

# Superstitions, Religious Identity, and COVID-19 Conspiracy Beliefs in Secularized Czechia

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## Abstract

The paper explores how individuals' religious identity—categorized as non-religious, religious but not affiliated, and religiously affiliated with traditional churches—in-

fluences COVID-19 conspiracy beliefs in Czechia. Based on an online sample of more than 7,800 Czech participants, our findings indicate that religiously affiliated individuals were less likely to endorse COVID-19 conspiracy beliefs compared to religious but not affiliated individuals. However, after accounting for individuals' superstitious beliefs, the differences in COVID-19 conspiracy beliefs between the three categories became negligible. Additionally, we found that public practices negatively affected COVID-19 conspiracy beliefs among individuals affiliated with traditional churches.

## Keywords

COVID-19 – religion – conspiracy beliefs – Czechia – superstitions

COVID-19 conspiracy theories surged immediately after the outbreak of the pandemic. Uncertainty and limited access to reliable information intensified concerns regarding the virus's origins, potential health implications, and preventive strategies. While the popularity of COVID-19 conspiracy beliefs should not be overstated (Jabkowski et al. 2023), their presence in public discourse may harm private and public health. The spread of misleading and false information has been associated with increased rates of vaccination refusal, adoption of irrational medical treatment (Bertin et al. 2020), and refusal to comply with sanitary regulations (Freeman et al. 2022).

According to Douglas et al., conspiracy theories are “attempts to explain the ultimate causes of significant social and political events and circumstances with claims of secret plots by two or more powerful actors” (2019, 4). While the subject of conspiracy theories may range from significant social and political events to pop culture, all conspiracies convey the causes of events and identify actors who, wielding their power and resources, perpetuate malevolent purposes over unaware individuals. Moreover, without concrete empirical evidence, conspiracy theories rely on a discursive framework to construct the illusion of coherence and credibility (Drinkwater et al. 2021).

What distinguishes individuals who find conspiracy theories appealing from others? Except for psychological factors (Dagnall et al. 2022; Stasielowicz 2022; Hoffmann et al. 2022) and social influences (van Mulukom et al. 2022), many researchers have underlined the role of religious beliefs. Although conspiracy theories differ from religion, both systems assert the existence of powerful agents operating behind the scenes and attribute a deeper meaning to events. For example, Grabow and Rock (2023) have argued that religious beliefs may serve as a precursor of conspiracy mentality, while Franks et al. (2013)

have characterized conspiracies as quasi-religious representations. Additionally, individuals holding supernatural beliefs (Griffiths et al. 2019) are more likely to perceive a spurious link between one's actions and the outcome, while paranormal beliefs lead to cognitive fallacies (Brotherton and French 2014), making them more prone to conspiracy beliefs.

However, since religion and conspiracies are multifaceted concepts, their relationship may not be so straightforward (Ladini 2022). While the above studies argue that religious individuals are more likely to believe in conspiracy, others suggest that other aspects of religiosity, such as church affiliation or attendance at religious practices, may have the opposite effect (Jasinskaja-Lahti and Jetten 2019; Wood and Douglas 2018; Frenken et al. 2022). However, these linkages remain underinvestigated in the literature on religion and COVID-19 conspiracy theories. Our study aims to fill this gap by empirically assessing the link between more nuanced aspects of an individual's religiosity and COVID-19 conspiracy beliefs. Using a large online sample of the Czech population, we compare the proneness to COVID-19 conspiracy beliefs between three categories: individuals who are religious but not affiliated with any particular church, those who identify as non-religious, and those who are religiously affiliated with traditional churches (e.g., Catholics or Protestants).

Additionally, we investigate the impact of public religious practices and internal religiosity on COVID-19 conspiracy beliefs. We formulate and test hypotheses regarding whether these groups differ in the propensity to believe in COVID-19 conspiracies and examine if superstitions moderate this association. Our study uses data collected shortly after the pandemic outbreak when the Czech government reported the first cases of the disease in mid-March 2020. Therefore, our data captures the most immediate reactions of people to unpredictable and threatening changes in the environment.

## 1 The Religious Landscape in Czechia

Czechia stands out as an outlier in the East-Central European map of religiosity, with roughly 70 % of Czechs identifying as non-religious (Furstova et al. 2021; Pew Research Center 2017), compared to about 14 % of Poles, roughly 40 % of Hungarians, and only 5 % Moldavians and Romanians. The census data show that secularization accelerated in the postcommunism era, when nearly 40 % of Czechs identified as nonaffiliated in the early 1990s, increasing to 47 % in 2021 (Czech Statistical Office 2022). Moreover, the share of people either refusing to report religious beliefs or reporting unspecified beliefs surged from 16 % to 30 % between 1991 and 2021. The drift from religion has been most evident

