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RESEARCH ARTICLE

Accordance and conflict between religious and scientific precautions against COVID-19 in 27 societies

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ABSTRACT

Meaning-making systems underlie perceptions of the efficacy of threat-mitigating behaviors. Religion and science both offer threat mitigation, yet these meaning-making systems are often considered incompatible. Do such epistemological conflicts swamp the desire to employ diverse precautions against threats? Or do individuals—particularly individuals who are highly reactive to threats—hedge their bets by using multiple threat-mitigating practices despite their potential epistemological incompatibility? Complicating this question, perceptions of conflict between religion and science likely vary across cultures; likewise, pragmatic features of precautions prescribed by some religions make them incompatible with some scientifically-based precautions. The COVID-19 pandemic elicited diverse precautions thus providing an opportunity to investigate these questions. Across 27 societies from five continents ($N = 7{,}844$), in the majority of countries, individuals' practice of religious precautions such as prayer correlates positively with their use of scientifically-based precautions. Prior work indicates that greater adherence to tradition likely reflects greater reactivity to threats. Unsurprisingly given associations between many traditions and religion, valuing tradition is predictive of employing religious precautions. However, consonant with its association with threat reactivity, we also find that traditionalism predicts adherence to public health precautions—a pattern that underscores threat-avoidant individuals' apparent tolerance for epistemological conflict in pursuit of safety.

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Introduction

Individuals vary in the frequency and extent to which they perceive threats in their environment. This threat sensitivity in turn motivates harm-mitigating behaviors. Many factors shape both (a) the decision to engage in threat-mitigating behaviors broadly, and (b) the choice of which precautionary behavior(s) to adopt. The concepts and beliefs with which the individual understands and makes sense of the world likely shape such decisions. Here, we explore how variation in threat sensitivity intersects with attitudes toward religion and toward science. Our goal is to illuminate the extent to which potential epistemological and pragmatic conflicts between religious and scientific meaning-making systems shape threat-mitigating responses in the context of a real-world pathogen threat.

Decisions to engage in threat-mitigating behaviors

Decisions to engage in threat-mitigating behaviors are shaped by many interacting endogenous and exogenous factors, including individuals' real and perceived vulnerability to different threats (e.g., Fessler et al., 2005; Sparks et al., 2018); informational and cultural environments that structure how various threats and threat responses are viewed (e.g., Gelfand et al., 2021); the goodness-of-fit between a particular threat response and an individual's preexisting epistemological schemas (Fessler & Machery, 2012; Lévi-Strauss, 1963); and assessments of the costs and benefits of various possible mitigations (Tybur et al., 2020). As illustrated by the consequences of widespread variation in how people have responded to recent global threats, it is vital to understand how threat-mitigating

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decisions relate to various aspects of people's meaning-making systems, epistemological schemas, and considerations of cost–benefit tradeoffs.

Epistemic rationales for the efficacy of threat-mitigating behaviors

Threat-mitigating behaviors derive from a wide variety of epistemological frameworks and meaning-making perspectives. For example, many religious rituals are intended to supernaturally mitigate threats such as natural disasters (e.g., Duiveman, 2019). At the actual instrumental level, rituals may indeed mitigate threats by eliciting group cooperation and support (Sosis, 2004). Concordantly, religious ritual can also serve as an anxiety-reduction mechanism (Lang et al., 2020; Sosis & Handwerker, 2011) that facilitates effective responses to threats and other challenges (e.g., Pollack et al., 2018). In contrast, some threat-mitigating behaviors may derive perceived and/or instrumental efficacy from folk knowledge or folk intuitions about the natural world (e.g., Harrison et al., 2015; Miton et al., 2015). Folk conceptions of science are one such epistemological schema, structuring the rationale for many threat-mitigating behaviors in contemporary life. In addition to content biases, various context biases (Henrich & McElreath, 2003) such as prestige, conformity, and success biases, can underlie perceptions of the efficacy of threat-mitigating behaviors (e.g., de Barra et al., 2014). For example, precautions can be simply normative, in that their perceived justification derives from those behaviors being considered a culturally appropriate way to respond to a given circumstance, irrespective of whether any underlying causal mechanism is considered. Finally, some threat-mitigating behaviors—such as the fight or flight response—are developmentally canalized and autonomic, and do not necessarily have a cognized epistemic justification.

The above possibilities are not mutually exclusive. For example, religious precautions such as prayer or ritual can be both culturally normative and intended to invoke supernatural support. Additionally, for all the above, different precautions can have both "real" (i.e., mechanistically or instrumentally effective in the natural world) and perceived reasons for efficacy. Sometimes the two align, in that an individual's epistemological schema for a precaution matches its actual mechanism of action, and sometimes they do not, either because the actual mechanism of action differs from the perceived one, or because the precaution is perceived to be efficacious while having no actual instrumental effect.

Relationships between epistemically competing domains of threat-mitigating precautions

For any given threat or set of threats, more threat-sensitive individuals may embrace threat-mitigating behaviors broadly, even when those precautions derive their perceived efficacy from differing epistemological frameworks (e.g., an individual could both structurally reinforce their home and engage in religious rituals to ward off earthquakes). Given a stronger orientation toward threats, individuals may hedge their bets by maximizing the potential for harm reduction. Therefore, religiously- and scientifically-derived threat-mitigating behaviors may correlate.

However, the epistemic rationales for any two precautions can be perceived to clash. Whether science and religion are seen as epistemically incompatible is contested in the scientific literature. On the one hand, some research suggests that many people do indeed view religion and science as clashing (Funk, 2015; McPhetres & Zuckerman, 2018). As a result, given two potential precautionary behaviors in response to a threat—one deriving perceived efficacy from supernatural intervention, the other from scientifically-derived and/or endorsed mechanisms—individuals who see a religion-science conflict may view those precautions as mutually exclusive, or as having varying utility in actually mitigating that threat. On the other hand, a growing body of research suggests that, especially among religious individuals, many people view religion and science as fundamentally epistemically compatible (Jackson et al., 2020; Legare et al., 2012; Leicht et al., 2022; Watts et al., 2020). Hence, these individuals may be able to freely switch between epistemically diverse practices

without the need to resolve apparent conflict. In any case, the perception of epistemic clashes between natural and supernatural explanations will vary across individuals, groups, cultures, and content domains.

Taken in sum, whether epistemically clashing or co-existing, do threat-mitigating behaviors with varying epistemic rationales correlate? For example, when responding to a particular threat, rather than simultaneously entertaining epistemically competing precautions, people may mentally alternate between them. Alternatively, people may simply reject precautions that are inconsistent with their prior epistemological frameworks, such that threat-mitigating behaviors do not reliably correlate across epistemic domains.

Pragmatic conflicts between domains of threat-mitigating behaviors

In addition to potential epistemic conflict, threat-mitigating behaviors can directly trade off against each other. All precautions are inherently costly, even if only by virtue of opportunity costs. Indeed, if precautions were not costly, their frequency would likely vary far less across individuals. Instead, whether consciously or not, individuals must weigh the costs and benefits of any given precaution. Because more threat-sensitive individuals are likely to assign greater weight to such benefits, they are more likely to engage in threat-mitigating behaviors. Concordantly, given that threat-mitigating behavior entails costs, once individuals decide to address a threat, they must also determine which precautions to prioritize from among the range of possible options (e.g., should they reinforce their home against earthquakes first, or should they engage in an earthquake-prevention ritual first).

Oftentimes various possible precautions conflict only in terms of prioritization or the allocation of finite resources (e.g., given enough time and resources, it is possible to engage in both earthquake retrofitting and protective rituals). However, threat-mitigating behaviors can sometimes directly clash, such that one precaution pragmatically contravenes the ability to engage in a second. For example, staying and fighting a wildfire is mutually exclusive with evacuating. In sum, in considering the extent to which threat-mitigating behaviors correlate within individuals, it is necessary to consider both epistemic conflicts and direct clashes in the pragmatic ability to carry out competing precautions.

Understanding epistemic conflict between threat-mitigating domains in the context of COVID-19

The COVID-19 pandemic motivated individuals across the globe to address the threat of SARS-CoV-2 infection, with a wide array of epistemically competing precautions to choose from. Some of the most commonly performed precautions were those recommended by public health authorities, including mask-wearing, hand-washing, and social distancing (Lin et al., 2021). From a folk epistemological perspective, these were likely viewed as efficacious because they were rooted in the scientific process and were endorsed by sources of scientific authority. In contrast, other precautions—such as complementary and alternative remedies (Bendezu-Quispe et al., 2022)—derived from competing folk epistemologies. Religious precautions constituted another major domain of COVID-19 threat mitigation, including prayers, rituals, and collective worship (Bentzen, 2021; Isiko, 2020).

Given the differences between natural and supernatural explanations, and the possibility for religion and science to be perceived as clashing, religious precautions may have been perceived to epistemically conflict with public health precautions. For example, religious faith may make scientifically-derived precautions seem less efficacious than faith-based interventions, and vice versa. Further, the ability to engage in religious and public health precautions may have directly clashed, leading to zero-sum tradeoffs between those domains depending on the precautions in question. For example, social distancing directly contravenes the ability to attend collective worship services. Together, these dynamics may have important ramifications for understanding how people

respond to emerging pathogen threats in particular, and socially impactful threats in general. Understanding whether people will simultaneously adopt multiple domains of threat mitigation may inform efforts to promote novel and efficacious precautions such as mask wearing.

Traditionalism, threat-mitigation, and competing epistemologies

In addition to interrelationships between various modes of precautionary responses, threat-mitigating behaviors likely associate with other individual preferences. These additional relationships further illuminate the cost–benefit tradeoffs of precautionary behaviors, and highlight the importance of decomposing threat-mitigation motivations into multiple domains with complex interactions. A large literature connects threat-avoidance motivations generally—and pathogen-avoidance motivations in particular—to individuals' preferences for traditional values and norms, such that those who strongly embrace tradition are more likely to engage in threat-mitigating behaviors (Claessens et al., 2020; Jost et al., 2009; Murray & Schaller, 2012; Samore et al., 2023; Tybur et al., 2016).

Here, we etically define traditions as being characterized by a real or imagined time depth (Graburn, 2000; Samore, 2023, Introduction), and a moral and hierarchical valence (that is, respect for tradition overlaps with respect for authority). However, the precise practices and values that constitute traditional practice—and the qualities that separate them from norms broadly—vary, as do participants' emic conceptualizations of the concept. Further, traditionalism overlaps with concomitant dimensions at the individual and social level. For example, preference for authority likely tracks preference for tradition, given that authority figures often (but not always) endorse the tried-and-true, and because hierarchical social structures are oftentimes themselves traditional. Likewise, cultural tightness-looseness (Gelfand et al., 2021) closely connects with traditionalism, given that tightness-looseness captures the extent to which people are allowed to express themselves non-normatively, and whether norm violations are punished. In that sense, tightness-looseness likely bounds the extent to which traditionalism varies within a given group, and personal preferences for a tight versus loose society likely overlap very closely with preferences for traditionalism.

The *traditional norms account* (Tybur et al., 2016) provides a functionalist explanation for this relationship, hypothesizing that traditional norms may have culturally evolved to consistently reduce the costs of certain recurrent threats. Several mutually compatible functional mechanisms could explain why adherence to traditions would have these threat-mitigating properties, in turn leading more threat-sensitive individuals to endorse traditionalism (see Samore et al. [2023] for discussion).

In the context of COVID-19, more traditionalist individuals may thus be more likely to adopt precautionary behaviors (Fischer et al., 2020; Samore et al., 2021). Indeed, using the same dataset as the present study, we previously found that, in a majority of the 27 societies sampled, traditionalism positively correlated with the reported frequency of adherence to COVID-19 public health precautions. However, we also found that traditionalism and public health precautions can clash when the two are perceived to trade off against each other. This is consistent with the above framework wherein engaging in precautionary behaviors depends in part on the epistemic fit between a particular precaution and an individual's schemas and meaning-making perspectives.

