Impact of the COVID-19 Pandemic on Religiosity: Evidence from Germany

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How does a major external shock that potentially threatens the community and the individual impact religiosity in the context of ongoing secularization? Do individuals in a rich and secularized society such as Germany react to potential community-level (sociotropic) and individual-level (egotropic) threat with heightened religiosity? We estimate multilevel regression models to investigate the impact of sociotropic and egotropic existential security threats associated with the COVID-19 pandemic on individuals' religiosity. Our data come from a rolling cross-sectional online survey conducted in Germany among 7,500 respondents across 13 waves in 2020. Our findings suggest that a global health pandemic such as COVID-19 increases individuals' perception of existential and economic threat, which, in turn, leads to an increase in religiosity. However, this relationship is only true for egotropic existential security threat but not for sociotropic threat. We discuss the theoretical implications of these findings.

Keywords: religiosity, COVID-19, Germany, existential security, economic insecurity.

INTRODUCTION

The COVID-19 pandemic has reinvigorated discussions on the potential causal relationship between insecurity and secularization, leading to renewed empirical investigations. These studies, including the present paper, aim to investigate whether religiosity has increased as a result of COVID-19 and what implications the empirical outcomes may have on secularization theories, specifically the rationalistic and demand-driven insecurity theory. Insecurity theory primarily scrutinizes religion as a cognitive coping mechanism. According to demand-oriented secularization theories, religiosity is expected to increase when insecurity is heightened or intensified, as in the case of a new global pandemic.

In the field of social sciences, Norris and Inglehart (2004) have prominently argued, based on World Value Survey Data, that religious change and cross-national differences in religiosity are mainly driven by variations in insecurity. They suggest that individuals who grow up and live in contexts characterized by high existential insecurity, such as agrarian societies with poor health systems, are more likely to be religious than individuals growing up and living in more secure circumstances. Similarly, historian Norman Cohn (1970), who studied millennial movements in medieval Christianity, posited that these new religious movements emerged due to the spread of the Great Plague. However, the question remains as to whether 21st century individuals who are accustomed to relying on the biomedical services of a wealthy country's health system perceive the spread of a pandemic on their national territory as a significant threat, compelling them to turn to religion as their main source of hope. Moreover, is religiosity still a fallback option for individuals facing existential security threats in a strongly secularized country? To answer these questions, this paper employs original data from a rolling cross-sectional online survey conducted in Germany during the pandemic's first year in 2020. Our findings suggest that individuals in Germany are more likely to respond to the COVID-19 pandemic with increased religiosity when they experience a more direct impact. However, we observe no effect on individuals' religiosity when the threat is experienced at the national level. We discuss these results in comparison to previous findings on the impact of the COVID-19 pandemic in Poland and Italy, two countries where individuals are on average more religious than in Germany, and where COVID-19 did affect religiosity, as well as in the context of results for the Netherlands, a country on average more secularized than Germany, where COVID-19 did not impact religiosity. In the following section, we will first review the theory of insecurity.

Theory and Literature Review

Demand-driven theories are just one of several theories seeking to explain variance and changes in religiosity. They are often traced back to Durkheim's functionalist definition of religion. Therefore, when Norris and Ingelhart (2004) published "The Sacred and the Secular," they did not introduce a completely new theory, but made a robust empirical and theoretical argument in support of insecurity theory. Their work has stimulated new research, which has at times refuted and at other times refined insecurity theory as we will see in the upcoming section. We focus on three elements that we identify as the theory's central building blocks: namely, the sources of insecurity, the levels of insecurity, and the duration of insecurity. We will then review empirical results for these three theoretical elements and examine how the COVID-19 pandemic has affected religiosity in other countries. Subsequently, we will apply these three elements of insecurity theory to our case study of the COVID-19 pandemic in Germany and conclude the theory and literature review section by formulating hypotheses that will be tested in the empirical section.

A first essential consideration when examining insecurity theory is that insecurity has various sources. Norris and Inglehart encompass a wide range of phenomena under the concept of existential insecurity, which they define as "freedom from various risks and dangers" (Norris and Inglehart 2004:14). The authors cite war, environmental degradation, "natural and manmade disasters such as floods, earthquakes, tornadoes, and droughts, as well as the threat of disease epidemics, violations of human rights, humanitarian crises, and poverty" as examples of such risks and dangers (Norris and Inglehart 2004:14). At other times, Norris and Ingelhart (2004:106) emphasize that a lack of welfare support, individual illness, and poverty also constitute existential security risks. With industrialization, humans became increasingly capable of controlling many of these threats, reducing the need to seek divine intervention and support. Subsequent studies have adopted the concept of existential insecurity but further differentiated it. For instance, Immerzeel and van Tubergen (2011) studied a broad range of economic insecurity experiences, including

the experience of growing up with unemployed parents. They also expanded the perspective on existential insecurity beyond illness, widowhood, and war to encompass experiences of terrorism on one's own territory. Their distinction between existential and economic insecurity has been replicated by Molteni (2021:34; 68) and Storm (2017), who particularly examined economic insecurity and analyzed various factors, such as household income, national economic prosperity, and national social welfare spending. Moreover, several studies have focused on the feelings of insecurity engendered by severe illnesses (Ferraro and Kelley-Moore 2000; Kraus 2022).

A second important aspect that Norris and Inglehart consider is that insecurity can arise at different levels, namely, at the individual and societal levels. Norris and Inglehart refer to individual-level risks as "egotropic" and societal-level risks as "sociotropic," defining the latter as risks that threaten the entire community. "People who experience ego-tropic risks during their formative years (posing direct threats to themselves and their families) or socio-tropic risks (threatening their community) tend to be far more religious than those who grow up under safer, comfortable, and more predictable conditions" (Norris and Inglehart 2004:5). While the concept of egotropic risk is relatively straightforward and pertains to personal experiences such as severe illness, death of a loved one, or poverty, the concept of sociotropic risk is more ambiguous and requires clarification. In a later response to their critics, Norris and Inglehart (2015) defined egotropic risks as personal risks and sociotropic risks as societal risks. These societal risks can emanate from nature, e.g., subsistence farmers "facing sudden disasters from drought or flood, disease or landslides, crop failure or weather-related emergencies" and from the state as in the case of "poor nations [that] have limited access to the basic conditions of survival, including the provision of uncontaminated water and adequate food, access to effective public services offering basic healthcare, literacy, and schooling, and an adequate income" (Norris and Inglehart 2015:3392). Norris and Inglehart (Norris and Inglehart 2015) contend that the strengthening of feelings of security, especially at the sociotropic level, reduces the demand for religion. Sociotropic risk is more than the sum of individual risks because a constant confrontation with risk leaves a mark on society and fosters a generalized awareness of contingency. Living in a society with high sociotropic risks means being surrounded by other individuals who have often experienced that fate was stronger than their will.