among Roman Catholics: at the beginning of the twentieth century, more than 90 % identified as Catholics, declining to 7.4 % in 2021 (Tížik 2023). Researchers suggest that low religiosity in Czechia should not be considered as “atheist” or “non-religious” (Furstova et al. 2021; Nešporová and Nešpor 2009) but rather as a mirror to the anticlerical sentiments. Václavík et al. (2018) describe attitudes toward traditional churches as negative or indifferent. Bubík and Václavík suggest there is in Czechia an “openly hostile or at least ... [a] distrustful attitude to anything the churches and denominations, the Catholic Church above all, represent” (2020, 79). These attitudes have a strong social and historical context and date back to the fourteenth-century Hussite and nineteenth-century national awareness movements, and twentieth-century communism.

Decreasing church attendance has combined with the growing skepticism toward fundamental religious dogmas, such as heaven, the afterlife, or hell (Václavík et al. 2018). Czech society is less likely to believe in those traditional religious beliefs than in the supernatural, such as amulets, horoscopes, and fortune-tellers. For example, about 45 % of Czechs believed in fortune tellers, 41 % in faith healers, and only a little less in horoscopes, while about 20 % believe in heaven and about 25 % in the afterlife (Nešporová and Nešpor 2009). The coexistence of low religiosity with the prevalence of spiritual beliefs in Czechia has been referred to as “private religion” or “individual religion.” It describes situations where individuals who are not affiliated with the institutional church tend to develop personal forms of beliefs or spirituality, often mixing “old” religions with New Age beliefs (Václavík et al. 2018; Tížik 2023). However, at least some spiritual beliefs typical for “alternative” religiosity are also present among Catholic churchgoers. For example, Nešporová and Nešpor (2009) documented that regular (attending at least twice a month) and irregular churchgoers (attended once a month or less) were more likely to believe in healers and horoscopes compared to atheists and the general population. Those results may imply that some aspects of modern spirituality might have seeped into the traditional religious belief system, making this religious category more prone to conspiracy beliefs.

## 2 Religious Beliefs and COVID-19 Conspiracy Beliefs

Many previous studies have documented a positive relationship between COVID-19 conspiracy and religious beliefs (Green and Douglas 2018; Pait et al. 2023; Ladini and Vezzoni 2022). In a recent study, Jabkowski et al. (2023) found that in twenty-six European countries, religious beliefs were positively associated with the belief that the pandemic resulted from actions pursued

by governments or organizations. Similarly, the positive link between COVID-19 conspiracy and religiosity was recently found by Tsamakidis et al. (2022) in the US, UK, South Korea, and Turkey. Van Mulukom et al. (2022) identified a positive association between religiosity and endorsement of COVID-19 in some countries but pointed to several moderators of this relationship, such as political orientation, trust in science, or dimension of religious beliefs. In Germany, a country with Christian traditions, Grabow and Rock (2023) found that conspiracy mentality mediated religiosity's association with conspiracy narratives. Explaining the link between beliefs and conspiracy theories, researchers emphasized the role of religious socialization, during which individuals are exposed to cognitive factors that prioritize imperatives over proofs. Consequently, religiosity may lay the groundwork for a conspiracy mentality in adulthood. Further, based on meta-analyses, Frenken et al. (2022) found a positive association between religiosity and conspiracy beliefs, but the magnitude of the association varied between countries—it was high in Poland (a country with high religiosity) and minor in Germany (a country with low religiosity).

Conceptually, religious individuals are expected to believe in conspiracies because religion and conspiracy theories share core characteristics, including belief in powerful agents, assumption of the intentionality of events, and erroneous links between the reason and the outcome. Also, both concepts address similar individual needs. For example, researchers have pointed out that both conspiracy and supernatural beliefs appeal to individuals seeking order and patterns in chaos (van Prooijen et al. 2018). Other explanations highlight that conspiracy beliefs and religion satisfy the need for security and control. For example, Green and Douglas (2018) documented that insecure attachment style is positively related to holding conspiracy beliefs, arguing that conspiracy beliefs may be rooted in early childhood socialization. For those reasons, conspiracy may be a surrogate of traditional religions in some cultural contexts. Franks et al. argued that in post-industrial societies characterized by increasing secularization, conspiracy theories function as quasi religions, proposing narratives contradicting the official and legitimized discourse. These alternative interpretations tend to appeal most to individuals who oppose organized religions, as institutional religions often compete with these alternative views.

### 3 Religious Affiliation and COVID-19 Conspiracy Beliefs

Although conspiracy theories and religiosity share many similarities, they also have differences. Most importantly, conspiracies lack the institutional and legitimized long-lasting structures designed to gather people in the same place

to jointly praise the shared system of beliefs and values and perform the rituals together. Religious affiliation—a membership in a given church—may also influence the endorsement of conspiracy beliefs. This idea stems from the notion that churches and conspiracy theories offer conflicting explanations of events, leading individuals affiliated with religious institutions to reject conspiracies in favor of church learning. In contrast, those unaffiliated with traditional churches and who do not follow views presented by religious leaders are more likely to develop independent systems of beliefs.