The extent to which precautions and traditionalism co-occur should be sensitive to the perceived tradeoffs between traditions and particular domains of threat avoidance—tradeoffs that are individually and culturally contingent. Most prior work on the relationship between traditionalism and pathogen avoidance implicitly assumes that this relationship is invariant across different modes of precautions. However, some forms of pathogen avoidance may be perceived to epistemically conflict with tradition. For example, in the context of COVID-19, some public health precautions such as social-distancing were relatively novel behaviors in many societies, and thus could have been perceived as clashing with the tendency to conduct oneself in a traditional manner. In contrast,

religious precautions against COVID-19 will likely have often been viewed as more compatible with traditionalism given that many religious practices are themselves perceived to be traditional. Other public health precautions, such as hand washing, were likely to have been normative prior to the pandemic, although those practices may not have been considered a core part of one's cultural tradition.

We aimed to test whether the relationships between threat sensitivity, traditionalism, and pathogen-avoidance behaviors were contingent on the particular mode of precaution in question. Having previously found a positive correlation between COVID-19 *public health* precautions and traditionalism (Samore et al., 2023), we next assessed potential associations between COVID-19 *religious* precautions and traditionalism. If traditional people tend to perceive less conflict with religious precautions than with public health precautions, then the overall relationship between traditionalism and pathogen avoidance ought to be stronger for the former. The present work can lead to a more nuanced understanding of the traditional norms account, illuminating the extent to which traditionalism tracks pathogen-avoidance motivations. More broadly, we seek to contribute to the overall enterprise of understanding how epistemically diverse domains of threat-avoidance behaviors interrelate in real-world settings.

Increasing generalizability

Because the perceived extent of epistemic overlap or conflict between precautions will depend on the cultural context, it is important to study these dynamics in a cross-cultural sample to obtain a more generalizable understanding of how different real-world precautions associate. The extent to which religion and science are perceived to conflict varies across individuals and societies (Funk, 2015; Leicht et al., 2022), and will also depend in part on culturally-specific information environments that arose around the pandemic. When the perception of conflict is higher within a society, religious and public health precautions may be less likely to associate. Therefore, in addition to testing the overall association between potentially epistemically conflicting precautions, we sought to document the extent to which that association varies across cultures. Likewise, the relative strength of association between traditionalism and public health versus religious precautions will depend on the cultural context. For example, the extent to which religious practices are encoded as traditional, the extent to which public health precautions are construed as novel, and the extent to which those same public health precautions then clash with traditional practices will all vary across societies.

When examining the question of whether threat-avoidant individuals will or will not simultaneously pursue epistemically competing threat-mitigating behaviors, both possibilities are theoretically cogent. If people can set aside epistemic conflicts, more threat-avoidant individuals may hedge their bets by adopting many different modes of threat mitigation. Conversely, epistemic inconsistency may carry reputational costs within the group. Further, at the proximate level, and given optimality constraints, resolving said conflicts may be cognitively or emotionally challenging, such that people will tend to exclusively pick one over the other. Further, if precautionary behaviors conflict pragmatically as well as epistemically, they are especially unlikely to co-occur.

Here, we consider the extent to which epistemically-diverse COVID-19 threat-mitigating behaviors correlate across a wide range of cultures, using participants' reports of their real-world precautions. We compare religious precautions, scientifically-justified public health precautions, and the extent to which these two precautionary modes conflict or accord. Further, we test whether the putative relationship between traditionalism and precautions is stronger for religious precautions relative to public health precautions, given the closer epistemic overlap between traditionalism and religion. We present the results of a study of 7,844 participants recruited across 27 countries during 2020 and 2021, examining the dynamics described above. Below, we articulate our specific research questions and hypotheses.

Research questions

Do religious and public health COVID-19 precautions correlate?

At first glance, religious precautions and public health precautions in response to COVID-19 may seem incongruous—the former are often perceived as efficacious because of supernatural intervention (and might actually be effective by scaffolding threat-ameliorating cooperation between members of faith communities—see Sosis, 2004), while the latter are likely seen as having scientifically-derived instrumental efficacy. Nevertheless, the tendency to practice religious precautions may correlate with the tendency to embrace scientific precautions such as those recommended by public health authorities. If threat-mitigating behaviors are stimulated by threat-avoidance motivations, individuals may pursue multiple avenues of precaution as a form of bet-hedging or threat-mitigation maximization (Hong, 2023), even when the epistemic rationales for those various precautionary domains conflict. The correlation between engaging in religious precautions and practicing public health precautions could thus be either negative or positive.

The cultural environment is likely to shape the perception of conflicts between religion and science, in part as a function of dynamics such as information environments (e.g., rhetoric from faith or scientific leaders, or from news media or political figures), the particularities of different faith traditions, and historical path dependencies. These same dynamics apply to the COVID-19 pandemic, where individuals' perceptions of the costs, benefits, and tradeoffs of various precautions varied widely (Samore et al., 2023), likely structuring cross-culturally variant perceptions of conflict or compatibility between religious and public health precautions. Hence, we expect cross-cultural variation in the extent to which engaging in religious and public health precautions correlate. We therefore tested the direction of, and estimated the strength of, the within-country correlation between religious and public health COVID-19 precautions, both in the entire sample, and, in order to explore cross-cultural variation, in each study-site subsample. Further, we sought to measure the existence of perceived epistemic conflict between religion and science by examining the relationship between religiosity and attitudes toward scientists. The present data derive from a larger project addressing many aspects of disease-avoidance psychology; because that project did not directly measure perceptions of conflicts between religion and science, here we use proxy measures, including religious belief and reported trust in science, to indirectly gauge epistemic conflict.

Do pragmatic tradeoffs moderate the relationship between religious and public health precautions?

While propensities toward different modes of threat avoidance may be related, that relationship should be sensitive to the particular tradeoffs and potential clashes between any two precautions. The relationship between religious and public health precautions may therefore be sensitive to zero-sum conflicts between competing behaviors. When religious and public health precautions do not directly conflict, more threat-avoidant individuals may hedge their bets and entertain both types of precautionary behaviors despite their divergent epistemic rationales. However, if precautions from one domain preclude engaging in precautions from the other, then individuals may be forced to prioritize between them, weakening the cross-domain correlation within individuals.

Some COVID-19 public health precautions were more likely to clash with religious precautions than others. For example, social distancing is directly at odds with engaging in prophylactic collective religious behaviors, such as group worship intended to mitigate COVID-19. In contrast, hand washing is unlikely to clash with collective worship, while social distancing does not prevent people from engaging in private prayer to ward off COVID-19. Therefore, greater pathogen-threat sensitivity may drive a general association between public health precautions and religious precautions as threat-motivated individuals seek out multiple modes of prophylaxis, yet that relationship can be expected to vary as a function of specific tradeoffs between certain classes of behaviors.

To test this possibility, we compared individual versus collective religious precautions (e.g., prayer vs. group worship), and internal-facing versus external-facing public health precautions (e.g., handwashing vs. social distancing). Ceteris paribus, internal-facing public health precautions are less likely to conflict with either individual or collective religious precautions. While external-facing precautions are less likely to conflict with individual religious precautions, they are more likely to directly conflict with collective religious precautions, given that external-facing behaviors such as social distancing directly preclude engaging in behaviors such as group worship. Note that this hypothesis is exploratory and was not pre-registered.

Does traditionalism associate more strongly with religious versus public health precautions?

In prior work using the same sample as the current study (Samore et al., 2023), we found that greater traditionalism tended to correlate with taking more public health precautions. This finding is consistent with the hypothesis that greater sensitivity to threats—including pathogen threats—is associated with greater traditionalism, given that practicing the tried-and-true may have threat-mitigating benefits. Because both public health precautions and religious precautions are domains of threat-mitigating behavior in response to the danger of COVID-19, the traditional norms account predicts that, all else equal, both ought to correlate with traditionalism. However, all else may not be equal regarding the epistemic fit between various precautions among traditionalists. For example, whereas traditions can clash with public health precautions in particular cultural contexts (Samore et al., 2021, 2023), many religious precautions are themselves traditional, and hence inherently less likely to clash with traditionalism.

Per the predictions of the traditional norms account, we tested whether individuals' practice of religious precautions against COVID-19 (a manifestation of pathogen-threat sensitivity) correlated with their traditionalism across the 27 countries in the sample. Further, given that religious precautions may be less likely to conflict with traditionalism than relatively novel public health precautions, we assessed whether religious precautions correlated more strongly with traditionalism than did public health precautions.

Methods

Project overview

Research was approved by the UCLA Office of the Human Research Protection Program, and informed consent was obtained prior to participation. The questionnaire, translations, datasets, and analysis code are available at https://osf.io/6vu5b/?view_only=873259d429c346d2912303fc44df5079. See Supplement for a list of questionnaire items and composite scales in English.

The survey from which this study uses data was intended to contribute to several individual studies and projects. When the survey was administered, we published an omnibus pre-registration for the entire survey (found at the OSF link above). Note that this study focuses on the hypotheses found in section four in the omnibus pre-registration; the other hypotheses have either been addressed in other published papers (see Samore et al., 2023), or are presented in manuscripts currently in progress. There are some discrepancies between the pre-registered hypotheses and the work presented here. First, research question 2 regarding pragmatic tradeoffs was not pre-registered. The hypothesis occurred to the researchers after conducting an exploratory factor analysis on the public health precautions items for a prior study. Therefore, research question 2 should be considered exploratory. Second, the pre-registration focuses on belief in the efficacy of prayer to protect against COVID-19 as the primary dependent variable, in addition to religious precautions. However, after completing the pre-registration, but before conducting analyses for this study, we concluded that the religious precautions items more closely approximated real-world commitments to epistemic beliefs, hence we did not analyze the trust in prayer item, and used the religious precautions items instead. Third, we did not pre-register the test of the correlation

between trust in scientists and belief in higher powers. Further, while the research questions, methods, and general statistical approach were pre-registered, a detailed analysis plan was not included in the pre-registration. Additional discrepancies are explained in the Supplement; see page S6.

Between October 2020 and July 2021, adult participants ($N = 7{,}844$ after exclusions) were recruited across 27 countries for an observational, cross-sectional survey. Countries were included on a convenience basis, and the inclusion of possible study sites—as well as the representativeness of the samples recruited within them—was constrained by our use of online methods for recruitment and participation. Nevertheless, we aimed to include a wide range of societies across diverse major culture areas; see Figure S1 in Supplement. In countries where participants did not speak English, materials were translated by fluent bilingual speakers. The recruitment and compensation scheme varied across study sites, including unpaid volunteers, paid research participants, and student subject pools. See Table S1 in the Supplement for a summary of each study site, including site-specific Ns, survey language, recruitment procedures, and participant demographics. Data were pre-screened for minimum completeness and correct answers to attention checks.

Measures

Measures were identical across study sites, with some small deviations where necessary (for example, response options for participant education differed across sites according to the local education structure). A full list of these differences can be found on the OSF repository (see link above).

COVID-19 public health precautions

COVID-19 public health precautions were measured with a 13-item scale examining participants' self-reported real-world behaviors. Questions addressed behaviors which were generally associated with public health efforts to reduce COVID-19 infection risk during the initial stages of the pandemic, such as the frequency of mask wearing, hand washing, and social distancing. Items were rated on 7-point scales, either from "never" to "as often as possible," or from "not important at all" to "extremely important." An exploratory factor analysis (Samore et al., 2023) indicated that the 13 items could be coherently combined into a single public health precautions scale. Therefore, a composite public health precautions score was created by averaging across the 13 items (note that using factor scores instead of raw averages did not conceptually affect the results, see Supplement page S15). See Samore et al., 2023 for details on scale development and scale reliability. Consistent with prior research on COVID-19 precautions (Gul et al., 2021), this factor analysis also revealed two conceptually coherent subscales: *external-facing health precautions* (e.g., observing mask wearing and social distancing), and *internal-facing health precautions* (e.g., washing hands). Unless otherwise noted, the analyses presented in the main text report results using the combined composite.