Thirdly, risk can have both lasting and permanent effects that impact a group of people over time (e.g., persistent poverty) or sudden effects that arise from unexpected events (e.g., natural disasters in otherwise wealthy countries). Molteni (2021) distinguishes between generational effects and period effects. The idea of a generational effect is a well-established concept in secularization theory, with Voas (2009) arguing that throughout Europe, religiosity decreases by one unit of measurement from one generation to the next. This is a slow and gradual process of religious change. On the other hand, period effects refer to external shocks that impact all individuals in a society. "Such external circumstances can be war, technological innovation, crises, epidemics, a new law such as a smoke ban, or an increase in human security" (Molteni 2021:121). As Norris and Inglehart (2004:5) build their main argument on experiences of high levels of insecurity during an individual's formative years, they certainly acknowledge generational effects. However, Norris and Inglehart also recognize that the process of modernization, which generally leads to greater security, can be temporarily reversed or halted by dramatic events such as natural disasters, wars, or severe recessions, even in the most affluent postindustrial nations (2004:16). Molteni (2021:30) agrees that period effects can potentially explain the resurgence of religiosity but he finds generational effects more likely, especially in Europe with its gradual decline in religiosity. During such a process of secularization, "religious capital" (Verter 2003) based on Bourdieu, cited in Molteni 2021:45) diminishes from one generation to the next. According to Molteni (2021:46, 67), only individuals who possess a minimum of religious capital are able to revive and fall back on it during a period of crisis. Thus, when applying insecurity theory to a crisis such as the COVID-19 pandemic, the central question is whether and to what extent individual religiosity responds to changing circumstances. Can nonreligious individuals become religious during a

sudden crisis, as the WWII proverb "There are no atheists in foxholes" suggests? Demand-driven theories presume that such a change can occur and that it may even halt or reverse the process of secularization.

Turning now to the empirical findings for insecurity theory, we observe that empirical research, while confirming some aspects of insecurity theory, also delivers mixed results on the supposedly positive correlation between insecurity and religious increase. We start again by reviewing findings for the different sources of insecurity. Immerzeel and van Tubergen's (2011) analysis of 26 European countries largely confirmed Norris and Inglehart's theory and findings, indicating that individual economic insecurities experienced during childhood have a lasting effect on an individual's religiosity, with slight variations across forms of religious expression. They also observe a negative correlation between social welfare spending and unemployment rates with religious attendance. In terms of existential insecurities, the authors find that bad health correlates with higher levels of subjective religiosity (but not attendance), and that the widowed and individuals who experienced a war are more religious (Immerzeel and van Tubergen 2011:368). Storm's (2017) analysis focused on economic insecurity largely confirms insecurity theory as well, showing multiple correlations between individual and national economic poverty and heightened religiosity on the individual and societal level. However, she finds a negative correlation between unemployment and religiosity after controlling for income–a finding for which she points to many other mixed results in the literature and to ample discussions about potential explanations (Storm 2017:165).

Thus, it is not surprising that Molteni (2021:73), who also uses unemployment as a measure of economic insecurity (based on European Social Survey and World Value Survey data), finds only limited evidence that changes in individual insecurity impact religiosity, despite using unemployment as a measure of economic insecurity. He does find a positive effect of widowhood on religiosity (Molteni 2021:104), evidence (only for Europe though) that poor health has a positive effect on religiosity (Molteni 2021:107), and some evidence that religion works as a buffer against insecurity to the extent that among individuals with poor health, the more religious ones report a smaller decrease in life satisfaction than the less religious individuals (Molteni 2021:70–71). A further study comparing individuals suffering from different types of illnesses finds differences across the illnesses and argues that only individuals who already showed a minimum level of religiosity before the illness started reported an increase in religiosity in reaction to their illness (Ferraro and Kelley-Moore 2000:230). For patients with chronic disease, Kent et al. (2022) find that the experience of pain was correlated with an increase in religiosity. We will review the literature related to COVID-19 further below.

In addition to the various types of insecurity, researchers have also examined the different levels of insecurity. Ingrid Storm (2017) builds upon Norris and Inglehart's differentiation between egotropic and sociotropic risks, finding that predictors at both the individual and country levels are correlated with religiosity: higher household income *and* higher GDP, for instance, are both negatively correlated with self-rated religiosity and religious service attendance. Immerzeel and van Tubergen (2011) also distinguish between two types of insecurity, which they refer to as individual and contextual insecurities. In relation to the sphere of economic insecurity, they conclude: "We find that both individual and contextual insecurities are associated with religiosity and that with regard to subjective religiosity individual and contextual conditions are about equally important. Thus, we do not find evidence for the suggestion (Norris and Inglehart 2004:18) that contextual conditions are more important in explaining religiosity than individual conditions" (Norris and Inglehart 2004:370).

Molteni (2021:76) on the contrary finds that individual insecurity and personal religiosity are almost unrelated and that changes in insecurity on the collective level do not predict changes in average religiosity either. He contends that a certain minimum level of security is necessary for a process of secularization to start but that once this threshold is passed, further changes in insecurity do not explain societal value change at a given point in time (Molteni 2021:95; also cf.

103–104). In their paper entitled "Do Social Crises Cause Religious Revivals?" Bruce and Voas (2016) study changes in British church adherence rates during World Wars I and II and during the economic recession of the interwar period. One might easily conceptualize wars and economic recessions as strong sociotropic threats and expect an increase of religiosity, but Bruce and Voas (2016) find no such increase: neither did church membership nor church attendance or Sunday school enrolment of children increase during the two World Wars or during the economic crisis.

As to the closely related third element of the duration of insecurity, empirical findings clearly point to generational effects. The findings by Bruce and Voas (2016:41) regarding the astonishing lack of increase in religiosity during major events suggest a gradual process of secularization rather than an immediate response to crises. Storm (2017:164) supports this view, suggesting that slow generational change may override the potential effect of changes in GDP on religiosity during economic recessions. Similarly, Molteni (2021:126) argues: "the fact that no robust sign of decline can be seen if looking at periods, but that strong long-term dynamics due to cohort replacement can be, suggests viewing human security's impact on religiosity more as a trigger than as a continuously ongoing determinant." In agreement with both Storm and Voas, Molteni concludes that individual religious change occurs primarily among the religiously socialized and that those who were not exposed to religious messages during childhood are unlikely to become religious later in life (Molteni 2021:139). This finding has also been observed in some recent studies on COVID-19-related changes in religiosity. For instance, a survey conducted in the United Kingdom and the United States during the COVID-19 pandemic "revealed that strong believers compared to weak believers strengthened their religious beliefs more in response to the coronavirus pandemic […], while weak believers strengthened their religious beliefs more than non-believers" (Rigoli 2021:2200). Similarly, a study carried out in Italy found that only individuals who had a religious basis were able to revive their religiosity during the pandemic (Molteni et al. 2020). However, studies on pandemic-related religious change in two other countries with different religious demographics did not observe this mechanism.