Further, Frenken et al. (2022) suggested that if religious individuals are satisfied with the narratives provided by their church, they will be less motivated to seek out alternative claims. Some empirical studies partly support this hypothesis. For example, Kosarkova et al. (2021) found that church-affiliated individuals in Czechia, compared to spirituals with non-religious affiliations, were less prone to hold COVID-19 conspiracy beliefs and refuse vaccination. The researchers suggested that the neutral effect of religious affiliation on COVID-19 conspiracy beliefs in Czechia may stem from the supportive reaction of the head of the Catholic Church regarding some COVID-19 sanitary measures (Gaweł et al. 2021). Moreover, Czechia media portrayed the Catholic Church mostly positively, depicting priests as willing to implement government safety measures, such as restrictions during masses or the cancellation of religious events. In contrast, religious activities against strict sanitary regimes implemented across East Europe were framed negatively in Czechia media (Rončáková 2022).

Relying on those studies, *Hypothesis 1* of this study posits that individuals affiliated with traditional churches score lower on COVID-19 conspiracy scales than religious but nonaffiliated and non-religious individuals. We argue that individuals affiliated with traditional churches face higher social control and may conform to the views stated by their religious leaders. In contrast, religious nonaffiliated and non-religious individuals tend to develop a system of beliefs more independently from the church's teachings.

#### 4 Internal Religiosity, Religious Practices, and COVID-19 Conspiracy Beliefs

The centrality of religious beliefs may also influence the endorsement of conspiracy in an individual system of beliefs. In one study, Jasinskaja-Lahti and Jetten (2019) found no difference in COVID-19 conspiracy beliefs between believers and nonbelievers, but further investigation showed that conspiracy beliefs depended on the importance of religious beliefs in the worldview. Believers

who value their religious worldview are more likely to believe in conspiracy, which remains a more important predictor than mere religious beliefs. Similarly, Frenken et al. (2022) reported that conspiracy beliefs positively correlate with intrinsic religiosity (measuring how important religion is in one's life) but found no relationship with extrinsic and quest religiosity. In contrast, the non-religious mindset did not facilitate conspiracy beliefs among nonbelievers. The authors explain that a high religious worldview is associated with higher anti-intellectualism, making individuals more susceptible to conspiracy. Tonković et al. (2021) reported that in Croatia, the importance of religion was positively associated with COVID-19 conspiracy beliefs. In contrast, Łowicki et al. (2022), using a Polish sample, showed that religious centrality, representing the importance or saliency of religion, was negatively related to COVID-19 conspiracy beliefs in contrast to religious fundamentalism.

The conflicting results of the aforementioned studies may stem from the differences in individuals' religious identities. It is likely that among religiously affiliated individuals, the link between internal religiosity and conspiracy will be negative because those individuals may remain faithful to the official religious doctrine. We previously hypothesized that affiliation with a traditional church is expected to "protect" individuals from conspiracy beliefs, and internal religiosity may further contribute to this effect by making church-affiliated individuals with intrinsic religiosity even more resistant toward conspiracy theories. Hence, *Hypothesis 2a* states that internal religiosity is negatively related to COVID-19 conspiracy beliefs. This assumption may hold in Czechia religiosity, where the cost of being unchurched is low. In such a setting, individuals who value religious values will likely exhibit higher "fidelity" to church learning and resist competing narratives.

Endorsement of conspiracy beliefs may also differ between religious attendees and nonattendees. Religious meetings may enhance mutual understanding of events by upholding the preferred narratives and refuting alternative views. In the context of spreading conspiracy theories, Franks et al. (2013) pointed out that rituals provide confirmation of shared beliefs that cannot be verified otherwise and place the group's beliefs at the center of community attention through their social and repetitive character. Further, Wood and Douglas (2018) highlighted that the social dimension of religion might translate into greater social connectedness and transfer of ideas compared to rather loose communities of conspiracy believers. Similarly, Ladini (2022) documented that in Italy, the regular church attendees were less likely to believe in the big pharma conspiracy than nonattendees and irregular attendees, but this difference became negligible after controlling for trust in political institutions and the church. In another study, Ladini and Vezzoni (2022) found that the link

between vaccination willingness and attribution to divine agency in explaining evens was mediated by conspiracy beliefs, but only among individuals not participating in religious practices. In contrast, the mediated effect was not observed among people participating in religious meetings. A rare example where the link between conspiracy beliefs and religious practices was different is a study from Romania, where higher attendance in religious practices was related to higher belief in vaccine conspiracy theories (Buturoiu et al. 2021).