COVID-19 religious precautions

Participants were asked two questions regarding religious behaviors aimed to protect against COVID-19: how frequently (7-point scale from "never" to "very frequently") they engaged in (a) individual religious behavior (e.g., praying alone) to protect against COVID-19, and (b) collective religious behavior (e.g., attending collective worship) to protect against COVID-19. Given that these two items were strongly correlated ($r = .57$), they were averaged into a single "COVID-19 religious precautions" composite for some analyses. Note that using the individual items instead of the composite did not conceptually affect the results (see Supplement Page S21).

Traditionalism

Because we could not identify a culturally-neutral traditionalism scale in the prior literature, we crafted our own measure by drawing upon two instruments that have been extensively used in

Table 1. List of items in traditionalism composite.

[agree or disagree] Traditions are the foundation of a healthy society and should be respected.	[agree or disagree] It would be better for society if more people followed social norms.	[agree or disagree] People should respect social norms.
[rightness or wrongness of …] Whether or not someone conformed to the traditions of society	[rightness or wrongness of …] Whether or not someone showed a lack of respect for authority	[agree or disagree] Respect for authority is something all children need to learn.

cross-cultural research. These scales jointly assessed the concept of traditionalism, or the tendency to endorse and place importance on traditional norms. To increase comparability across study sites, we modified items so as to measure participants' broad propensity to embrace or disregard their own society's traditional social norms and values. The two scales were as follows. First, the conventionalism subscale of the Aggression-Submission-Conventionalism scale (Dunwoody & Funke, 2016), which includes items about traditionalism generally, such as, "Traditions are the foundation of a healthy society and should be respected." Second, the authority subscale from the Moral Foundations Questionnaire Short Version (Graham et al., 2008, 2011), which similarly assesses whether individuals respect traditions and authorities, both generally (e.g., "To what extent are the following considerations relevant to your thinking … Whether or not someone conformed to the traditions of society"), and in relation to specific values regarding gender and age roles (e.g., "Respect for authority is something all children need to learn"). Items were rated on 7-point scales, either from "Not at all relevant" to "Extremely relevant," or from "Strongly Disagree" to "Strongly Agree." An exploratory factor analysis was conducted on all 10 traditionalism items jointly (see Samore et al., 2023 for details).

Based on the results of an exploratory factor analysis conducted on all items jointly (Samore et al., 2023), there was most agreement for a single "traditionalism" factor. Six of the ten items were then averaged into an overall traditionalism composite (see Table 1 for a list of these six items). Using factor scores instead of raw averages did not conceptually affect the results, see Supplement page S15. See Samore et al., 2023 for details on scale development and reliability. Note that, in order to avoid confounding, none of the traditionalism items explicitly concerned religiosity or religious practice.

Items testing perceptions of trust in different epistemic sources

First, participants were asked a single yes/no item as to whether they believed in a deity/deities or higher power(s). (For reasons of cultural sensitivity regarding privacy and/or social expectations, this item was excluded in Qatar and Austria.) Second, using a 7-point scale, participants were asked a single-item question concerning how much they trusted scientists regarding the COVID-19 pandemic.

Demographics, COVID-19-related covariates, and attention checks

Participants were asked about their gender identity and age, and their income relative to others in their country. Education was re-coded into a four-level structure so as to be comparable across study sites: primary school, secondary school, undergraduate-level, and post-graduate-level. We also measured a number of covariates relevant to the pandemic itself, including perceived COVID-19 prevalence in participants' local communities; the population density of those communities; whether participants' jobs required that they leave the home; and whether participants had certain pre-existing medical conditions that may put them at higher risk for severe disease. Summary statistics for the demographic and COVID-19 related covariates can be found in Tables S1 and S2 in the Supplement. Finally, we included several attention checks.

Results

Analytical strategy

Data were analyzed using a combination of random effects meta-analyses, as well as mixed-effects moderated linear regressions. Random effects meta-analyses were employed for assessing main effects given their affordances for easily comparing effects and heterogeneity between and across the 27 study sites. However, for analyses that included moderator variables, meta-analyses of interaction terms would be difficult to parse. Therefore, for moderator analyses pooling across all study sites, we employed mixed-effects linear regressions that facilitated the visualization of the interactions and their simple slopes. Note that results were not conceptually affected by the decision to use mixed-effects models versus random effects meta-analyses; see Supplement page S33 for details.

Do religious and public health COVID-19 precautions correlate within countries?

First, we assessed whether participants perceived epistemic conflict between religion and science vis a vis the COVID-19 pandemic. Because this perception was not measured directly, we gauged the relevant attitudes obliquely using available questions. Consonant with the interpretation that participants perceived an epistemic conflict, the 3,449 participants who believed in a higher power (M = 5.14, SD = 1.46) compared to the 3,003 participants who did not believe in a higher power (M = 5.58, SD = 1.32) were slightly, but significantly, less trusting in scientists regarding the COVID-19 pandemic ($t = -12.73$, $p < 22e\text{-}16$, $d = .32$).

We then assessed the main research question regarding the intra-individual correlation between religious and public health COVID-19 precautions. A random effects meta-analysis was conducted on the zero-order correlation between COVID-19 religious precautions and COVID-19 public health precautions, treating each study site as a separate sample (see Figure 1). The correlation between the two precaution domains was significant and positive at 21 of the 27 study sites. The overall meta-analyzed correlation was relatively small (r = .19, 95% CI [.15, .22]), with substantial variation across study sites ($I^2 = 56.77\%$, 95% prediction interval [.06, .32]). These results suggest that, on average, the self-reported frequency of practicing religious and public health precautions correlate together, even though the conceptual rationales for those precautions are derived from contrasting meaning systems. However, within bounds (the relationship never trended negatively at any study site), the extent to which religious precautions and public health precautions accord or conflict varied across study sites. Note that this result is conceptually similar when analyzed using a mixed effects model rather than a random-effects meta-analysis (see Supplement page S33).

In addition to identifying an individual-level association between religious and public health precautions, we also explored the possibility of a country-level association. To achieve these, in a pooled sample across all study sites, we regressed public health precautions on study site sample-mean religious precautions, as well group-mean centered religious precautions at the individual level. This approach allowed us to differentiate between individual- and study site-level effects. There was a significant association between sample mean religious precautions and public health precautions ($B = .23$, SE = .08, $p = .008$). That is, every one unit increase in mean religious precautions at the study site level was associated with a .23 unit increase in public health precautions (both measured on 1–7 scales). These results indicate that in addition to an individual-level association, there was a relationship between religious and public health precautions at the study site level.

Finally, at the recommendation of reviewers, we conducted an exploratory post-hoc analysis in order to test whether the positive relationship between religious and public health precautions obtained specifically among participants with an explicit belief in deities or higher powers. Note that the survey did not include more granular measures of religiosity, hence we were only able to test for an effect of the presence or absence of belief in higher powers on the religious-public

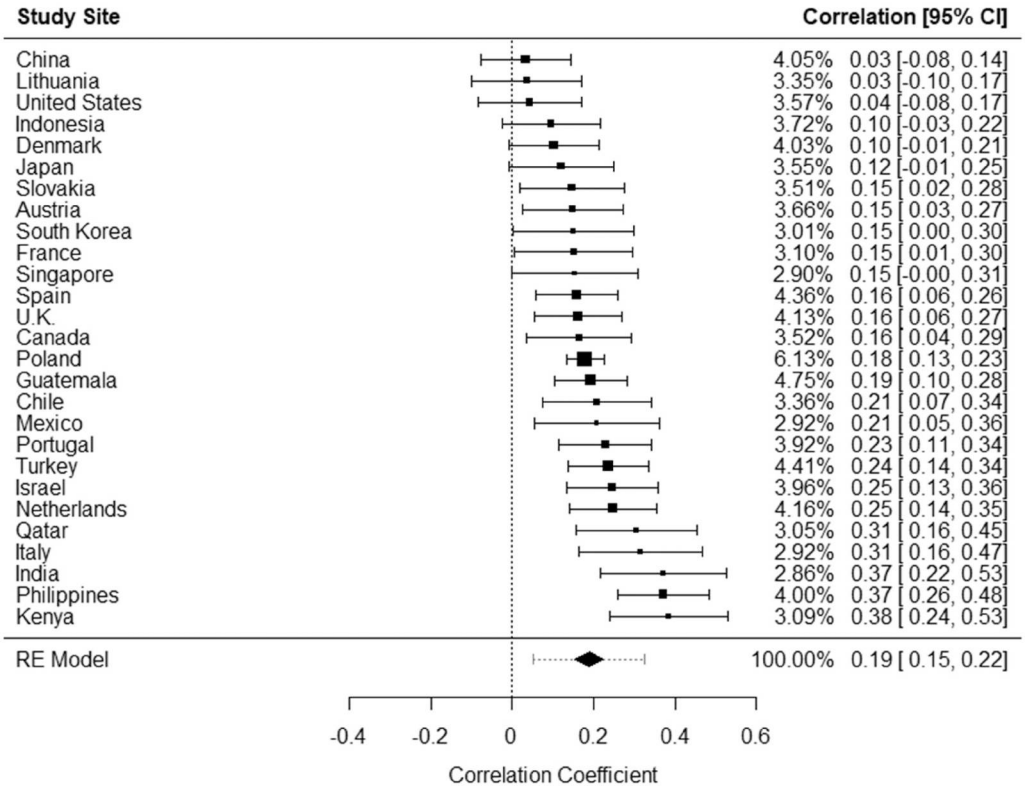

Figure 1. Relationship between COVID-19 religious and public health precautions. Results of a random-effects, restricted maximum likelihood meta-analysis in which each study site was treated as a separate sample. Plot shows zero-order product-moment correlations between COVID-19 religious precautions and COVID-19 public health precautions at each study site, ordered by effect size. For the individual country estimates, the location of the square along the x-axis corresponds with the correlation coefficient, the size of the square corresponds with the weight of that study site in the meta-analysis, and bands are 95% confidence intervals. At the bottom of the plot, an overall meta-analyzed point estimate is provided. The midpoint of the diamond corresponds with that point estimate, the width of the diamond corresponds with the 95% CI, and the dotted bands correspond with the 95% prediction interval. On the right side of the plot, weights, correlation coefficients, and 95% CIs respectively are numerically listed for both the site-specific correlations, as well as the overall estimate. Note that for the overall meta-analyzed point estimate, neither the 95% confidence interval nor the 95% prediction interval overlap with zero.

health precautions relationship. Further, this item was excluded at some study sites for reasons of cultural sensitivity. Using random effects meta-analyses, we found that, among participants lacking belief in a higher power, there was no relationship between religious precautions and public health precautions (overall estimate r = .04, 95% CI [−.002, .087]). Among participants who believed in a higher power, there was a significant overall effect (r = .21, 95% CI [−.002, .087]), similar to the meta-analyzed correlation in the full sample. However, compared to the whole sample, there was more heterogeneity across study sites in this estimate—(I^2 = 74.08%, 95% prediction interval [−.07, .49])—suggesting that among religionists, perceived tradeoffs vary more across populations. See Supplement page S40 for forest plots, and for details on the sample.

Do pragmatic tradeoffs moderate the relationship between religious and public health precautions?