For instance, a study on religious change during the COVID-19 pandemic in Poland observed that even individuals who had ceased practicing their Catholic faith became more religious during the crisis (Boguszewski et al. 2020). Another study on the effect of the COVID-19 crisis on values among individuals in the Netherlands found no changes in religiosity at all (Reeskens et al. 2020). These cross-national differences in pandemic-related religious change have also been revealed by the Pew Global Attitudes Survey (Pew Research Center 2021). We will discuss the implications of these cross-national differences for our findings in Germany in the concluding section.

THE COVID-19 PANDEMIC AND RELIGIOUS CHANGE IN GERMANY

In the following section, we aim to utilize the theoretical framework presented above to analyze the impact of the COVID-19 pandemic on religiosity in Germany. We will begin by examining religiosity and religious change in Germany as the dependent variable, followed by a discussion of the explanatory approaches presented previously, leading to the formulation of our hypotheses.

Germany is a nation characterized by high levels of economic prosperity and a relatively high degree of secularization. A significant proportion of the German population, particularly in the former East, grew up without acquiring any religious capital. According to Detlef Pollack's (1995:189) definition of religion, such individuals are not accustomed to receiving religious answers to their problems that are located in the transcendent sphere rather than the immanent. However, the pandemic's aleatoric character may have increased contingency perception among individuals in Germany. Such a turn toward transcendence would not necessarily result in vital religion in the sense that religious questions are met by religious answers and attendance at Sunday services or baptisms of children increases. Religious institutions may fail to provide adequate

religious answers to the pandemic, which could prevent them from reaching potential believers. Given the inability of mainstream Catholic and Protestant churches in Germany to portray the COVID-19 pandemic as divine retribution to appeal to new believers (Wischmeyer 2021), individuals may be left in a state of what Pollack (1995) calls "religious quest." Thus, if religiosity does not increase in reaction to the pandemic, the reason may be that religious demand did not increase or that an increase in demand has not been sustained by a matching religious offer.

Norris and Inglehart (2004:19–20) explain the process of secularization as the result of a growing disconnect between religious teachings and modern individuals' experiences and questions. They suggest that industrialization has created a cognitive mismatch between traditional normative systems and the world that people now know from their first-hand experience. As a result, the symbols and worldview of established religions are no longer as convincing as they were in their original setting. Additionally, they argue that the religious answers provided by traditional religions are less compelling because people in modern societies have fewer experiences of contingency: "In industrial society, production moved indoors into a manmade environment. Workers did not passively wait for the sun to rise and the seasons to change. When it got dark, people turned on the lights; when it got cold, people turned up the heating. Factory workers did not pray for good crops – manufacturing production depended on machines created by human ingenuity. With the discovery of germs and antibiotics, even disease ceased to be seen as a divine visitation; it became a problem within human control" (Norris and Inglehart 2004:19–20).

The COVID-19 pandemic brings a different perspective to these observations, as it has brought an awareness of contingency back into many people's lives. In spring 2020, the novel virus followed an unforeseeable pattern of sudden regional, national, and international spread involving high death rates in many European countries. As with other European countries, uncertainty about possible medical treatment, ways of transmission, and the capacities of health care systems was high in Germany. The political measures that followed were of an unknown scope in Western liberal democracies, leading German Chancellor Angela Merkel to describe the COVID-19 crisis as the largest challenge German society has faced since WWII, larger even than German reunification.[1] Therefore, it can be assumed that this very fast and radical change profoundly affected people's lives and underlined the pandemic's capacity to threaten existential security. In the subsequent section, we will systematically apply the theoretical framework previously discussed to the COVID-19 pandemic.

The first question that we revisit is the source of insecurity that the COVID-19 pandemic may have represented. Considering the illness's high lethality, it is plausible to assume that COVID-19 increased existential insecurity. In the initial months of the pandemic, it was unclear how the illness was transmitted, and a cure or vaccine was not readily available. Consequently, the pandemic was perceived as being beyond human control, exacerbating feelings of insecurity. Moreover, the rapid spread of the illness overburdened national health systems, raising concerns about so-called triage guidelines that were developed in Germany to determine who would be saved in situations where ventilators were in short supply. Additionally, the public health measures that were implemented against the pandemic, such as a complete lockdown, considerably heightened economic insecurity, with many shops and services being closed. In Germany, individuals lost their jobs or were put on furlough. Given the combined increase in existential and economic insecurity, we expect that a larger number of individuals have become aware of contingency.

The second point of the theoretical framework, which concerns the threat-level presented by COVID-19, is more complex to address. While it is evident that COVID-19 has represented an individual egotropic risk, threatening individual health and economic wealth, it is less clear to what extent, if at all, it has been a sociotropic threat to society as a whole. Norris and Inglehart's

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[1]TV address by Angela Merkel on March 18, 2020: https://www.bundesregierung.de/breg-de/aktuelles/fernsehansprache-von-bundeskanzlerin-angela-merkel-1732134

argument about agrarian societies, where a bad harvest poses a threat to the entire community, may not fully apply to contemporary German society. With high levels of functional differentiation and individualization, as well as significant wealth inequality, it may take a considerable amount of time before a pandemic, with its health-related and global economic consequences, is perceived as a threat to society as a whole. Rising infection rates may at best be indicative of a diffuse crisis of unknown scope, threatening not only the health system but also the political system due to the sudden upsurge of violent protests against government measures (see, e.g., Hunger, Hutter and Kanol 2023) as well as the German economy, which is heavily dependent on world trade.

Critics may argue that infection rates on the district and national levels are only a crude approximation of the generalized threat to the German nation and may even be a weak one since German institutions may not be threatened in their existence by the pandemic. However, national infection rates do reflect the diffuse threat scenario prevalent at the beginning of the pandemic. In a country as dependent on global trade as Germany, it was unclear how the economy would survive worldwide lockdowns. Moreover, for West Germans who had experienced an ever-growing increase in welfare since the end of World War II, a pandemic that might bring about a similar state of affairs as in Southern Europe was a highly threatening scenario. Nonetheless, people had little else than national- and district-level infection rates to assess the strength of the threat emanating from the pandemic. On the other hand, the above-reviewed research has produced mixed results regarding sociotropic effects on religiosity, and both Bruce and Voas (2016) and Molteni (2021) express doubt that a sudden crisis on the sociotropic level can genuinely cause observable, let alone sustainable, change in religiosity.

The third point of the theoretical framework, which is concerned with the distinction between generational and period effects, is more straightforward to address in the context of the COVID-19 pandemic. The pandemic and subsequent lockdown measures have affected all individuals living in Germany, regardless of their generational affiliation. Therefore, the pandemic can be classified as a clear example of a period effect.