Given that religious practices mainly involve those who are religiously affiliated, we expect to observe a negative association between COVID-19 conspiracy beliefs and public religious practices in this category (*Hypothesis 2b*). This expectation arises from the inherent prosocial nature of religious rituals prevalent in the traditional churches, which reinforce the control over the behaviors and worldview of their adherents and strengthen the beliefs in official narratives.

## 5 Superstitions and Conspiracy Beliefs

A substantial body of research has highlighted the symbiotic relationship between conspiracy theories and other supernatural beliefs, such as superstitions (Ward and Voas 2011). Both superstitions and conspiracy theories offer apparent causal links between events and outcomes, serving as explanatory mechanisms in times of uncertainty (Hoffmann et al. 2022). Griffiths et al. (2019) demonstrated that individuals scoring higher on a superstitions scale exhibited greater susceptibility to perceiving causal connections between their actions and outcomes, even when such relationships were randomized. Moreover, individuals who believe in the supernatural and conspiracy theories are less inclined to engage in complex cognitive tasks than those who do not (Bahçekapili and Yilmaz 2017; Shenhav et al. 2012). Individuals with superstitious or paranormal beliefs tend to formulate conclusions prematurely, require less information to confirm hypotheses, and exhibit a bias toward confirmatory rather than disconfirmatory evidence (Blanco et al. 2015). Similarly, Lindeman and Aarnio (2007) found a positive relationship between intuitive thinking, paranormal beliefs, and the propensity to believe in groundless ideas offered by alternative medicine, linking this tendency to the “ontological confusion”—the attribution of mental and biological characteristics to inanimate objects (eg., plants *like* sun) and with attributing intentionality to processes and events.

Furthermore, individuals holding supernatural beliefs, akin to those endorsing conspiracy beliefs, perceive reality through a similar lens, wherein actions



and events are imbued with purpose or are orchestrated by external agents or powers. Svedholm et al. (2010) also reported that beliefs in the purpose of events, a foundation aspect of conspiracy, fall into the same category of phenomenon as superstition or magic, and both stem from confusions of core knowledge from psychology, biology, and physics. The researchers document that people attributing life to lifeless entities were also more likely to ascribe intentions to events.

Although the above studies investigated different facets of supernatural beliefs, they suggest that such beliefs make individuals more receptive to perceiving patterns in randomness, correlate with susceptibility to unsupported ideas, and intertwine with confirmation bias. Given the solid conceptual resemblance of superstitious beliefs and COVID-19 conspiracy beliefs, we consider superstitions a potential confounder of the relation between religious identity and COVID-19 conspiracy beliefs.

## 6 Current Study

This study investigated the link between individuals' religious identity and beliefs in COVID-19 conspiracies. We posit that individuals who identify as religious but are not affiliated with a specific religion will display greater belief in COVID-19 conspiracies compared to both religiously affiliated individuals and those who identify as non-religious. We anticipate that the latter group will exhibit the lowest levels of conspiracy beliefs. An individual's superstitions score may serve as a potential confounder of this relationship. Additionally, we hypothesize that internal religiosity and engagement in public religious practices will decrease conspiracy beliefs among affiliated believers, even after controlling for superstition beliefs.

### 6.1 Data

Participants were recruited from an online community of volunteers willing to participate in research, which is administered by the authors (J. Flegr, L. Připlatová, R. Kopecký). The participant pool comprised more than 43,000 individuals. The invitation to the current study was sent using the Facebook snowball method (Kaňková et al. 2015) and directly through an individual's email. The questionnaire was distributed between March 13, 2020, and December 31, 2021 (Facebook, 4,954 participants) and March 13, 2020, and July 17, 2021 (email 3,051 participants), with most responses being collected before December 31, 2020 (4,455 Facebook, 2,806 emails). The final data set consisted of 7,831 participants. No financial reward was offered for participation. The questionnaire

was anonymous, but the participants could have filled in their anonymized community registration number so that we could use their data from multiple questionnaires in long-term studies. The Faculty of Science, Charles University IRB, approved the study.

Noteworthy is that the data collection started at the beginning of the pandemic in Czechia. The Ministry of Health reported the first three confirmed cases of COVID-19 on March 1, 2020, and on March 12, a day before the invitation was sent to the respondents, the government declared a state of emergency.

## 6.2 *Measures*

### 6.2.1 Religious Identity

Participants were asked to indicate whether they identify as: (1) not religious, (2) religious, but do not belong to any church or religious group, (3) belong to traditional churches (Roman Catholic Church, Evangelical Church, or Hussite Church). Based on self-reported identification we distinguished between three categories of religious identity: (1) non-religious, (2) religious but not affiliated, (3) affiliated to traditional churches.