We then investigated whether the overall positive relationship between public health precautions and religious precautions was sensitive to possible conflicts between some precautions in particular. Specifically, we examined whether the relationship between religious and public health precautions

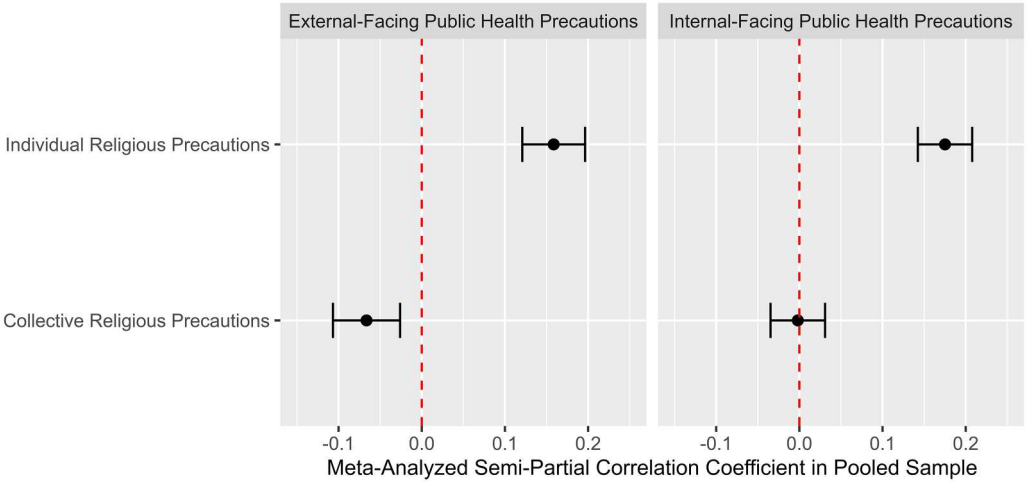

Figure 2. Effect of individual versus collective and internal- versus external-facing precautions on the relationship between religious and public health precautions. Overall results of two random effects meta-analyses, simultaneously regressing internal- and external-facing public health precautions on individual and collective religious precautions respectively. Lines indicate 95% confidence intervals.

varied as a function of whether the religious precautions in question were individual versus collective, and whether the public health precautions were internal- or external-facing.

In order to test the relative associations of the two types of religious precautions on the one hand, and the two types of public health precautions on the other, we conducted two random-effects meta-analyses. The first model assessed the semi-partial correlations between internal-facing public health precautions on the one hand, and individual and collective religious precautions on the other. The second model assessed the same relationships with external-facing precautions. The overall meta-analyzed semi-partial correlations are plotted in Figure 2, see Supplement page S28 for forest plots of cross-study site variation.

Consistent with our expectation that individual religious precautions were less likely to epistemically clash with public health precautions, the simple slope analysis indicates that individual religious precautions were positively related to both external- and internal-facing public health precautions. Meanwhile, the correlation between collective religious precautions and external-facing public health precautions was negative, consistent with the existence of pragmatic tradeoffs. However, contrary to expectations, collective religious precautions and internal-facing public-health precautions were uncorrelated. Note that these results are conceptually similar when analyzed using mixed effects models rather than random-effects meta-analyses (see Supplement page S33). Further, these analyses should be considered exploratory given that the hypothesis was only generated after finding evidence for the public versus private public health precautions factor structure in a prior study, and hence was not pre-registered.

Does traditionalism associate more strongly with religious versus public health precautions?

We conducted a random effects meta-analysis on the zero-order correlation between traditionalism and COVID-19 religious precautions across all study sites (see Figure 3). At most study sites (21 of 27), there was a significant positive correlation between traditionalism and religious precautions, and the direction of the correlation was not negative at any study site. The overall meta-analyzed correlation—representing a weighted average of the country-specific effects—was .24 (95% CI [.20, .29]), suggesting that, on average, there was a small-to-medium correlation between traditionalism

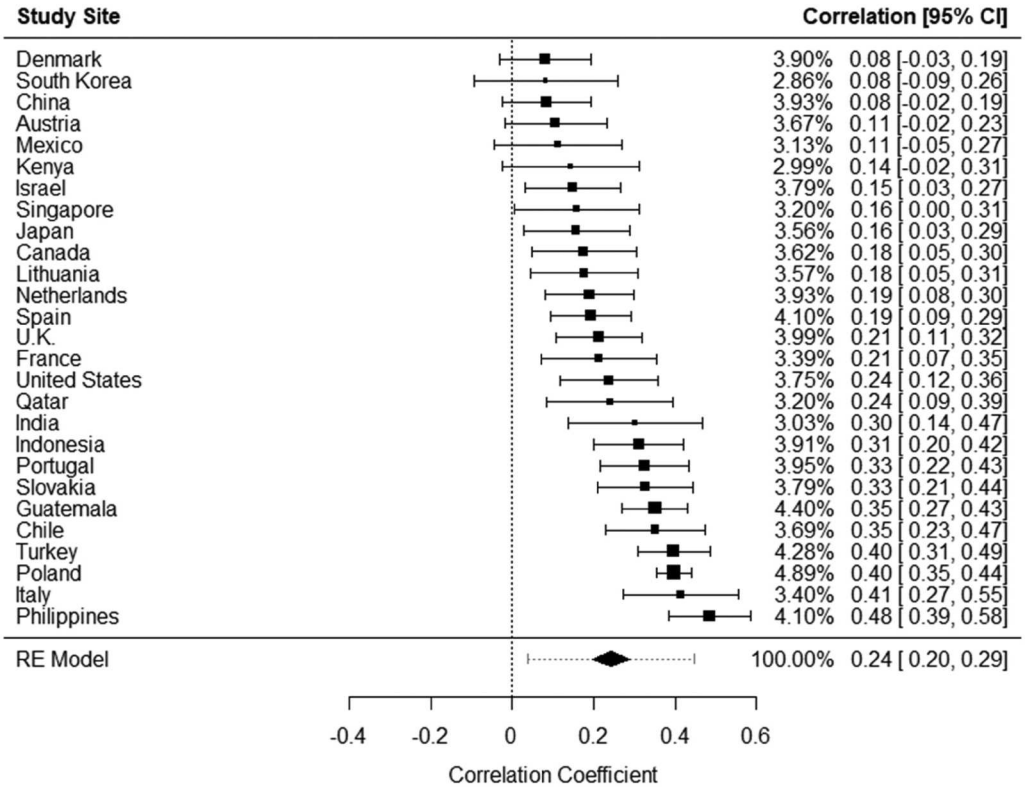

Figure 3. Correlation between COVID-19 religious precautions and traditionalism. Results of a random-effects, restricted maximum likelihood meta-analysis in which each study site was treated as a separate sample. Plot shows the zero-order product-moment correlations between traditionalism and COVID-19 religious precautions at each study site, ordered by effect size. See Figure 1 for a description of how to interpret the forest plot. For the overall meta-analyzed point estimate, neither the 95% confidence interval nor the 95% prediction interval overlap with zero.

and religious precautions across the countries included in this sample. Perhaps reflective of the fact that the extent to which traditional and religious values covary depends on the specific cultural context, the strength of the correlation varied substantially across study sites ($I^2 = 76.79\%$, 95% prediction interval [.04, .45]). Separating out individual and collective religious precautions did not conceptually alter the results, see Supplement page S19. Note that this result is conceptually similar when analyzed using a mixed effects model rather than a random-effects meta-analysis (see Supplement page S33).

Next, we compared the strength of the relation between traditionalism and public health precautions with the relation between traditionalism and religious precautions. In order to visualize a potential interaction, we fit a restricted maximum likelihood linear mixed model to the pooled sample across all study sites, setting random effects for participants nested within countries. In order to compare traditionalism with the two modes of COVID-19 precautions, data were lengthened such that there were two nested precautions observations per participant, one corresponding with their religious precautions, and the other with their public health precautions. Precautions were then regressed on the interaction between traditionalism and an indicator variable indexing whether the precautions in question were public health or religious. There was an interaction (see Figure 4) between precautions mode and traditionalism ($B = .26$, $SE = .02$, $t(7538) = 14.45$). Consistent with expectations, a simple slopes analysis revealed that the relation between traditionalism and religious precautions ($B = .51$, $SE = .01$, $t(7{,}535) = 37.12$) was about twice as strong as the relation between traditionalism and public health precautions ($B = .25$, $SE = .01$, $t(7{,}535) = 18.52$).

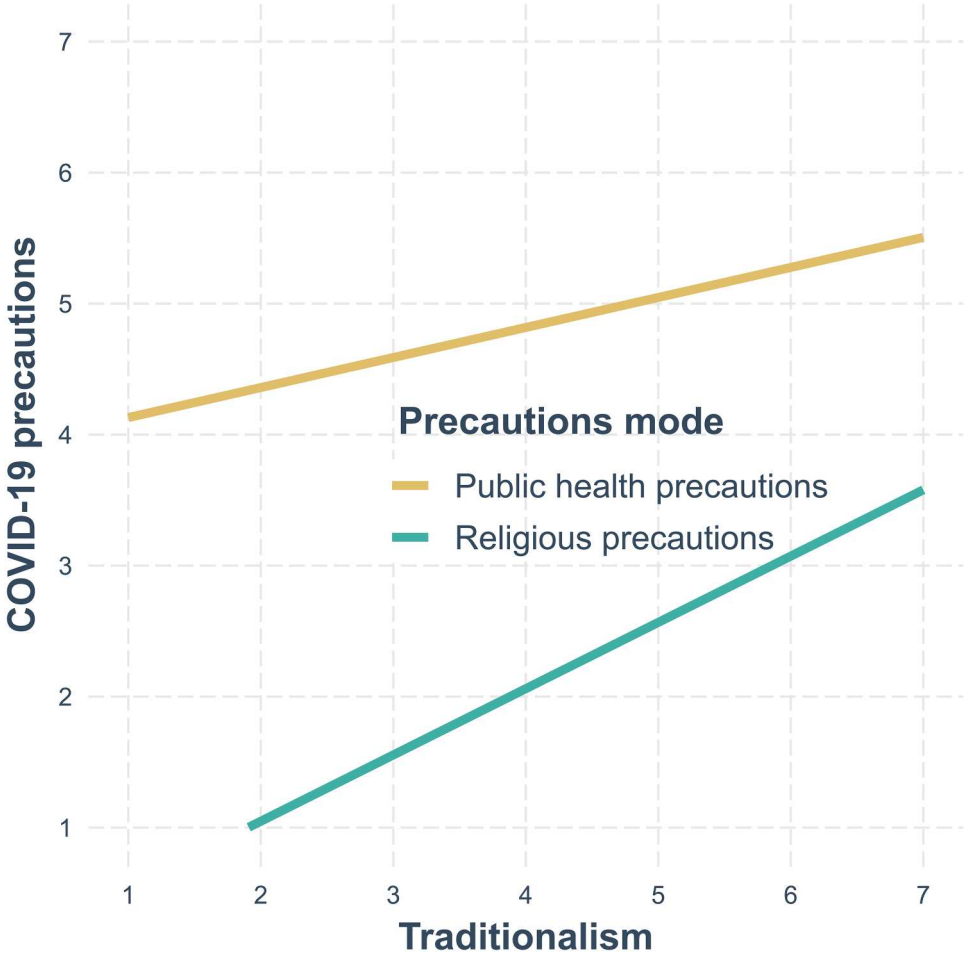

Figure 4. Comparing the relationships between traditionalism and religious versus public health COVID-19 precautions. Interaction plot based on the results of a moderated mixed linear regression in the overall pooled sample across all study sites. COVID-19 precautions were regressed on the interaction between traditionalism and a variable indicating whether the precautions were religious or public health in nature.

However, even when added to the same model, both modes of COVID-19 precaution remained correlates of traditionalism, suggesting that greater traditionalism is consistent with multi-modal responses to pathogen threats.

Although the traditionalism items were best explained by a single factor structure, we considered the possibility that these results were being driven by particular facets of the traditionalism scale. For example, the six traditionalism items comprising the traditionalism scale related to whether people should (a) follow norms broadly, (b) respect traditions in particular, and (c) respect authority and hierarchy norms. However, results were conceptually consistent across these three facets; see Supplement page S36 for details.

Accounting for covariates

The results reported above were robust to the inclusion of demographic controls—including age and education—as well as COVID-19-related covariates, such as participants' estimates of COVID-19 prevalence (see Supplement page S22).

Discussion

Our overall results suggest that in some contexts, individuals do not strongly police epistemic boundaries when responding to threats. Across the 27 countries included in the sample, the extent to which individuals reported taking religious precautions against COVID-19 tended to correlate with their reported adherence to science-based public health precautions. Religious and public health precautions also correlated at the study site level. Therefore, despite possible epistemic conflict between the competing rationales for religious and public health precautions, individuals who practiced one type of threat mitigation were nevertheless more likely to also practice the other type. These results are consistent with the possibility that on average, threat-sensitive individuals tend toward entertaining multiple possible epistemologies in the service of threat mitigation. However, there was also widespread cross-cultural variation in the relationship between religious precautions and public health precautions, ranging from null relationships to medium-sized positive correlations. This finding suggests that aspects of the social environment influence the extent to which epistemic conflict is perceived and/or acted on between different domains of threat mitigation.