Hypotheses

Moving to our hypotheses, we postulate that high levels of infection rates represent substantial sociotropic risks, and thus, we formulate the following hypotheses: Hypothesis 1a (H1a) suggests that the increasing national infection rates pose sociotropic risks that render higher levels of individual religiosity more likely. Hypothesis 1b (H1b) further suggests that increasing district-level infection rates also pose sociotropic risks that result in higher levels of individual religiosity.

The pandemic poses a significant existential threat to health and well-being, and it also represents an economic threat by affecting job security and increasing the odds of unemployment. Therefore, we focus on egotropic existential and economic security risks on the individual level and present the following hypotheses: Hypothesis 2a (H2a) suggests that individuals directly confronted with pandemic-related health risks are more likely to exhibit higher levels of religiosity; while Hypothesis 2b (H2b) suggests that individuals directly confronted with job insecurity due to the pandemic are more likely to be religious.

DATA AND METHODS

The data used in this study are obtained from a rolling cross-sectional online survey conducted in Germany. Bamberg Center for Empirical Studies (BACES) was commissioned to conduct the fieldwork. The survey was carried out between April 2020 and September 2020. BACES recruited 7,553 respondents across 13 waves from the online access panel *respondi*. To ensure adequate representation of various sociodemographic and denominational groups, several quotas

were utilized. Participants were required to be at least 18 years old to take part in the survey. More detailed information about the survey design, sampling methods, and procedures can be found in the Online Appendix.

Dependent Variable

We utilized a set of three questions to assess respondents' levels of religiosity.[2] In recognition of the fact that religious institutions were also affected by the pandemic and lockdown measures, we opted against using the traditional question about participation in Sunday services, and instead focused on individual religious practice. Specifically, we asked respondents how often they prayed, with response options: *more than once a day*, *daily*, *weekly*, *rarely*, and *never*. Approximately 20 percent of respondents indicated that they prayed at least weekly, while the majority reported praying rarely or never (80 percent).

Second, we asked respondents to rate the importance of religion in their lives using the categories *very important*, *quite important*, *not quite important*, and *not important at all*. About one-third of respondents (26 percen) indicated that religion was an important or very important part of their lives, while over 70 percen stated that religion was either not quite important or not important at all.

Lastly, we included an item that is particularly sensitive to even subtle changes in religious quest, and asked respondents to indicate how often they felt that their life was in the hands of God, with the following response options: *all the time*, *often*, *rarely*, *never*. Approximately 24 percen of respondents reported feeling this way all the time or often, while the majority responded "rarely" or "never" (80 percen).[3]

The survey items used to measure religiosity in this study have been commonly used in the previous literature to operationalize religiosity among Abrahamic believers, including Christians both within and outside Western contexts (see, e.g., Kanol 2021; LaBouff et al. 2011; Saroglou et al. 2005). The three items were found to be highly correlated and were averaged to create the *religiosity index*, which had a high internal consistency with a Cronbach's α of .84. On average, respondents scored 1.8 (SD = .93) on the *religiosity index*.[4]

Independent Variables

Following our theoretical model, we will present the independent variables that operationalize sociotropic risks first, followed by the independent variables that operationalize egotropic risks.

We operationalize the *sociotropic* dimension of the COVID-19 pandemic using the national level and the district level 7-day-incidence rates provided by the German Robert Koch Institut (2021). The 7-day-incidence rate is an epidemiological measure that reflects the number of new

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[2]The exact wording of the questions, the answer categories, and summary statistics can be found in the Online Appendix.

[3]There were a small number of missing observations (22 for the "prayer" variable, 14 for the "importance" variable, and 21 for the "life in hands of God" variable). Since these variables constitute the dependent variables, the observations with the missing cases were removed case-by-case from the dataset before the analyses and we do not report on these observations any further.

[4]We did not include a measure of worshiping or church attendance—a widely used indicator of religiosity in the literature—in our survey due to several reasons. First, there was uncertainty surrounding church attendance regulations during lockdowns. There were proposals to limit the number of attendants in church and in Sunday Mass as part of COVID-19 containment measures. Such regulations would have biased our findings. Second, we assumed that many individuals who were concerned about a COVID-19 infection would refrain from worshiping at church or attending mass, to protect themselves from an infection. Due to these considerations and potential biases, we did not include a measure of worshiping or church attendance as an indicator of religiosity during the height of the Covid-19 pandemic.

Figure 1

SEVEN-DAY INCIDENCE RATE OF DEATHS ON THE DISTRICT LEVEL AND ON THE NATIONAL LEVEL (2020). [Color figure can be viewed at wileyonlinelibrary.com]
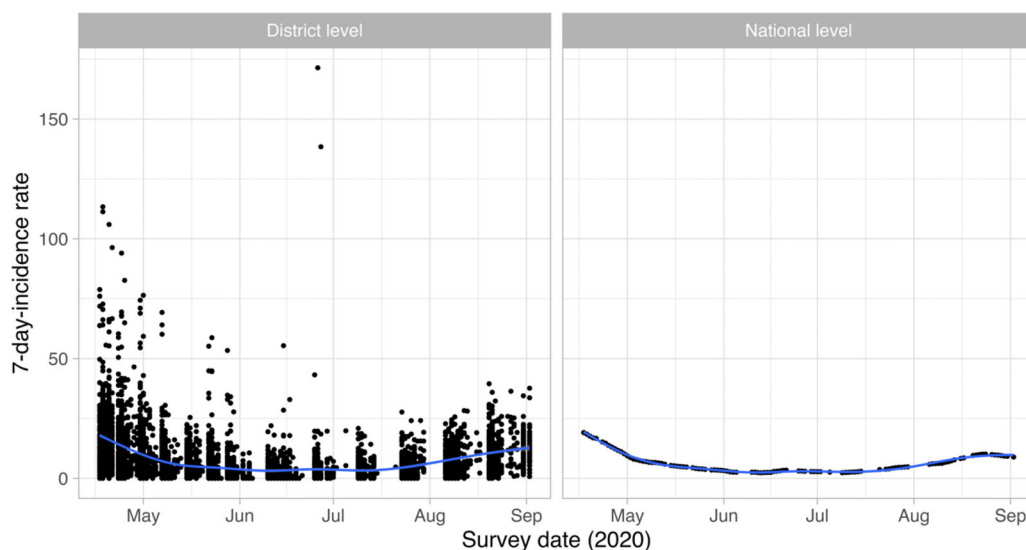
cases of coronavirus infections in the past week per 100,000 inhabitants. For each respondent in our sample, we matched the reported district with the respective incidence rate on the date of survey administration. Figure 1 depicts the 7-day-incidence rate of infections at the district level and at the national level. It is important to note that our fieldwork began during the peak of the first wave in spring 2020, continued as cases decreased, and concluded just as infections began to rise again for the second wave in fall 2020.

We employed four variables to operationalize the *egotropic* dimension of the COVID-19 pandemic, three of which pertain to the health concerns of respondents, while one is related to their perceived job insecurity.