### 6.2.2 The COVID-19 Conspiracy Beliefs Scale

The COVID-19 conspiracy beliefs were assessed using nine items assessed on a six-point scale from “definitely not” to “definitely yes.” The statements covered a range of claims that appeared to be most relevant at the time of the study, e.g.: “The coronavirus was artificially created in the laboratory as a biological weapon”; “Coronavirus mutates so fast that it is impossible to develop a drug or vaccine against it”; “Immoral people are at increased risk of contracting coronavirus.” Cronbach’s  $\alpha = 0.71$ . Using the *irt* package (Kondraterk 2022), utilizing item response theory (IRT) and the generalized graded response model (GRM), we estimated a latent trait reflecting individuals’ COVID-19 conspiracy beliefs.

### 6.2.3 The Superstitious Beliefs Scale

The superstitious beliefs statements consisted of eight items, e.g.: “You can influence your happiness with things like crossing your fingers or breaking a mirror”; “It is possible to connect with the minds of our family members and friends by thinking of them, even if they are very far away”; “There are spiritual beings like demons and angels who can help or harm people.” A six-point response format ranging from “definitely not” to “definitely yes,” with the numerical values in between was used. Cronbach’s  $\alpha = 0.86$ . IRT graded response model was used to assess latent traits reflecting individuals’ superstitions beliefs (Kondratek 2022).

#### 6.2.4 The Internal Religiosity Scale

The scale comprised three statements assessing the centrality of religion in respondents' belief system: "I experience the presence of God in my life"; "My religious faith underpins my whole approach to life"; "I try very hard to apply my religious beliefs to all aspects of my life." Responses were recorded using a six-point scale, and the final score was calculated as the summation of responses to these items. Cronbach's  $\alpha = 0.90$ .

#### 6.2.5 Public Practices

Participation in public practices is measured using a dummy variable, where a value of 1 is ascribed to respondents who participate at least once in public practices per month and 0 to those who reported non-participation.

### 6.3 Results

Table 1 presents the demographic characteristics of participants: the mean age of the respondents was twenty-six, with females comprising 64 % of the sample; about 52 % of participants held a tertiary degree. Age, gender, and education of our sample differed from the general Czechia population: according to the Czech Statistical Office (2021), the average age of the Czechia population was 42.7 years, with females making up 50.7 %; 17.6 % had tertiary education. Regarding religious identity, 57.2 % of participants identified as non-religious, 11.4 % were affiliated with traditional churches, and 31.4 % considered themselves religious but not affiliated. These proportions align with findings from other studies on the Czechia population (Furstovwa et al. 2021).

Table 1 displays the results of Pearson correlation between all variables used in the analyses. The correlation between superstitions and COVID-19 conspiracy beliefs is positive and strong ( $r=.47$ ). This result adds to previous studies suggesting a strong correlation between conspiracy beliefs and supernatural beliefs (Prooijen et al. 2018; Lindeman and Aarnio 2007). COVID-19 conspiracy beliefs also positively correlate with internal religiosity ( $r=.208$ ) but even more strongly with superstitious beliefs ( $r=.448$ ). Public religious practices are positively associated with conspiracy beliefs and superstitions. Also, public practices positively and strongly correlate with internal religiosity.

As for the remaining variables, females are more likely to hold conspiracy beliefs, as well as score higher on the superstitions scale. Higher education is negatively associated with those two variables and is little positive with internal religiosity, while living in large cities shows a small negative correlation with conspiracy beliefs, superstitions, and internal religiosity, in contrast to people from towns.

TABLE 1 Zero-order Pearson correlation coefficients

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
	C19 con- spiracy beliefs	Supersti- tious beliefs	Internal religios- ity	Non- religious	Religious but not affiliated	Affiliated to tradi- tional churches	Public practices	Female	Tertiary educa- tion	Age	Place of residence; Prague	Place of residence; large cities
1. C19 conspiracy beliefs	–											
2. Superstitious beliefs	.476											
3. Internal religiosity	.208	.450										
4. Non-religious	–.169	–.411	–.666									
5. Religious but not affiliated	.161	.369	.402	–.756								
6. Affiliated to traditional churches	.034	.113	.447	–.465	–.226							
7. Public practices	.133	.399	.610	–.589	.357	.394						
8. Female	.170	.240	.097	–.096	.081	.033	.113					
9. Tertiary education	–.136	–.051	.053	–.028	–.016	.064	.041	.049				
10. Age	.125	.123	.088	–.063	.018	.069	.050	–.059	.032			
11. Place of residence: Prague	–.046	–.020	–.016	.039	–.025	–.023	–.028	.048	.010	.052		
12. Place of residence: large cities	–.019	–.036	–.016	.024	–.002	–.032	–.014	–.035	.062	.038	–.270	
13. Place of residence: towns	.054	.046	0.02	–.052	.023	.046	.036	–.012	–.058	–.075	–.631	–.576

