https://doi.org/10.1177/2043820620935683

Szałachowski, R., & Tuszyńska-Bogucka, W. (2021). "Dies Irae?" The role of religiosity in dealing with psychological problems caused by the COVID-19 pandemic—studies on a Polish sample. *Religions, 12*(4), Article 267. https://doi.org/10.3390/rel12040267

Szumowska, E., Czernatowicz-Kukuczka, A., Kossowska, M., Król, S., & Kruglanski, A. W. (2020). Truth and significance: A 3N Model (Needs, Narratives, Networks) perspective on religion. In K. Vail, & C. Routledge (Eds.), *The science of religion, spirituality, and existentialism* (pp. 225–242). Academic Press.

Tsang, J. A., Al-Kire, R. L., & Ratchford, J. L. (2020). Prosociality and religion. *Current Opinion in Psychology, 40*, 67–72. https://doi.org/10.1016/j.copsyc.2020.08.025

van Prooijen, J. W., & van Lange, P. A. (2014). The social dimension of belief in conspiracy theories. In J. W. van Prooijen, & P. A. M. van Lange (Eds.), *Power, politics, and paranoia. Why people are suspicious of their leaders*. Cambridge University Press.

van Prooijen, J. W., & van Vugt, M. (2018). Conspiracy theories: Evolved functions and psychological mechanisms. *Perspectives on Psychological Science, 13*(6), 770–788. https://doi.org/10.1177/1745691618774270

Vincent, W., Parrott, D. J., & Peterson, J. L. (2011). Effects of traditional gender role norms and religious fundamentalism on self-identified heterosexual men's attitudes, anger, and aggression toward gay men and lesbians. *Psychology of Men & Masculinity, 12*(4), 383–400. https://doi.org/10.1037/a0023807

Vishkin, A., Ben-Nun Bloom, P., Schwartz, S. H., Solak, N., & Tamir, M. (2019). Religiosity and emotion regulation. *Journal of Cross-Cultural Psychology, 50*(9), 1050–1074. https://doi.org/10.1177/0022022119880341

Ward, C., & Voas, D. (2011). The emergence of conspirituality. *Journal of Contemporary Religion, 26*(1), 103–121. https://doi.org/10.1080/13537903.2011.539846

Weber, M. (1993). Trans. In E. Fischoff (Ed.), *The sociology of religion* (2nd ed.). Beacon Press (Original work published 1920).

Webster, D. M., & Kruglanski, A. W. (1994). Individual differences in need for cognitive closure. *Journal of Personality and Social Psychology, 67*(6), 1049–1062. https://doi.org/10.1037/0022-3514.67.6.1049

Yendell, A., & Huber, S. (2020). The relevance of the centrality and content of religiosity for explaining Islamophobia in Switzerland. *Religions, 11*(3), Article 129. https://doi.org/10.3390/rel11030129

Zajenkowski, M., Jonason, P. K., Leniarska, M., & Kozakiewicz, Z. (2020). Who complies with the restrictions to reduce the spread of COVID-19?: Personality and perceptions of the COVID-19 situation. *Personality and Individual Differences, 166*, Article 110199. https://doi.org/10.1016/j.paid.2020.110199

Zarzycka, B. (2011). Polska adaptacja skali Centralności Religijności S. Hubera [Polish adaptation of S. Huber's centrality of religiosity scale]. In M. Jarosz (Ed.), *Psychologiczny pomiar religijności* (pp. 231–261). Towarzystwo Naukowe KUL.

Zarzycka, B., Bartczuk, R. P., & Rybarski, R. (2020). Centrality of religiosity scale in Polish research: A curvilinear mechanism that explains the categories of centrality of religiosity. *Religions, 11*(2), Article 64. https://doi.org/10.3390/rel11020064

Zhong, W., Cristofori, I., Bulbulia, J., Krueger, F., & Grafman, J. (2017). Biological and cognitive underpinnings of religious fundamentalism. *Neuropsychologia, 100*, 18–25. https://doi.org/10.1016/j.neuropsychologia.2017.04.009

Zuckerman, M., Li, C., Lin, S., & Hall, J. A. (2020). The negative intelligence–religiosity relation: New and confirming evidence. *Personality and Social Psychology Bulletin, 46*(6), 856–868. https://doi.org/10.1177/0146167219879122