To measure the extent to which respondents were concerned about the potential health risks associated with a coronavirus infection, we used two variables. The first variable asked respondents to indicate the extent to which they were concerned that a coronavirus infection would cause them to develop a life-threatening illness, while the second variable asked respondents to indicate the extent to which they were concerned that a coronavirus infection would cause their close family members (including their children, parents, siblings, and grandparents) to develop a life-threatening illness. Responses were provided on a scale ranging from 1 (not concerned at all) to 5 (very concerned). The majority of respondents expressed concern about the health risks posed by the coronavirus, with 53 percen expressing concern about their own health and 70 percen expressing concern about the health of their close family members. As these two variables were found to be highly correlated, we averaged them to create a composite variable referred to as the "*worry about health index*." The Cronbach's alpha coefficient for this *worry about health index* was .81. On average, respondents scored 2.82 points (SD = 1.04) on this index.

In addition, respondents were queried as to whether they themselves or individuals in their surroundings tested positive for COVID-19. Respondents were presented with a variety of options, such as themselves, family members, neighbors, or coworkers. The majority of respondents reported that nobody in their surroundings tested positive for COVID-19 (86 percent). Only 1 percent of respondents indicated that they tested positive themselves, while around 2 percent reported a positive test result for a family member. Approximately 3 percent of respondents indicated that

friends or coworkers tested positive, and roughly 5 percent of respondents reported that a neighbor tested positive for COVID-19.

Lastly, respondents were asked to rate their perceived likelihood of being laid off from their current job due to the COVID-19 pandemic on a scale of 0 to 10, with 0 indicating very unlikely and 10 indicating very likely. It should be noted that the question about job insecurity was not applicable to some respondents, such as students, pensioners, or unemployed individuals (1,492 or 20 percent of the sample). To ensure that these respondents were included in the analysis, we created a dummy variable. Out of the total sample, 1,189 (16 percent) respondents expressed concern that they might be laid off due to the pandemic.

Control Variables

To control for potential confounding factors, we include a set of individual-level and context-level variables in our analysis (see also Online Appendix for summary statistics). The individual-level controls were derived from survey questions regarding the demographic and socioeconomic characteristics of the respondents. The *age* of the respondents was determined by subtracting their year of birth from the year 2021, with a mean age of 46 years (SD = 15). *Gender* was coded as a binary variable, where 1 represented male (50 percent) and 0 represented female (50 percent). In addition, we controlled for whether respondents had any *children* (3,931, 52 percent).

Education level was measured by asking respondents about their highest degree of school education achieved, with answer categories ranging from still in school or no school qualification (104 respondents, 2 percent), lower secondary school education (1,696, 27 percent), secondary school education (2,194, 35 percent), and graduated from high school, i.e., *Abitur*, (2,352, 37 percent).[5]

To measure *income*, respondents were asked to state their net monthly household income before the COVID-19 crisis hit Germany, i.e., before March 1, 2020. The answer categories ranged from 1, less than 750 Euros, to 6, more than 6,000 Euros per month. The median income category was 3 (1,500–2,500 Euros per month). We also included *employment* status as another socioeconomic control variable. Respondents were asked about their employment status prior to the COVID-19 crisis, with answer options including currently employed, looking for a job, and not applicable (e.g., students, pensioners). Among the sample, 4,785 (63 percent) respondents reported being employed, 450 (6 percent) were looking for a job, and 2,318 (31 percent) indicated that this question did not apply to them. We also considered the perceived job insecurity of colleagues in the workplace as a socioeconomic factor. The respondents were asked to rate the likelihood of their colleagues being fired on a scale of 0 to 10, where 0 meant very unlikely and 10 meant very likely. Respondents were asked to rate on a scale of 0 to 10 how likely they thought it was for their colleagues to be laid off due to the COVID-19 pandemic. We generated a dummy variable by recoding values from 5 to 10 as 1, indicating that the respondents considered it likely that their colleagues could be fired, and coded the remaining respondents as 0, indicating that this question was either not applicable or they did not consider it likely. A total of 1,043 (14 percent) respondents considered it likely that others might get fired where they worked, whereas 6,255 (86 percent) did not consider this likely.

We used two variables to control for the health status of respondents. One variable pertains to the self-assessment of respondents' health, which we reverse scored to indicate unhealthiness. Thirty four percent (2,582) of the respondents rated their health as mediocre or bad, whereas the rest rated it as good or very good (4,959, 66 percent). Respondents were also asked to indicate whether they suffered from any serious illnesses such as diabetes, high blood pressure, or chronic lung diseases. A total of 2,772 (37 percent) of the respondents reported having at least one serious health condition.

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[5]*Abitur* is the general qualification for university entrance in Germany.

Table 1: OLS regression results of the impact of the national 7-day-incidence rate on religiosity

	Dependent variable:			
	Religiosity (1)	Prayer (2)	Fatefulness (3)	Importance (4)
7-day-incidence rate (national)	−.01 (.02)	−.02 (.02)	.00 (.02)	.00 (.02)
Individual-level covariates	YES	YES	YES	YES
Observations	7,415	7,415	7,415	7,415
Adjusted R^2	.33	.25	.25	.33

Note: Standard errors in parentheses. Individual-level covariates: age, gender, level of education, income, employment status, parental status, health status, survey wave, religion, and East/West Germany dummy. Full regression models are in the Online Appendix Table S6.
*$p < .05$; **$p < .01$; ***$p < .001$.

To account for any temporal effects, we included a set of dummy variables for the waves in which the survey was conducted. We also controlled for regional effects by including a dummy variable for respondents living in West Germany. Additionally, we included a variable to control for religious affiliation of the respondents, where the majority identified as Christian (52 percent), followed by those who do not belong to any religion (43 percent), and a small proportion identified as Muslim (3 percent) or Jewish (.6 percent). The remaining 1.4 percent identified with other forms of religion and spirituality.

To better account for the context in which the respondents live, the study also controls for six district-level variables that were obtained from the Federal Statistical Office of Germany. These variables are population density in 2017, average household income in Euros in 2016, unemployment rate in 2019, the share of population older than 75 in 2017, share of Catholics in 2011, and the share of women in 2019. These variables are important as they can have an impact on individuals' experiences and perceptions of the pandemic. On average, there were around 19 respondents sampled per district with a standard deviation of 27 (see also Online Appendix Table S3).

RESULTS

The study employs a multistep analysis to investigate the effect of the COVID-19 pandemic on religiosity. In the first step of the analysis, ordinary least squares (OLS) regression models are used to investigate the effect of sociotropic existential security threat posed by the COVID-19 pandemic on the religiosity index, while controlling for individual-level covariates (Table 1, Model 1). We also disintegrate the religiosity index into its components and estimate the effect of the sociotropic risks on each religiosity variable (Table 1, Models 2–4). In the second step of the analysis, we estimate multilevel linear mixed-effects regression models to examine the effect of the district-level 7-day-incidence rate on the religiosity index and its components (Table 2, Models 1–4). In the third step, we turn our attention to the role of egotropic risks and include individual-level measures of the impact of the COVID-19 pandemic in the multilevel linear mixed-effects regression models (Table 3, Models 1–4). Finally, we run a series of additional analyses to assess the robustness of our results.