Second, we observe large differences between the investigated religious groups regarding COVID-19 conspiracy beliefs, internal religiosity, and superstition beliefs. Being non-religious is negatively correlated with COVID-19 conspiracy beliefs, superstitions, and internal religiosity. In contrast, being religious but not affiliated positively and strongly correlates with COVID-19 conspiracy, superstitions, and internal religiosity. Affiliation to traditional churches is also positively correlated to COVID-19 conspiracy with superstitions, internal religiosity, and conspiracy. Still, the magnitude of the coefficient is not as large as among those not affiliated: this group scored higher in superstitions, moderately higher in conspiracy, and a little higher in internal religiosity. The results confirm our hypothesis that affiliated people are less likely to believe in a conspiracy than the religious but not affiliated. Non-religious people are the least likely to endorse COVID-19 conspiracy beliefs.

Building on the results in Table 1, in the next step, we fitted OLS regression models to test if the differences between the three religious groups will hold after controlling for superstitious beliefs. The first column of Table 2 presents the differences between religious groups holding constant for demographic covariates. This result confirms *Hypothesis 1*, indicating lower conspiracy beliefs among those affiliated with traditional churches. However, after adding superstitious beliefs (Column 2), the difference between religious groups significantly diminishes: now, religious but nonaffiliated scores are slightly higher than those affiliated with traditional churches. These results imply that superstitious beliefs, as a proxy of supernatural beliefs, seem to be an important confounder of COVID-19 conspirator beliefs.

In the next step we tested the relationship between religious identity, internal religiosity, and COVID-19. We predicted that internal religiosity decreases the COVID-19 conspiracy beliefs among affiliated because in highly secularized environments, offering many opportunities to express individual religious convictions and where private beliefs are not subject to social ostracism, individuals ascribing high value to religion may be more faithful to church learnings and therefore deter alternative narrations. To test this hypothesis, we added an interaction between religious identity and internal religiosity (controlling for superstitions). The effect of internal religiosity for affiliated was negative ( $b = -.096$ ;  $se = .042$ ), confirming *Hypothesis 2a*. The effect is positive in the two remaining groups ( $b = .060$   $se = .022$  for non-religious and  $.030$   $se = .025$  for religious but not affiliated) but relatively small. This indicates that internal religiosity is negatively associated with conspiracy beliefs among affiliated but has the small opposite effect among religious, religious but nonaffiliated, and non-religious. Figure 1 illustrates this relation using predictive margins obtained in the model presented in Column 3.

TABLE 2     The effect of religious identity, superstitions on COVID-19 conspiracy beliefs (standard errors in parentheses)

Variables	(1)	(2)	(3)	(4)
<i>(ref. affiliated to traditional churches)</i>				
Non-religious	-.157 (.034)	.065 (.031)	.001 (.052)	-.165 (.065)
Religious but not affiliated	.143 (.037)	.025 (.034)	-.082 (.055)	-.191 (.070)
Internal religiosity			-.097 (.043)	
Non-religious			.162	
#internal religiosity			(.048)	
Religious but not affiliated			.128	
# internal religiosity			(.050)	
Public practices				-.306 (.070)
Public practices				.175
# non-religious				(.082)
Public practices				.242
#religious but not affiliated				(.080)
Superstitions		.417 (.012)	.408 (.012)	.428 (.012)
Constant	-.318 (.049)	-.224 (.045)	-.128 (.060)	.012 (.072)
Observations	5,970	5,970	5,954	5,871
R-squared	.096	.251	.253	.256

\*All models controlled for age, gender, education and place of residency

In the final step, we estimated the effect of public practices on COVID-19 conspiracy beliefs, assuming that this relationship may differ for religious groups. We hypothesized that public practices decrease conspiracy enforcement, particularly for the affiliated. To that aim, we estimated the interaction between religious practices and three religious groups. The result in Column 4 confirms *Hypothesis 2b* that the effect of public practices for affiliated believers is negative ( $b=-.306$   $se=.070$ ), and was negative but smaller for the remaining groups. Figure 2. presents predictive margins obtained from Column 4.