In addition to the moderating effects of the social environment, we also examined an exploratory hypothesis that pragmatic clashes between particular religious and public health precautions would mute the overall correlation in certain cases. Specifically, while precautions can be perceived to trade off because of competing epistemic rationales, they can also trade off because of pragmatic mutual exclusivity. Therefore, we compared individual versus collective religious precautions, and internal- versus external-facing public health precautions, predicting that external-facing public health precautions would directly clash with collective religious precautions in a zero-sum manner. Consistent with expectations, external-facing and collective precautions were negatively correlated, albeit only weakly. However, on the whole, these predictions were only partially supported, as collective religious precautions also clashed with internal-facing public health precautions despite the lack of obvious pragmatic tradeoffs between them.

One possible explanation of the above is that participants may not conceptually discriminate between internal- and external-facing precautions in their mental models of public health behaviors, despite the fact that the relative frequencies of these two categories can be decomposed. In other words, given a shared epistemic rationale rooted in science, precautions such as social distancing and hand washing may tend to be lumped together when people weigh cost–benefit tradeoffs. If conceptual distinctions are not being made between internal- and external-facing precautions, participants who prioritize collective religious behavior may perceive conflict with public health precautions generally. Another possibility, compatible with the above, is that particular political attitudes and associated information environments tend to covary with religious praxis in some socio-political contexts. Given the role of political polarization in shaping precautionary COVID-19 behaviors (e.g., Samore et al., 2021), these covarying political beliefs may have elicited negative attitudes toward public health precautions writ large among religionists who prioritized collective religious behavior. Likewise, government rulemaking around public gatherings such as religious worship may have contributed to the clashes between collective religious precautions and government-supported public health precautions. However, these explanations are post hoc and speculative, and cannot be tested with the available data.

Finally, our results further support the traditional norms account, while also highlighting the importance of contextually contingent tradeoffs in structuring the relationship between traditionalism and threat avoidance. Specifically, we found that the reported frequency of religious precautions positively correlated with traditionalism at most study sites, which is unsurprising given the close overlap between tradition and religion in many cultural contexts. Further, the relationship between religious precautions and traditionalism was stronger than the relationship between public health precautions and traditionalism, perhaps reflective of the role of epistemic priors and cost–benefit assessments in structuring how traditionalists respond to threats. By breaking down threat

avoidance behaviors into distinct domains, our research adds nuance to the prior literature on traditional attitudes and threat responses.

This study was limited in important ways. First, our sampling procedures limit the generalizability of the findings. Participants were recruited on the basis of convenience, and thus samples were not representative of their respective countries, particularly in terms of socio-economic status and formal education. For example, participants could only access the study via the internet, and, at some study sites, samples were comprised of students recruited from university subject pools. Our results should therefore not be taken to represent the cultural characteristics of an entire country. Although country is conveniently used to index the general location of each study site, the study sites are in actuality comprised of a non-representative population within each respective country. Equally importantly, the countries and cultures included in the study were not globally representative. In particular, countries from the Global North were oversampled, while countries from Africa and South America were particularly underrepresented. We thus sampled a limited and biased range of human societies, and our results likely do not capture the full range of possible variation concerning the relationships being tested (Henrich et al., 2010).

Second, although it is tempting to explain post hoc patterns of variation across the study sites by testing nation-level predictors in a meta-regression, this research was not structured to test causal explanations for heterogeneity in effects across study sites. In particular, the lack of representativeness within and across study sites precludes such attempts. Similarly, this project does not aim to explain why certain effects were observed in some study sites but not others. Our data lack the kind of ethnographic and culturally particular richness required to explain site-specific phenomena. Instead, we focused on overall trends across study sites.

Third, additional unmeasured individual differences may moderate the relationship between religious precautions and public health precautions. For example, although greater perceptions of conflict would likely suppress the correlation between religious and public health precautions, we did not measure explicit beliefs about epistemic conflict between religion and science. Although we attempted to indirectly measure said conflict by examining differences in trust in scientists and reported public health precautions across believers and non-believers, future research should explicitly model how people's perceptions of the religion-science conflict structure their subsequent behavioral strategies vis-a-vis threat mitigation in contexts such as the COVID-19 pandemic.

Fourth, traditionalism is an underspecified concept in both the literature broadly, and in our study in particular. Here, we relied on participants' own lay conceptualizations of tradition. Participants were asked to indicate their favorability toward their society's traditions, with the content of those traditions being unspecified so as to invite participants to employ their own definitions. These definitions likely varied across both participants and societies. Although we were interested in comparing participants' tendency to embrace traditions writ large—irrespective of the specific content of those traditions, which are culturally constituted and variable across our sample—it is possible that, in their responses, participants did not discriminate between traditional norms and norms more generally. Therefore, we cannot exclude the possibility that our results indicate a relationship between conformity and precaution generally, rather than with tradition in particular. Future research should systematically examine the processes that distinguish the traditional from the merely normative.

Fifth, collective and individual religious precautions were measured using only single items which asked about the efficacy of religious behavior in protecting against COVID-19 infection directly. However, the pandemic may have prompted people to engage in religious precautions to ameliorate costs related to, yet downstream of, COVID-19. For example, people may have prayed for strength in dealing with the general adversity of the pandemic, but not necessarily for direct relief from infection specifically. Our impoverished measure of religious precautions would not have captured these concomitant uses of religion.

These results conflict with the literature on risk compensation during the pandemic (e.g., Luckman et al., 2021), where researchers broadly found that COVID-19 risk reduction in one domain

was associated with increased risk in other domains. Future research should elucidate the circumstances under which individuals bet hedge by simultaneously upregulating many precautionary behaviors, versus those in which people engage in risk compensation.

These results may or may not generalize to other conflicts and sources of threat. On the one hand, the COVID pandemic was largely unprecedented in modern times, suggesting that people may have been more willing to drop their epistemic priors and engage in more bet-hedging across epistemically diverse precautions. Further, prior research suggests that the relationship between traditional values and scientifically motivated precautions can be tenuous, and vulnerable to countermessaging (see Samore et al., 2021). On the other hand, a large body of research (e.g., Jackson et al., 2020; Legare et al., 2012; Leicht et al., 2022) suggests that many religionists are broadly willing to accept and hold both scientific and religious beliefs, despite potentially competing epistemic rationales. Further research should test the generalizability of the results found here.

In contrast to much of the prior literature on threat sensitivity and pathogen avoidance, we asked participants about contemporaneous and inherently costly behaviors in response to a highly impactful and globally salient real-world threat. This research contributes to an understanding of how religious and scientific epistemologies interact, conflict, and harmonize in an actual behavioral domain. Rather than a simplistic religion-versus-science dichotomy, our results suggest that individuals make complex decisions about religiously and scientifically justified precautions. On the one hand, the correlation between precautions across disparate domains is broadly consistent with overarching individual tendencies toward threat avoidance, or even negativity bias writ large (Hibbing et al., 2014). However, these results also point to the contextual importance of specific cost–benefit tradeoffs, epistemic perspectives, and cultural variation, indicating that threat sensitivity and avoidance are not monolithic dimensions of individual difference. Given societies' vital interest in convincing individuals from diverse perspectives to adopt novel precautionary behaviors in response to shared threats, it is important to understand the conditions under which individuals are willing to adopt new and/or epistemically conflicting precautions, particularly when such behaviors may conflict with deeply held religious beliefs and practices.

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Supplementary Information for

Accordance and conflict between religious and scientific precautions against COVID-19 in 27 societies

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Contents

Supplementary Procedure

1. Composite scales and other variables

Full survey items in English can be found in the open archives, as well as all translations.

COVID-19 Public Health Precautions Composite: Composite of both external- and internal-facing precautions.

Note that although the following item—"When you leave your home and may be near other people, how often do you wear gloves"—was included as a precaution item in the survey, it did not load onto either factor, and therefore was not included in any composite.

Internal-facing precautions:

> Compared to before the pandemic, how important has it been for you to have adequate supplies of... [1 – not at all important … 7 – extremely important]

1. Cleaning supplies (such as bleach, disinfectant spray, disinfectant wipes, etc.)
2. Hand sanitizer/hand soap
3. Masks and gloves

> Compared to before the pandemic, how important has been for you to… [1 – not at all important … 7 – extremely important]

1. Clean your hands with soap or sanitizer
2. Disinfect surfaces in your house, like doorknobs or counters
3. Eat or drink things to boost your immune system

> When you leave your home and may be near other people, how often do you each of the following? [1 – never … 7 – as often as possible]

1. Disinfect surfaces upon returning home

External-facing precautions:

> When you leave your home and may be near other people, how often do you each of the following? [1 – never … 7 – as often as possible]

1. Wear a mask and/or face shield/visor
2. Stay farther than 2 meters/6 feet away from people [*note: unit of distance varied according to local norms]*

> To what degree were you careful in the last week to avoid interaction with people outside your household? [1 – not careful at all … 7 – as careful as possible]
>
> In your daily life, how important is it that you take actions that protect yourself and others from COVID-19? [1 – not at all important … 7 – extremely important]

Compared to before the pandemic, I have changed many aspects of my everyday behavior to protect myself and others from COVID-19 [1 – strongly disagree … 7 – strongly agree]

Religious precautions:

How often do you engage in… [1 – never … 7 – very frequently]

1. Individual religious behavior such as prayer (for example praying alone) to protect yourself and others from COVID-19
2. Collective religious behavior such as attending a church/synagogue/mosque/temple/shrine to protect yourself and others from COVID-19

Conventionalism: From the Aggression-Submission-Conventionalism scale(Dunwoody & Funke, 2016), a measure of right-wing authoritarianism.

The following questions concern values that people may or may not hold. Please select a number to indicate the degree to which you agree or disagree with each statement. [1 – strongly disagree … 7 – strongly agree]

3. People emphasize tradition too much. (r)
4. It would be better for society if more people followed social norms.
5. People should respect social norms.
6. Traditions are the foundation of a healthy society and should be respected.
7. Traditions interfere with progress. (r)
8. People should challenge social traditions in order to advance society. (r)

Moral Foundations authority subscale: Short-form measure(Graham et al., 2008).

When you decide whether something is right or wrong, to what extent are the following considerations relevant to your thinking? Please rate each statement using this scale: [1 – not at all relevant … 7 – extremely relevant]

1. Whether or not someone showed a lack of respect for authority
2. Whether or not someone conformed to the traditions of society

Please read the following sentences and indicate your agreement or disagreement [1 – strongly disagree … 7 – strongly agree]

1. Men and women each have different roles to play in society.
2. Respect for authority is something all children need to learn.

Traditionalism Factor: Items derived from Conventionalism and Moral Foundations authority subscales.

1. It would be better for society if more people followed social norms (see anchors above).
2. People should respect social norms (see anchors above).
3. Traditions are the foundation of a healthy society and should be respected. (see anchors above).
4. Whether or not someone showed a lack of respect for authority (see anchors above).
5. Whether or not someone conformed to the traditions of society (see anchors above).
6. Respect for authority is something all children need to learn (see anchors above).

Other items:

1. Distrust in scientists:

   How much do you think scientists provide advice based on accurate information about what to do during the COVID-19 outbreak? [1 – not at all accurate … 7 – extremely accurate]
2. Belief in a deity/deities/higher power(s):

   Do you believe in God or another deity or deities?
   - Yes
   - No
   - Prefer not to answer

COVID-19-relevant covariates:

1. Perceived COVID-19 prevalence:

   In your opinion, how prevalent is COVID-19 in your local community? [1 – not at all prevalent … 7 – extremely prevalent]
2. Population density:

   How would you best describe the area where you live?
   - Large city
   - Small city
   - Town or suburb
   - Village or countryside
3. Job requirements:

   If applicable, does your job currently require that you leave the home?
   - Always required to leave the home
   - Sometimes required to leave the home
   - Rarely required to leave the home
   - Never required to leave the home
   - I don't have a job
4. Health conditions:

   Has a doctor or other health professional ever diagnosed you with any of the following health conditions?