Our first hypothesis predicts that increasing national infection rates pose sociotropic risks that render higher levels of individual religiosity more likely (H1a). Table 1 presents the results

Table 2: Multilevel linear mixed-effects regression results of the impact of the district-level 7-day-incidence rate on religiosity

| | *Dependent variable* | | | |
	Religiosity index	Prayer	In God's hands	Importance
7-day-incidence rate (district)	.00 (.00)	.00 (.00)	.00 (.00)	−.00 (.00)
Individual-level covariates	YES	YES	YES	YES
District-level covariates	YES	YES	YES	YES
AIC	17,007.77	20,668.55	18,252.75	17,782.37
BIC	17,304.77	20,965.54	18,549.75	18,079.36
Log Likelihood	−8,460.89	−10,291.27	−9,083.38	−8,848.19
Number of observations	7,382	7,382	7,382	7,382
Num. groups: Districts	399	399	399	399
Variance: Districts (Intercept)	.00	.00	.00	.00
Variance: Residual	.56	.93	.67	.62

Note: Standard errors in parentheses. Individual-level covariates: age, gender, level of education, income, employment status, parental status, health status, survey wave, religious affiliation, and East/West Germany dummy. District-level covariates: population density, average household income, unemployment rate, share of population over age 75, share of Catholics, and share of women. Full regression models are in the Online Appendix Table S7.
*$p < .05$; **$p < .01$; ***$p < .001$.

of the OLS regressions.[6] Model 1 depicts the relationship between the national 7-day-incidence rate and the religiosity index, while controlling for age, gender, education, income, employment status, parental status, health status, survey wave, whether the respondent lives in an East German federal state, and the respondent's religious affiliation. The results indicate that there is no significant relationship between the national COVID-19 infection rates and the religiosity index. These results lead us to reject *hypothesis 1a*.

Since survey respondents are clustered in districts and since we are interested in the rising infection rates on the district level, we estimate multilevel linear mixed-effects regressions. Table 2 shows the regression coefficients of the effect of the district-level 7-day-incidence on the level of religiosity, while controlling for the aforementioned individual-level variables and a range of district-level variables including population density, average household income, unemployment rate, share of women, and share of Catholics. Similar to the findings using OLS estimations, the multilevel models indicate that the district-level infection rates are also not significantly associated with religiosity. Based on these findings, we reject *hypothesis 1b*, which predicts that increasing district-level infection rates also pose sociotropic risks that result in higher levels of individual religiosity.

In the next step of the analyses, we turn our attention to *egotropic* threats. Hypotheses H2a and H2b are concerned with the direct threat of the COVID-19 pandemic on respondents' health and job insecurity. To investigate the impact of *egotropic* threats on religiosity, we estimate multilevel linear mixed-effects regression models, while controlling for individual-level and district-level covariates. Regression results in Table 3 suggest a significant association between *egotropic* threats related to the COVID-19 crisis and the religiosity of respondents. Respondents who are

[6]The time a respondent was surveyed (i.e., the survey waves) covaries strongly with the national-level of COVID-19 infections. We therefore repeated this analysis while excluding the survey wave dummy variables. The results were not affected and remained the same.

Table 3: Multilevel linear mixed-effects regression results of the impact of sociotropic and egotropic threats on religiosity

	Religiosity index	Prayer	In God's Hands	Importance
7-day-incidence rate (district)	.00 (.00)	.00 (.00)	.00 (.00)	−.00 (.00)
Worry about health (index)	.04*** (.01)	.02 (.01)	.04*** (.01)	.06*** (.01)
Tested positive Covid-19 (ref.: No)				
Tested positive Covid-19: Self	.66*** (.09)	.92*** (.12)	.57*** (.10)	.55*** (.10)
Tested positive Covid-19: Family	.36*** (.07)	.44*** (.08)	.40*** (.07)	.24*** (.07)
Tested positive Covid-19: Friends	.23*** (.05)	.36*** (.06)	.17** (.05)	.18*** (.05)
Tested positive Covid-19: Colleagues	.11* (.05)	.12 (.07)	.16** (.06)	.07 (.06)
Tested positive Covid-19: Neighbors	−.01 (.04)	.01 (.05)	.00 (.05)	−.03 (.04)
Worry about own job	.20*** (.03)	.25*** (.04)	.19*** (.03)	.17*** (.03)
Age x 10	−.00*** (.00)	−.00*** (.00)	−.00*** (.00)	−.00** (.00)
Age	.00*** (.00)	.00*** (.00)	.00*** (.00)	.00*** (.00)
Male	−.03 (.02)	−.04 (.02)	−.03 (.02)	−.01 (.02)
Education (ref.: None)				
Education: Lower secondary	.07 (.08)	.08 (.10)	.09 (.08)	.05 (.08)
Education: Secondary	.14 (.07)	.17 (.10)	.14 (.08)	.11 (.08)
Education: Abitur	.16* (.07)	.23* (.10)	.11 (.08)	.14 (.08)
Income (ref.: below 750 Euro)				
Income:750—1,500 Euro	−.06 (.04)	−.06 (.05)	−.07 (.04)	−.04 (.04)
Income:1,500–2,500 Euro	−.07 (.04)	−.07 (.05)	−.11** (.04)	−.04 (.04)
Income:2,500–4,000 Euro	−.08* (.04)	−.09 (.05)	−.10* (.04)	−.05 (.04)
Income:4,000–6,000 Euro	−.09* (.04)	−.07 (.06)	−.14** (.05)	−.06 (.05)
Income: more than 6,000 Euro	.01 (.06)	.03 (.07)	−.03 (.06)	.02 (.06)
Employment status (ref.: Employed)				
Employment status: Unemployed	.06 (.04)	.05 (.05)	.06 (.05)	.08 (.04)
Employment status: Not in labor force	−.04 (.02)	−.06 (.03)	−.04 (.03)	−.02 (.03)

(*Continued*)

Table 3: (Continued)