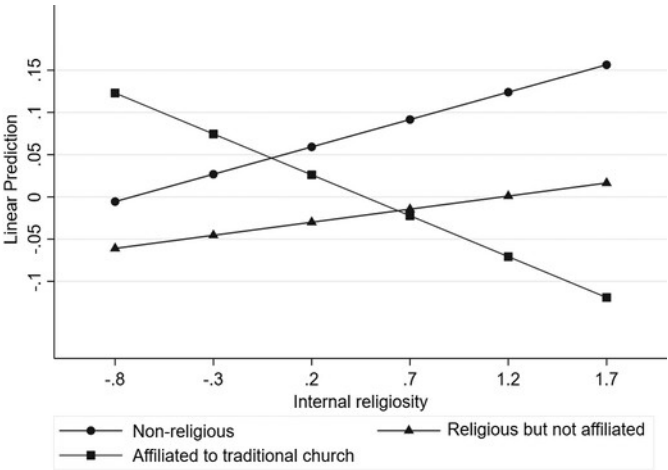


FIGURE 1 COVID-19 conspiracy beliefs by internal religiosity and religious identity

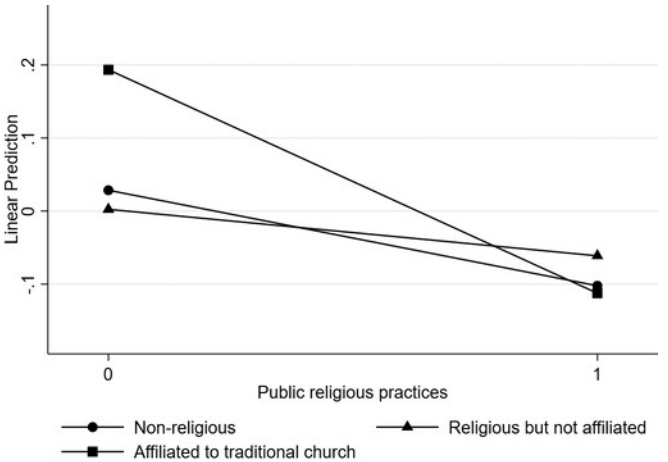


FIGURE 2 COVID-19 conspiracy beliefs by public religious practices and religious identity

7 Discussion

This study seeks to understand the links between the type of religious identity and COVID-19 conspiracy beliefs in Czechia, a country characterized by high secularization, low religious attendance, and a growing trend toward supernatural beliefs. We divided our sample into three categories based on self-reported religious identification: religiously affiliated with traditional church,

religious but nonaffiliated, and non-religious. We then investigated whether these categories differ in propensity for COVID-19 conspiracy beliefs. Additionally, we examined the effect of internal religiosity and public religious practices on those beliefs. Our analyses also control for individual superstitious beliefs (as a proxy for supernatural beliefs) as a potential confounder of conspiracy beliefs (Nowak et al. 2022). Our study was conducted on a nonrepresentative online panel of primarily young people managed by the Czech Academy of Sciences.

Building on previous studies and theoretical insights, we hypothesized that the three religious groups would differ in their endorsement of conspiracy beliefs. Specifically, we expected non-religious individuals to have lower conspiracy beliefs, while religiously nonaffiliated individuals would be more inclined toward conspiracy beliefs than those affiliated with traditional churches. Our analyses confirmed this hypothesis. Interpreting this result, we argue that institutional churches “protect,” at least to some degree, their members from the direct influence of conspiracy theories. In contrast to adherents of traditional religious churches, religious nonaffiliated individuals may be more open to embracing illegitimate ideas offered by conspiracy theories (H1). However, this interpretation held only as long as individuals’ superstitious beliefs were not taken into account. After accounting for this factor and other covariates, the differences between religious categories became negligible, implying that previously observed differences may be attributed mostly to superstitious beliefs rather than religious identity. Spirituality (proximate by superstitious beliefs in our study) seems to be a significant vehicle of conspiracy beliefs. By demonstrating this pattern, we contribute to previous studies highlighting that other variables may confound the link between religious and conspiracy beliefs. For example, Ladini (2022) showed that the difference between regular churchgoers and nonpracticing diminished when accounting for institutional trust, while Frenken et al. (2022) showed a similar effect after adding political orientation. The relationship between those two variables may be indirect and moderated by other individual mental or cognitive characteristics.

We can only speculate whether the predominant role of superstitions in explaining conspiracy may be attributed to the specific religious landscape of the Czechia cultural context or if it represents a broader cognitive phenomenon. For example, Kosarkova et al. (2021), in line with our findings, documented on a Czechia sample that spirituality, rather than religiosity (whether affiliated or not), contributed to higher beliefs in conspiracy theories related to vaccination. Interpreting our results in the context of Czechia religiosity, we highlight that various forms of spirituality have been gaining popularity



in Czechia society. This trend is particularly notable among younger Czechs, who comprise most of our sample. Their beliefs and faith systems became more spiritual, undefined, and individualistic compared to older generations. For example, Coutinho and Laflamme (2024) documented that beliefs in religious dogmas, such as heaven, hell, and the afterlife, are more prevalent among younger cohorts than older among unaffiliated Europeans.