- Autoimmune disease
- Weak immune system
- Diabetes
- High blood pressure
- Heart disease
- Asthma
- Kidney disease

Demographic variables and attention checks:

1. Gender (some response options differed across study sites, see OSF repository for details):

   What is your gender identity?
   - Woman
   - Man
   - Other
2. Education (Response options differed across study sites based on local education systems. For the purposes of analysis, those response options were binned into the following four categories. see OSF repository for details):

   Your highest level of education completed?
   - Primary school
   - Secondary school
   - Undergraduate level
   - Advanced/post-graduate level
3. Age:

   What is your age in years?
4. Relative wealth:

   Compared to other people in your country, how would you describe your wealth? [1 – much less wealthy than most other people in my country … 7 – much wealthier than most other people in my country]
5. Attention check 1:

   When you look up on a clear day, what color is the sky?
   - Train station
   - Laptop
   - Blue
   - Cardboard box
   - Chicken
   - Green
   - Book
   - Lamp
6. Attention check 2:

   Did you carefully consider your responses to this survey (please be honest)?

- Yes
- No

2. Differences between pre-registration and final manuscript

There are several differences between the pre-registered measures and those reported in the main text and supplement. Here, we explain those differences.

- *Survey items reserved for separate projects:* We included a number of measures in the surveys that are not reported in the main text because they are being reserved for separate projects, and were not a part of the research questions described in the section of the pre-registration (section 4) dedicate to this particular project. In addition to listing these reserved variables below, they can also be found in the full surveys in the open archive.

  Reserved measures:

  1. Pathogen disgust sensitivity scale (Tybur et al., 2009)
  2. Belief in a dangerous world scale (Navarrete, 2005)
  3. Generalized social trust item (not included at every study site)
  4. Social conservatism item (not included at every study site)
  5. Economic conservatism item (not included at every study site)
  6. Various measures that were included at individual study sites only (see study-site specific full surveys in open archive for details).
  7. Parental status
  8. Social dominance orientation

- *Unincluded study sites*: In addition to the 27 countries included in the manuscript, we pre-registered that we would collect data in the following additional countries: Russia, Brazil, Colombia, Egypt, and Armenia. However, these countries were not included in the final sample for a variety of unanticipated circumstances. In Armenia, Brazil, and Russia, data collection never began due to extenuating circumstances. In Egypt and Colombia, data collection began, but we were unable to recruit more than 60 participants in either country after exclusion criteria were applied. Therefore, they were excluded from the study, and the existing underpowered data was never analyzed in any way. We specified in the pre-registration that study sites may be excluded on the basis of insufficient participant recruitment.
- *Belief in a deity, deities, or higher power:* Although we initially intended to use this item in our cross-country analyses, it had to be dropped from full-sample tests because this item was excluded from some study sites for cultural sensitivity reasons.
- *COVID-19 infection status:* Participants were asked whether they were currently known to be infected with COVID-19. We intended to use this as a covariate with the other COVID-19-related covariates in relevant meta-analyses. However, at some study sites, no participants reported being infected with COVID-19. Therefore, it was dropped from analysis.

3. Analysis software

We used R(R Core Team, 2020), RStudio (RStudio Team, 2019), and the R-packages easystats (Lüdecke & Makowski, 2020), ggpubr (Kassambara, 2023), gridExtra (Auguie, 2017), interactions (Long, 2019), lme4 (Bates et al., 2015, p. 4), lmerTest (Kuznetsova et al., 2017), metadat (White et al., 2022), metafor (Viechtbauer, 2010), psych (Revelle, 2019), report (Makowski et al., 2021), scales (Wickham & Seidel, 2020), and tidyverse (Wickham et al., 2019) for our analyses. The code that produced all analyses in the main text and supplement is openly available at: https://osf.io/6vu5b/?view_only=873259d429c346d2912303fc44df5079.