	Religiosity index	Prayer	In God's Hands	Importance
Children (dummy)	.05* (.02)	.04 (.03)	.04 (.02)	.07*** (.02)
Illness (yes)	.05* (.02)	.05 (.03)	.06** (.02)	.02 (.02)
Health assessment	−.01 (.01)	−.01 (.02)	−.01 (.01)	−.01 (.01)
Worry about colleagues	−.03 (.03)	−.08* (.04)	−.00 (.03)	−.02 (.03)
Waves (ref: Wave 1)				
Wave: 2	−.02 (.05)	−.01 (.06)	−.08 (.05)	.01 (.05)
Wave: 3	−.04 (.05)	−.04 (.06)	−.08 (.05)	−.01 (.05)
Wave: 4	−.08 (.05)	−.08 (.07)	−.12* (.06)	−.05 (.05)
Wave: 5	−.04 (.05)	−.06 (.07)	−.08 (.06)	.02 (.05)
Wave: 6	−.08 (.05)	−.11 (.07)	−.10 (.06)	−.03 (.05)
Wave: 7	.03 (.05)	.04 (.07)	−.00 (.06)	.04 (.05)
Wave: 8	−.06 (.05)	−.07 (.07)	−.11* (.06)	−.01 (.05)
Wave: 9	−.01 (.05)	−.02 (.07)	−.03 (.06)	.01 (.05)
Wave: 10	−.06 (.05)	−.07 (.07)	−.09 (.06)	−.02 (.05)
Wave: 11	.01 (.05)	.04 (.07)	−.02 (.06)	.03 (.05)
Wave: 12	−.06 (.05)	−.04 (.06)	−.09 (.05)	−.03 (.05)
Wave: 13	−.08 (.05)	−.12 (.06)	−.10 (.05)	−.04 (.05)
West Germany (dummy)	−.08* (.04)	−.07 (.05)	−.06 (.04)	−.13** (.04)
Religion (ref.: Christian)				
Religion: Muslim	1.09*** (.06)	1.15*** (.07)	1.12*** (.06)	1.02*** (.06)
Religion: Jewish	.45*** (.12)	.50** (.16)	.58*** (.13)	.28* (.13)
Religion: None	−.88*** (.02)	−.92*** (.02)	−.74*** (.02)	−.99*** (.02)
Religion: Other	.17* (.07)	.23* (.10)	.05 (.08)	.26** (.08)
Population density	.04* (.02)	.05* (.02)	.02 (.02)	.04* (.02)
Household income	.01 (.01)	.01 (.02)	.01 (.02)	.01 (.02)
Unemployment rate	−.04* (.02)	−.05* (.02)	−.04* (.02)	−.03 (.02)
Share of pop over 75	.01 (.02)	.02 (.02)	.01 (.02)	−.00 (.02)
Share of Catholics	.01 (.01)	.03 (.01)	.01 (.01)	.01 (.01)
Share female	−.01 (.01)	−.02 (.01)	−.01 (.01)	−.02 (.01)
Intercept	.60*** (.13)	2.31*** (.17)	2.36*** (.15)	2.48*** (.14)
AIC	16,223.65	19,768.43	17,461.33	17,007.97
BIC	16,574.03	20,118.82	17,811.71	17,358.35
Log Likelihood	−8,060.83	−9,833.22	−8,679.67	−8,452.98
Number of observations	71,17	7,117	7,117	7,117
Number of groups: Districts	399	399	399	399
Variance: District (Intercept)	.00	.00	.00	.00
Variance: Residual	.54	.90	.65	.61

Note: Standard errors in parentheses.
* $p < .05$; **$p < .01$; ***$p < .001$.

more concerned about the consequences of a COVID-19 infection on their and their close family members' health are significantly more likely to be religious (.04, $p < .001$). The strongest association is observed among respondents who have contracted the coronavirus themselves (.66, $p < .001$). We believe that this is a substantial effect, and the relationship is also significant for all three individual items of the index. In the Online Appendix, we report odds ratios for the three religiosity variables (see Online Appendix Table S13). For instance, for respondents who tested positive for a COVID-19 infection, the odds of praying more than once daily (versus the reference category of daily, weekly, seldom, or never) are 4.46 times higher than of respondents who did not test positive, holding all else constant. Similarly, respondents whose family members or close friends contracted the coronavirus are also more likely to report higher levels of religiosity (.36 and .23, $p < .001$, respectively).

These findings are in line with H2a and indicate that individuals who are directly confronted with pandemic-related health risks are more likely to exhibit higher levels of religiosity. Similarly, respondents who believe that they might lose their job due to the COVID-19 pandemic are also more likely to be religious (.20, $p < .001$). This is also in line with our expectations as formulated in H2b: individuals who are directly confronted with job insecurity due to the pandemic are more likely to be religious.

Additional Analyses

The 7-day-incidence rate may have a different impact on religiosity depending on whether the respondents belong to a religion or not. It would have been interesting to investigate the effect of the 7-day-incidence-rate conditional on the religious group of the respondents; however, the sample size for religious groups other than Christianity was too small (see Online Appendix Table S5). Therefore, we created a dummy variable indicating that the respondent belonged to any religious group. A total of 4,283 (57 percent) respondents stated that they belonged to a religion, whereas 3,250 (43 percent) did not identify with a religion. We explored the effect of the 7-day-incidence rate conditional on whether the respondents belong to a religion or not by including a cross-level interaction term (7-day-incidence on the district level × religion dummy) in the multilevel linear mixed-effects regression model (see Online Appendix Table S8 for the full regression model and also Online Appendix Figure S3). Following Heisig and Schaeffer (2019), we included a random slope for the religion variable. We did not observe a statistically significant interaction effect between the 7-day-incidence rate on the district level and whether the respondents belong to a religion or not on religiosity ($b = .00$, $p = .338$). The findings show similar effects of the infection rates for both groups. As one would expect, respondents who belonged to a religious group scored significantly higher on the religiosity index; however, the higher infection rates did not impact them significantly more than respondents who did not belong to any religious group.

The COVID-19 infections may also have a different impact on religiosity depending on the *religious denomination* of respondents. Among the Christian respondents, 1,973 (51 percent) respondents stated that they were Roman Catholics, 1,474 (39 percent) stated that they were Protestant, whereas a minority of 454 (11 percent) respondents stated that they belonged to another Christian denomination (e.g., Russian Orthodox). To investigate whether the effect of the incidence rate varied across the Christian religious denominations, we included a cross-level interaction term (7-day-incidence on the district level × religious denomination of the respondent) in the multilevel linear mixed-effects regression model (see Online Appendix Table S9 for the full regression model and also Online Appendix Figure S4). We also included a random slope for the religious denomination variable. The results indicate that there was no significant difference between the three Christian denominations, i.e., Roman Catholics, Protestants, or other denominations. The effect of the 7-day-incidence rate on religiosity appears to be strongest among the Protestant respondents; however, this relationship is also not significant ($b = .01$, $p = .102$). For

robustness, we also estimated the regression models separately for Catholics and Protestants (see Appendix Table S12). The findings are in line with the additional analyses using interaction terms.