Moreover, Czechia is among the countries where the difference in beliefs in such dogmas between younger and older unaffiliated is one of the largest in Europe. Further, Klůzová Kráčmarová et al. (2019) found that non-religious Czechia adolescents considered supernatural beliefs as a significant aspect of life despite lacking religious socialization in their upbringing. The non-religious youths “customized” religious beliefs, borrowing from both old religions (like Christianity) and the new movements (such as the New Age). While we lack similar reports for religiously affiliated adolescents, the results of our study suggest that members of traditional churches also may hold at least some spiritual beliefs not aligning with the traditional religious doctrine (the religiously affiliated exhibit some level of superstition), and mere affiliation may be less critical for holding conspiracy beliefs.

Going back to the hypothesis that the traditional church “protects” its members from conspiracy theories, we conclude that the church indeed has the ability to suppress competing narratives, but its effectiveness may vary based on the specifics of religious beliefs and patterns of religious practices. Specifically, we found that internal religiosity (*Hypothesis 2a*) and public practices (*Hypothesis 2b*) are negatively associated with COVID-19 conspiracy beliefs among affiliated believers (but neutral in the remaining groups), suggesting that church may decrease susceptibility to conspiracies, but primarily among more involved believers. A centrality of religious beliefs in the individual's life may translate into greater fidelity to the doctrine and adherence to the church's interpretation of events. Conversely, individuals who place less value on religion (lower scores on the internal religiosity scale) or who do not participate in public gatherings where communal worldviews are shared, justified, and rationalized may be more inclined to believe alternative views. This does not imply that nonattenders are immune to alternative, mystical, or magical beliefs; some research suggests otherwise. For example, Nešporová and Nešpor (2009) showed that regular and irregular churchgoers did not differ in magical beliefs (fortune tellers, faith healers) but at the same time, the regulars were more likely to believe in fundamental aspects of traditional religious Christian doctrine (heaven and afterlife). However, these official aspects of religiosity may come to the fore during public religious meetings while alternative beliefs remain unpronounced.

Arguably, the limited “protective” effect of church attendance in our sample may be also tied to the specific cultural context. It is plausible that in societies characterized by high secularization and growing spirituality, where the institutional church plays a minor role in shaping political, social, and economic norms, its influence on the dominant narrative about certain events is likely diminished.

Interpreting the association between conspiracy and superstitions through the lens of cognitive psychology, we extend prior investigations suggesting that various unfounded beliefs, including conspiracy, may in fact represent different facets of the same cognitive phenomena rather than pose as distinct concepts. For example, Lindeman and Aarnio (2007) argue that not only superstitious and supernatural or magical thinking are hardly distinguishable on the conceptual and theoretical ground, but they derive from the exact cognitive mechanism of cognitive confusion (attribution of where the mental qualities to material objects). Furthermore, Svedholm et al. (2010) documented that beliefs regarding the purpose of events, an essential aspect of conspiracy beliefs, fall within the same category of cognitive bias as superstitious or magical thinking—individuals who attribute the purpose to the event are also likely to hold other magical and superstitions beliefs. The shared cognitive mechanism may explain why we observed a strong association between COVID-19 conspiracy and superstition in our study. Moreover, our study’s operationalization of religious identity focuses on self-reported religiosity rather than beliefs in the supernatural. Therefore, this aspect of religiosity seems to play a minor role in explaining COVID-19 conspiracy compared to superstition, emphasizing that the main catalyst of conspiracy thinking is more profound in human cognition.

Our study has limitations that should be taken into account before further research. Our findings indicate the need for a more rigorous taxonomy of the respondent’s religious status should be applied to increase measurement accuracy; it might be essential in secularizing societies like Czechia, where the proportion of the “non-religious” or “religious nonaffiliated” population is growing. Our study categorized religious identity into three main groups, but employing a more detailed classification could provide deeper insight into the complex relationship between religiosity and conspiracy beliefs. Also, since our study sample primarily covered the younger segment of the Czechia population, further studies should aim to include participants from various age groups.

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Appendix

TABLE A1 Demographic characteristics of participants

Baseline characteristic	Non-religious		Religious but not affiliated		Affiliated to traditional church		Full sample	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Gender								
Female	2.254	60.7	1.397	68.5	507	69.5	4.158	64
Male	1.460	39.3	642	31.5	233	31.5	2.335	36
Education level								
Tertiary education	1.932	52.1	1.017	50	286	38.7	3.401	52.5
No tertiary education	1.776	47.9	1.018	50	452	61.3	3.080	47.5
Place of residence								
Prague	818	22	396	19.5	130	17.6	1.344	20.7
Middle-sized cities <sup>a</sup>	1.339	36.1	779	38.3	299	40.5	2.417	37.3
Towns	1.554	41.9	860	42.3	309	41.9	2.723	42
Age	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
	26	13.4	26.7	13.0	29.5	14.7	26.1	13.5

<sup>a</sup>Middle-sized cities defined as having between 500,000 and 100,000 inhabitants; towns defines as having 50,000 and less