4. Software version and source information

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127.  xml2            1.3.3      2021-11-30 [1] CRAN (R 4.2.2)
128.  xtable          1.8-4      2019-04-21 [1] CRAN (R 4.2.2)
129.  yaml            2.3.7      2023-01-23 [1] CRAN (R 4.2.2)
130.  zoo             1.8-11     2022-09-17 [1] CRAN (R 4.2.2)
```

Map of Study Sites

Figure S1. Map of countries (purple pins) that were included in the study. See a list of study sites in Table S3. This map was created by the authors using www.mapcustomizer.com.

Summary statistics and other information by study site

Table S1, below, presents a list of study sites, study-site specific Ns, as well as information on survey languages, recruitment procedures, and participant demographics for each study site. In the main text we report excluding participants on the basis of minimum completeness and correct answers to attention checks. Across all the study sites, 11,983 participants at least started the survey. We excluded 4,139 participants based on the above criteria, to arrive at a final sample size of 7,844. This relatively high attrition rate is unsurprising given that, at a majority of study sites, participants were uncompensated volunteers.

Study Site	Survey Language	Population	Recruitment Method	Compensation	N	Mean (SD) Age	% Women	Mean (SD) Religious Precautions Composite	Mean (SD) COVID-19 Public Health Precautions Composite	Average daily confirmed COVID-19 cases per million people over data collection period
Austria	German	Students; general population	Social media; classrooms	Volunteer	244	34.69 (13.28)	84	1.50 (1.12)	4.38 (1.04)	205.84
Canada	English	Students	Subject pools	Course credit	221	19.34 (2.40)	77	2.08 (1.44)	5.25 (.96)	109.18
Chile	Spanish	Students; general population	Social media; classrooms	Volunteer	195	31.91 (12.71)	67	1.85 (1.39)	5.61 (.83)	359.77
China	Mandarin Chinese	General population	Online workers (Weidiaocha)	CNY ¥6	317	25.27 (6.21)	55	2.64 (1.47)	5.78 (.81)	.02
Denmark	Danish	General population	Online workers (YouGov)	75 YouGov points	307	50.11 (18.23)	50	2.62 (1.32)	5.07 (.97)	233.77
France	French	Students; general population	Social media; classrooms	Volunteer	176	29.80 (13.29)	66	1.21 (.75)	3.88 (.99)	52.18
Guatemala	Spanish	General population	Social media	Volunteer	457	39.65 (12.67)	80	3.21 (1.80)	5.36 (1.03)	41.00
India	English	Students	Classrooms	Volunteer	118	28.33 (9.01)	62	4.33 (1.87)	5.33 (1.06)	8.60

Indonesia	Indonesian	Students; general population	Classrooms; social media	Volunteer	257	31.10 (9.97)	76	3.87 (1.37)	5.57 (.82)	32.02
Israel	Hebrew	Students	Subject pools	Course credit	267	22.49 (2.44)	51	1.83 (1.41)	4.37 (1.01)	609.52
Italy	Italian	General population	Social media	Volunteer	135	35.31 (15.50)	61	1.91 (1.52)	4.99 (1.02)	235.94
Japan	Japanese	Students	Subject pools; classrooms	Course credit or volunteer	231	22.36 (4.36)	46	1.22 (.72)	4.81 (.98)	19.40
Kenya	English	Students; general population	Classrooms; snowball recruitment	Course credit or volunteer	133	23.60 (4.91)	50	4.70 (.1.56)	5.22 (1.12)	8.60
South Korea	Korean	Students	Subject pools; classrooms	Course credit or volunteer	167	23.25 (3.92)	63	1.64 (1.32)	4.86 (.87)	11.05
Lithuania	Lithuanian	Students; general population	Social media; classrooms	Volunteer	211	28.03 (10.33)	80	1.64 (1.23)	4.05 (.92)	213.78
Mexico	Spanish	Students; general population	Social media; classrooms	Volunteer	153	28.75 (10.97)	65	2.04 (1.51)	5.51 (1.00)	29.02
Netherlands	Dutch	General population	Online workers (Prolific Academic)	€ 1.10	300	29.58 (10.22)	41	1.36 (.99)	4.63 (.92)	340.18
Philippines	English	Students; general population	Social media	Volunteer	229	21.17 (3.64)	75	5.00 (1.68)	5.76 (.92)	67.20
Poland	Polish	Students; general population	Social media; classrooms	Volunteer	1,665	22.98 (7.54)	74	2.22 (1.73)	4.35 (1.15)	240.09
Portugal	Portuguese	General population	Subject pools	Raffle (5 prizes worth € 10.00)	264	27.58 (8.82)	76	1.77 (1.41)	5.18 (.85)	53.41

Qatar	Arabic	Students; general population	Social media; classrooms	Volunteer	146	24.23 (6.84)	82	4.23 (1.41)	5.08 (1.08)	279.66
Singapore	English	Students	Subject pools	Course credit	155	21.58 (2.03)	78	2.61 (1.67)	4.31 (.87)	2.77
Slovakia	Slovak	Students	classrooms	Volunteer	222	21.90 (3.89)	77	2.35 (1.75)	4.63 (.96)	389.92
Spain	Spanish	General population	Social media	Volunteer	365	40.15 (13.74)	79	1.60 (1.29)	4.94 (1.32)	562.56
Turkey	Turkish	Students; general population	Social media; classrooms	Volunteer	352	31.71 (16.28)	77	2.29 (1.35)	5.72 (.84)	287.61
U.K.	English	General population	Online workers (Prolific Academic)	£0.82	316	36.81 (13.87)	70	1.42 (1.10)	5.15 (.99)	340.47
U.S.	English	General population	Social media	Volunteer	241	33.08 (18.91)	83	1.99 (1.42)	4.98 (.98)	305.59
Pooled Sample	-	-	-	-	7,844	28.91 (12.95)	70	2.32 (1.72)	4.94 (1.16)	186.64

Table S1. Summary statistics and other information by study site

country	relative wealth M	relative wealth SD	COVID prevalence M	COVID prevalence SD	education - primary	education - secondary	education - undergraduate	education - advanced	has health condition	does not have health condition	density - village or countryside	density - town or suburb	density - small city	density - large city
austria	4.06	1.05	2.79	1.40	0.04	0.66	0.27	0.02	0.23	0.77	0.20	0.57	0.09	0.13
canada	4.48	1.04	4.90	1.44	0.00	0.90	0.10	0.00	0.22	0.78	0.05	0.32	0.39	0.24
chile	4.08	1.28	5.14	1.53	0.22	0.23	0.37	0.18	0.88	0.12	0.03	0.10	0.22	0.65
china	3.38	1.18	2.44	1.59	0.00	0.05	0.44	0.50	0.20	0.80	0.09	0.11	0.38	0.41
denmark	4.77	1.44	5.13	1.41	0.07	0.42	0.50	0.01	0.29	0.71	0.21	0.29	0.21	0.28
france	4.02	1.04	3.43	1.34	0.01	0.05	0.45	0.48	0.24	0.76	0.25	0.05	0.21	0.49
guatemala	4.13	1.54	5.16	1.59	0.01	0.08	0.55	0.36	0.31	0.69	0.04	0.20	0.19	0.58
india	3.78	1.61	3.80	1.60	0.00	0.00	0.19	0.81	0.49	0.51	0.18	0.18	0.25	0.39
indonesia	3.26	1.03	5.11	1.44	0.00	0.24	0.49	0.27	0.31	0.69	0.03	0.13	0.09	0.75
israel	4.56	1.11	3.62	1.35	0.01	0.91	0.08	0.00	0.22	0.78	0.14	0.04	0.22	0.60
italy	3.57	1.20	4.64	1.34	0.01	0.35	0.56	0.07	0.24	0.76	0.08	0.24	0.21	0.46
japan	4.62	1.16	3.02	1.73	0.00	0.45	0.35	0.17	0.14	0.86	0.03	0.15	0.27	0.55
kenya	2.71	1.40	3.52	1.71	0.01	0.42	0.52	0.04	0.28	0.72	0.15	0.36	0.08	0.41
korea	3.57	1.13	4.69	1.32	0.00	0.87	0.10	0.02	0.13	0.87	0.00	0.02	0.10	0.88
lithuania	3.82	1.19	3.90	1.36	0.00	0.51	0.21	0.28	0.25	0.75	0.05	0.08	0.13	0.74
mexico	3.44	1.19	4.81	1.40	0.00	0.39	0.44	0.15	0.22	0.78	0.01	0.24	0.44	0.31
netherlands	3.90	1.26	3.93	1.42	0.01	0.29	0.44	0.26	0.16	0.84	0.25	0.09	0.28	0.37
philippines	2.93	1.28	4.29	1.76	0.01	0.56	0.30	0.01	0.34	0.66	0.18	0.48	0.28	0.06
poland	3.67	1.04	4.28	1.52	0.00	0.72	0.17	0.10	0.32	0.68	0.24	0.17	0.51	0.07
portugal	3.69	1.29	4.27	1.51	0.00	0.21	0.38	0.40	0.28	0.72	0.07	0.19	0.23	0.51
qatar	3.86	1.24	5.55	1.37	0.00	0.61	0.33	0.01	0.35	0.65	0.01	0.03	0.48	0.48
singapore	4.22	0.97	3.10	1.43	0.00	0.80	0.20	0.00	0.13	0.87	0.00	0.10	0.65	0.25
slovakia	3.76	1.16	4.27	1.63	0.00	0.77	0.19	0.04	0.98	0.02	0.36	0.03	0.29	0.32
spain	2.92	1.13	5.10	1.70	0.01	0.41	0.42	0.13	0.38	0.62	0.07	0.31	0.44	0.17
turkey	3.91	1.26	4.72	1.43	0.00	0.47	0.34	0.19	0.48	0.52	0.06	0.03	0.18	0.73
uk	3.53	1.17	3.92	1.37	0.01	0.41	0.41	0.16	0.25	0.75	0.17	0.45	0.16	0.22
us	4.51	1.22	4.05	1.51	0.00	0.51	0.33	0.16	0.30	0.70	0.00	0.36	0.23	0.41