An alternative way of operationalizing the external threat posed by the COVID-19 pandemic would be to examine the effect of COVID-19-related deaths. We therefore replicate our analyses by substituting the 7-day-incidence rate of infections with a variable measuring the 7-day-incidence rate of COVID-19-related deaths (based on own calculations of the data provided by the Robert Koch Institut 2021, see also Online Appendix Figure S1). We estimate OLS regression models to examine the effect of the *national* 7-day-incidence rate of deaths on religiosity (see Online Appendix Table S10), and multilevel linear mixed-effects regression models to examine the effect of the *district*-level 7-day-incidence rate of deaths on religiosity (see Online Appendix Table S11). In both analyses, we do not find a significant relationship between COVID-19-related deaths and religiosity.

<div align="center">DISCUSSION</div>

This paper has explored whether the Covid pandemic, which has posed an existential and economic threat to individuals in Germany, has affected their religiosity. In a nutshell, our findings suggest that a global pandemic such as COVID-19 increases individuals' perception of insecurity and contingency in life, which, in turn, leads to a rise in religiosity but only if existential and economic security are threatened directly on the egotropic level. On the contrary, we do not find that the pandemic as such has an effect on religiosity. It is also important to underline that we use a measure of religiosity that is sensitive to increases in religious quest but does not capture more institutionalized religious practices such as religious service attendance.

In more detail, we did not find evidence supporting our hypothesis H1a, which posited that rising national infection rates would create sociotropic risks and increase the likelihood of higher individual religiosity levels. Additionally, we did not find support for our hypothesis H1b, which suggested that increasing district-level infection rates would also pose sociotropic risks resulting in higher levels of individual religiosity. However, we found support for our hypotheses H2a, predicting that individuals directly confronted with pandemic-related health risks are more likely to exhibit higher levels of religiosity and for H2b predicting that individuals directly confronted with job insecurity due to the pandemic are more likely to be religious. Furthermore, we observed that the impact of the pandemic on religiosity is more pronounced for individuals who have had close social relations with someone who has been infected with COVID-19. In other words, the effect of the pandemic on religiosity is stronger when individuals have a direct and personal experience with the disease.

We do not find any evidence that so-called sociotropic threat has an impact on religiosity. These findings support the critics of Norris and Inglehart's concept of sociotropic risk as a driving force behind religious change. Molteni (2021:30, 95, 104), for example, argues that a fundamental scarcity of security measured in terms of the human development index (i.e., sociotropic risk) can explain why a country has not engaged in a process of secularization. Smaller increases in security, however, do not correlate with a decrease in religiosity. Our findings also lend support to Bruce and Voas' (2016) and Storm's (2017) conclusion that war, or a major economic crisis do not foster religious change. These authors all argue that religious change is better understood as an intergenerational process. This, of course, raises the question how long the observed increase in religiosity in Germany might last?

Our prediction is that it will not last for long. In fact, Pollack's (1995) definition of religion suggests that perceptions of contingency that are not met by religious answers are likely to end in religious quest, rather than vivid religiosity. While these mechanisms are likely to be the same across different national contexts, two factors suggest that the pandemic-related religious increase we observe in Germany will not be sustained. First, many people in Germany do not

possess religious capital, given that secularization rates have been high already in the previous generations (Müller and Pollack 2022). This implies that individuals in Germany are less likely to understand and appreciate religious messages. Second, the large Christian churches in Germany could hardly deliver religious interpretations of the pandemic as divine retribution (Wischmeyer 2021) and were thus blocked in delivering religious answers. Against this background, it is unlikely that the increase we observed in what is best described as religious quest (an increase of prayer and of the feeling that one's life lies in the hands of God) will result in sustained institutionalized religious practices such as attending services or baptizing children. We therefore assume that the high degree of secularization reached in Germany and its further progress as a gradual, intergenerational process will not be reversed or come to a halt by the pandemic.

How then do our results relate to the findings on the development of religiosity during the pandemic in other countries? In fact, studies on the relation between COVID-19 and religiosity in Poland, Italy, and the Netherlands show some interesting cross-national differences. For Italy, Molteni et al. (2020) have found that only individuals who had some religious basis were able to revive it during the pandemic. For Poland, findings show that even individuals who had ceased to practice their Catholic faith became more religious again during the COVID crisis (Boguszewski et al. 2020) and for the Netherlands, Reeskens et al. (2020) have found that no change in religiosity could be observed during the pandemic. For Germany, we find an increase in religiosity but only in situations where the individual is directly threatened by the pandemic. We suggest interpreting these partially contradicting results by taking into account the level of secularization in a given country. According to a Eurobarometer survey (European Commission 2019), only 9 percent of the individuals surveyed in Poland declared that they were either atheist or agnostic, while 14 percent of those surveyed in Italy made this statement. In Germany, 30 percent of the individuals surveyed for Eurobarometer 2019 declared themselves atheist or agnostic, and in the Netherlands, 52 percent affirmed this statement. If we take into account that secularization is an intergenerational rather than an individual process (Voas 2009), we can assume that among the atheists and agnostics in the Netherlands and Germany, there are significantly more individuals who are nonreligious in the second generation. In reverse, this also means that atheists or agnostics in Poland are likelier to have received a religious education than those in the Netherlands and Germany. Atheists and agnostics in Poland and to some degree also those in Italy may still have a religious capital that they can revive during a crisis. These assumptions, however, remain on the level of hypotheses we formulate regarding cross-national differences. We have no cross-national data that could directly substantiate these ideas.

We conclude by delineating the limitations of our study and by providing some suggestions for future research. In this study, we use repeated cross-sectional data to investigate our research questions and document a relationship between COVID-19-related threats and religiosity on the individual level. Although we control for relevant covariates, one should be cautious in interpretating these associations as causal. We cannot rule out the possibility that religious individuals might have refused to comply with anticontainment measures for political or religious reasons, and therefore, were more likely to contract the coronavirus. The policies regarding the operation of churches and worship services during the pandemic in Germany have been variable and subject to change over time and by region. While some regions imposed stricter measures that required the closure of churches and suspension of in-person worship services, other regions allowed churches to remain open. Concerning noncompliance, there are also reports of Christian fundamentalists who refused to get vaccinated (Deutschlandfunk 2021). Highly religious individuals who participated in public gatherings at church or who were without immunization may have been at an increased risk of contracting the coronavirus compared to lesser religious individuals. In this case, the direction of causation would have been from religiosity to COVID-19 infection, and not the other way around. Arguably, panel data would have allowed us to address these concerns and establish causality. Employing such a longitudinal design would have also enabled us

to establish and verify the enduring nature of the effects we detected. Unfortunately, no such data were available for Germany at the time of this study.

Our data are also limited to two Christian denominations—Roman Catholics and Protestants—in Germany, a highly secularized Western European country context. Therefore, our conceptualization of religion and religiosity is to a great extent Western, and it is limited to an Abrahamic and monotheistic understanding of religion. A comparative research design using cross-national data across other major religious groups could further shed light into the generalizability of our findings and investigate the contextual and group-specific effects of egotropic and sociotropic risks beyond Christianity.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Appendix Information