Table S2 Demographic and COVID-19 related covariates. Table displaying summary statistics for a variety of demographic and COVID-19 related covariates. Relative wealth was measured on a 1-7 Likert scale, with participants asked to indicate their perceived relative wealth compared to other people living in the participant's country, from much less wealthy to much more wealthy. Perceived COVID-19 prevalence was measured on a 1-7 Likert scale from not at all prevalent to extremely prevalent.

The additional covariates, such as education, presented in Table S2 were categorical. In the table, proportions are then given for each level of these categorical variables. The education variable asked participants their highest level of completed education, grouped into four categories: primary level, secondary level, undergraduate level, and post-graduate level. For the health conditions item, participants were presented with a list of various health conditions (such as diabetes and heart disease), and asked for each condition whether they had been diagnosed with that condition. Participants were then grouped into whether they had not been diagnosed with any of the health conditions, or if they had been diagnosed with at least one of the conditions. Finally, the population density question asked participants to describe the density of the population area in which they lived, from village or countryside to large city. Note that proportions have been rounded to the nearest hundredth.

Analyses Supporting Main Text

1. Traditionalism-precautions relationship using factor scores

In the main text analyses, we used composite variables for traditionalism and COVID-19 public health precautions (including its two subscales, internal- and external-facing precautions) that were comprised of raw averages of all the items that loaded onto each respective factor in exploratory factor analyses (see Samore et al., 2023 for details). However, in the main text, we report that using factor scores instead of raw averages in the main text analyses did not conceptually affect the results. Here, we present those results. First, after extracting factor scores for the relevant composite variables described above, we found that said factor scores were highly correlated with their corresponding composited averages (Samore et al., 2023).

Second, we then re-analyzed the main text results using the factor scores instead of the composited averages. The relationship between religious precautions and public health precautions did not conceptually change as a result of using the factor scores, see Figure S2. Further, the interaction between collective versus individual religious precautions, and internal- versus external-facing public health precautions, also did not conceptually change (see Figure S3). Likewise, the use of factor scores did not conceptually affect the correlation between religious precautions and traditionalism (see Figure S4). Finally, the relative strength of association between traditionalism on the one hand, and public health versus religious precautions on the other, also did not conceptually change as a result of using factor scores. There was an interaction between precautions mode and traditionalism (B = .47, SE = .02, t(7536) = 20.52). A simple slopes analysis revealed that the correlation between traditionalism and religious precautions (B = .70, SE = .02, t(7,536) = 40.84) was substantially stronger than the correlation between traditionalism and external-facing public health precautions (B = .23, SE = .01, t(7,536) = 13.41). Compare to the interaction plotted in Figure 4 in the main text.

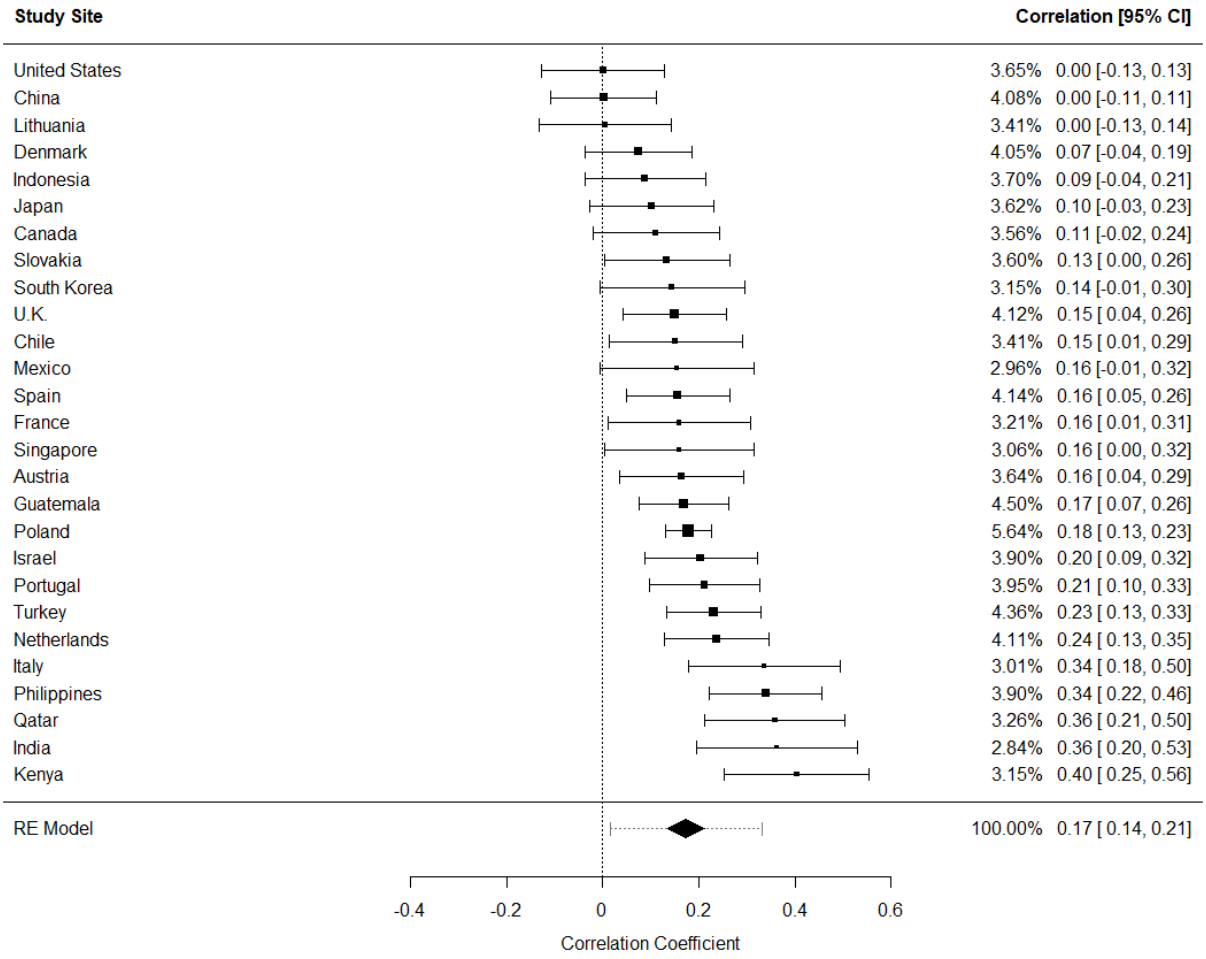

Figure S2. Results of random-effects meta-analysis examining the zero-order correlation between the COVID-19 public health precautions factor scores and the COVID-19 religious precautions composite. Compare to Figure 1 in the main text.

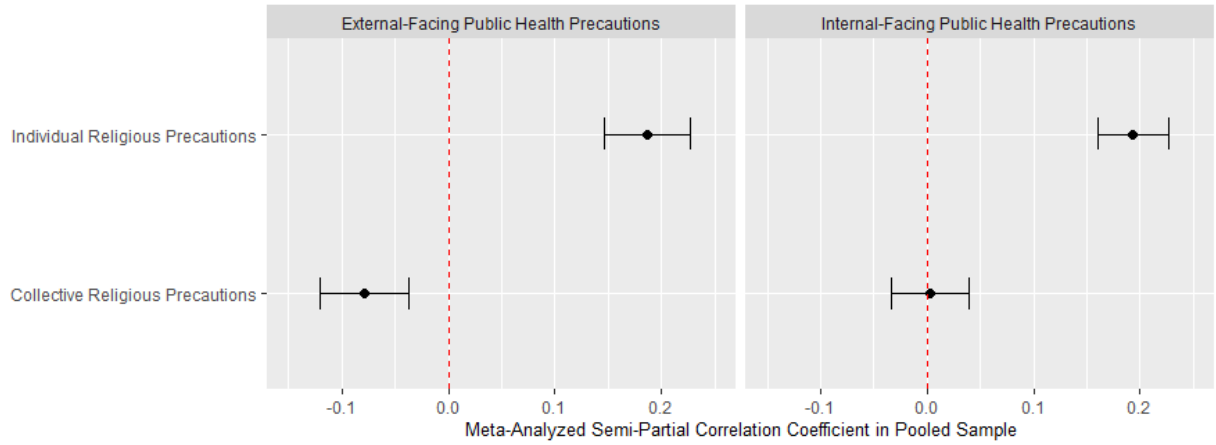

Figure S3. Effect of individual versus collective and internal- versus external-facing precautions on the relationship between religious and public health precautions. Overall results of two random effects meta-analyses, simultaneously regressing internal- and external-facing public health precautions on individual and collective religious precautions respectively, using factor scores instead of averaged composites. Compare to Figure 2 in main text.

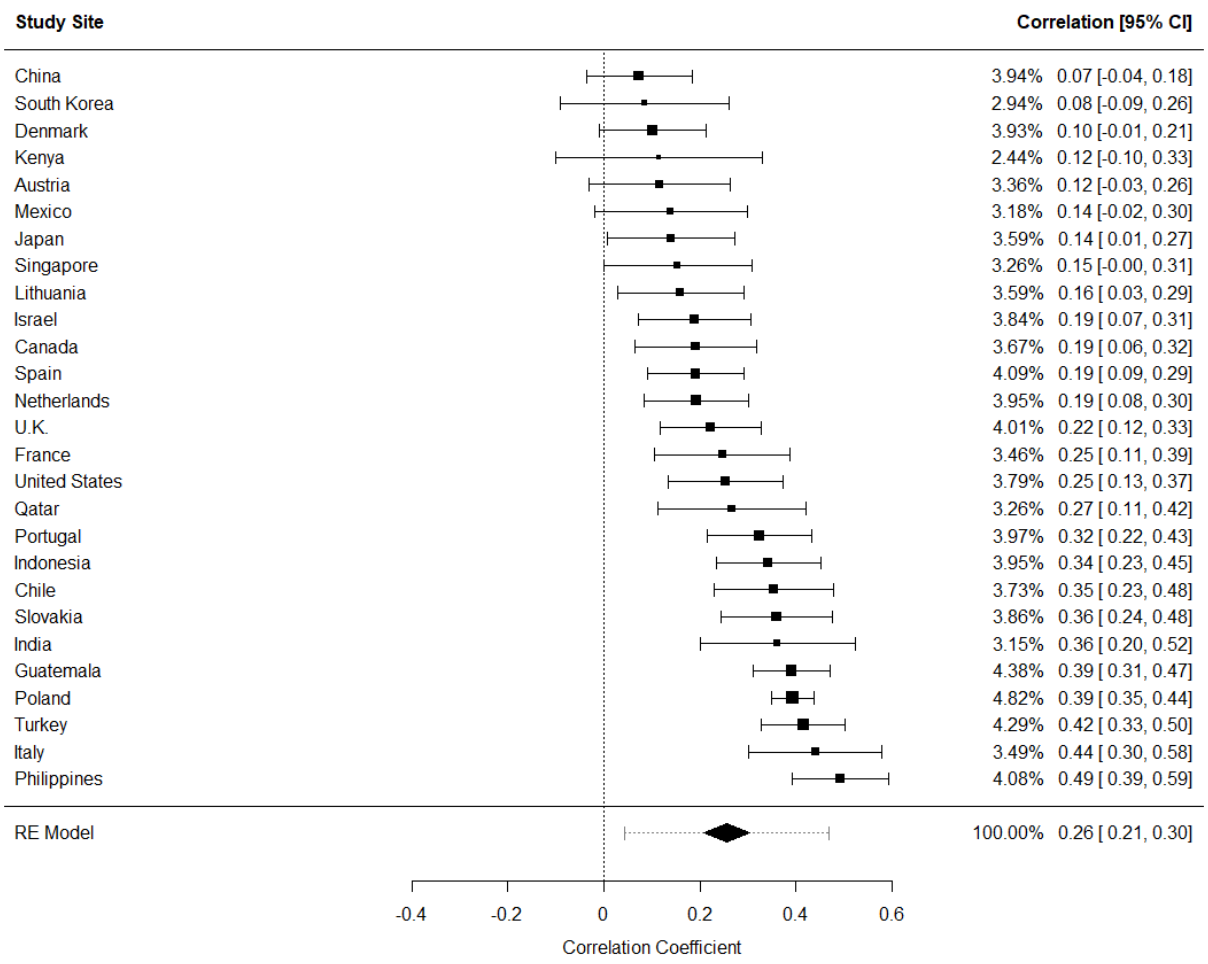

Figure S4. Results of random-effects meta-analysis examining the zero-order correlation between the traditionalism factor scores and the COVID-19 religious precautions composite. Compare to Figure 3 in the main text.

2. Traditionalism and individual versus collective religious precautions

In the main text, we claimed that the correlation between traditionalism and COVID-19 religious precautions was conceptually unaffected by combining individual and collective religious precautions into a combined composite, versus analyzing individual and collective religious precautions separately. Here (see figures S5 and S6), we show the analyses using the separated religious precautions.

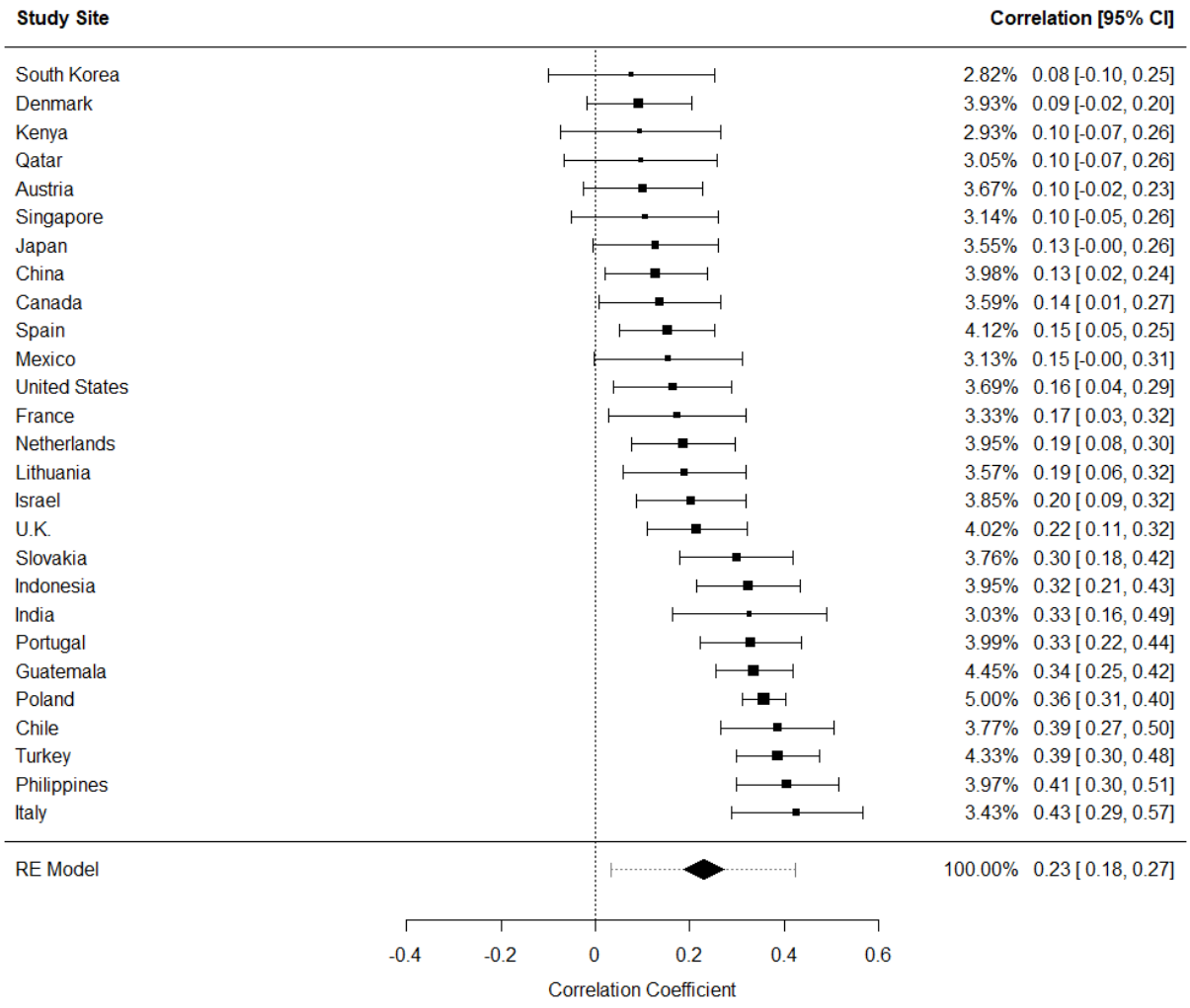

Figure S5. Results of random-effects meta-analysis examining the zero-order correlation between the traditionalism composite and COVID-19 individual religious precautions only. Compare to Figure 3 in the main text.

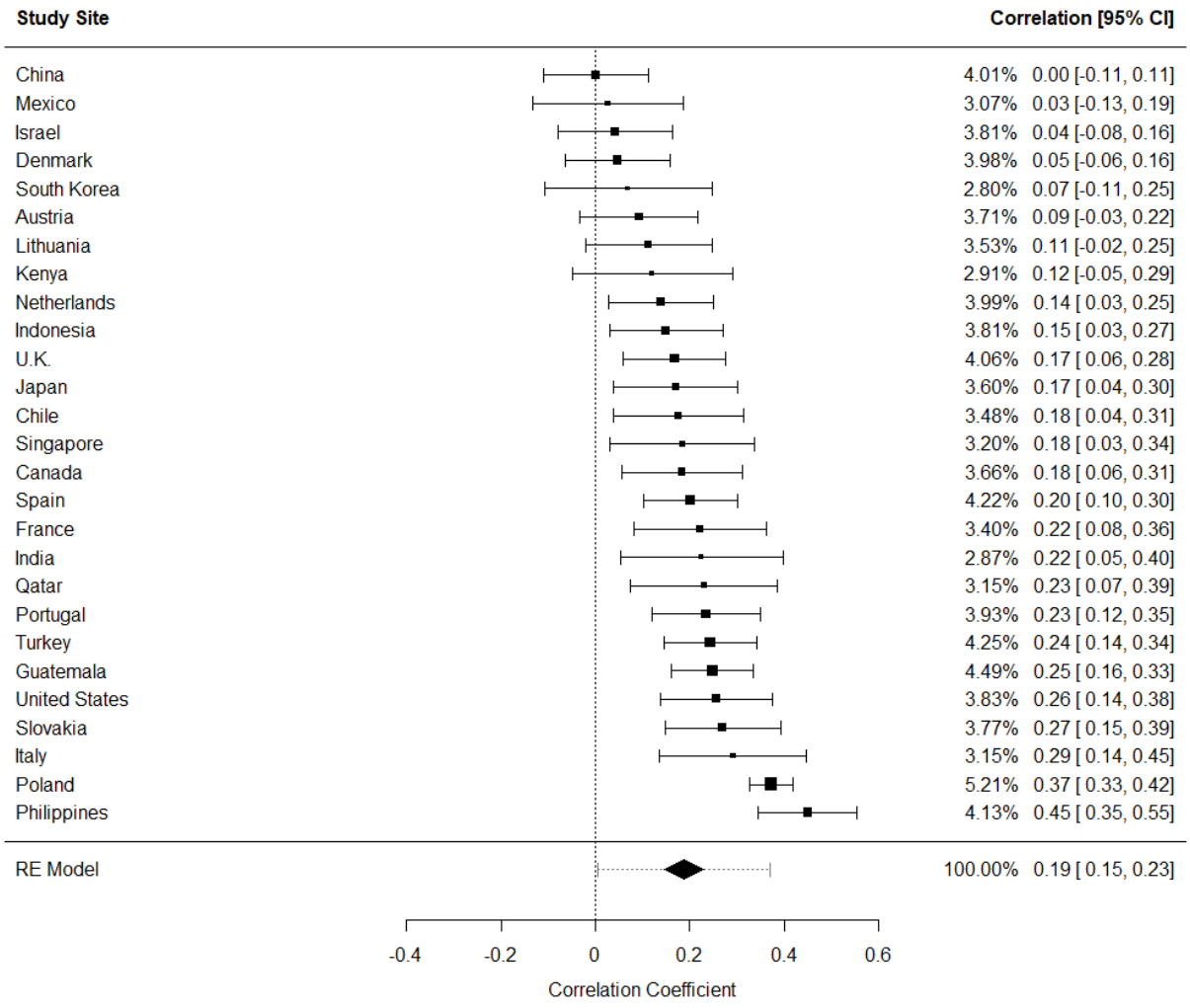

Figure S6. Results of random-effects meta-analysis examining the zero-order correlation between the traditionalism composite and COVID-19 collective religious precautions only. Compare to Figure 3 in the main text.

3. Accounting for covariates

In the main text, we reported that results were not conceptually affected by the inclusion of additional covariates, including demographic controls and COVID-19 related variables. Here, we show those analyses. For all models presented below, the following covariates were added: age; gender; education; relative income; perceived COVID-19 prevalence in participants' local communities; the population density of those communities; whether participants' jobs required that they leave the home; and whether participants had certain pre-existing medical conditions that put them at higher risk for severe disease.

First, we conducted a random-effects, restricted maximum likelihood meta-analysis in which each study was treated as a separate sample. We tested the semi-partial correlation between public health and religious precautions after adjusting for the effects of the eight aforementioned covariates in multiple linear regressions. As seen in Figure S7, adjusting for these covariates did not conceptually change the results. We used the same procedure to test the covariate-adjusted relationship between religious precautions and traditionalism, which were similarly conceptually unaffected (see Figure S8).

Second, we also conducted the interaction analyses from the main text while adjusting for the eight covariates. Accounting for these variables did not conceptually affect the interaction between collective versus individual religious precautions and internal- versus external-facing public health precautions (Figure S9) nor the interaction between precautions mode (public health or religious) and traditionalism (Table S3).

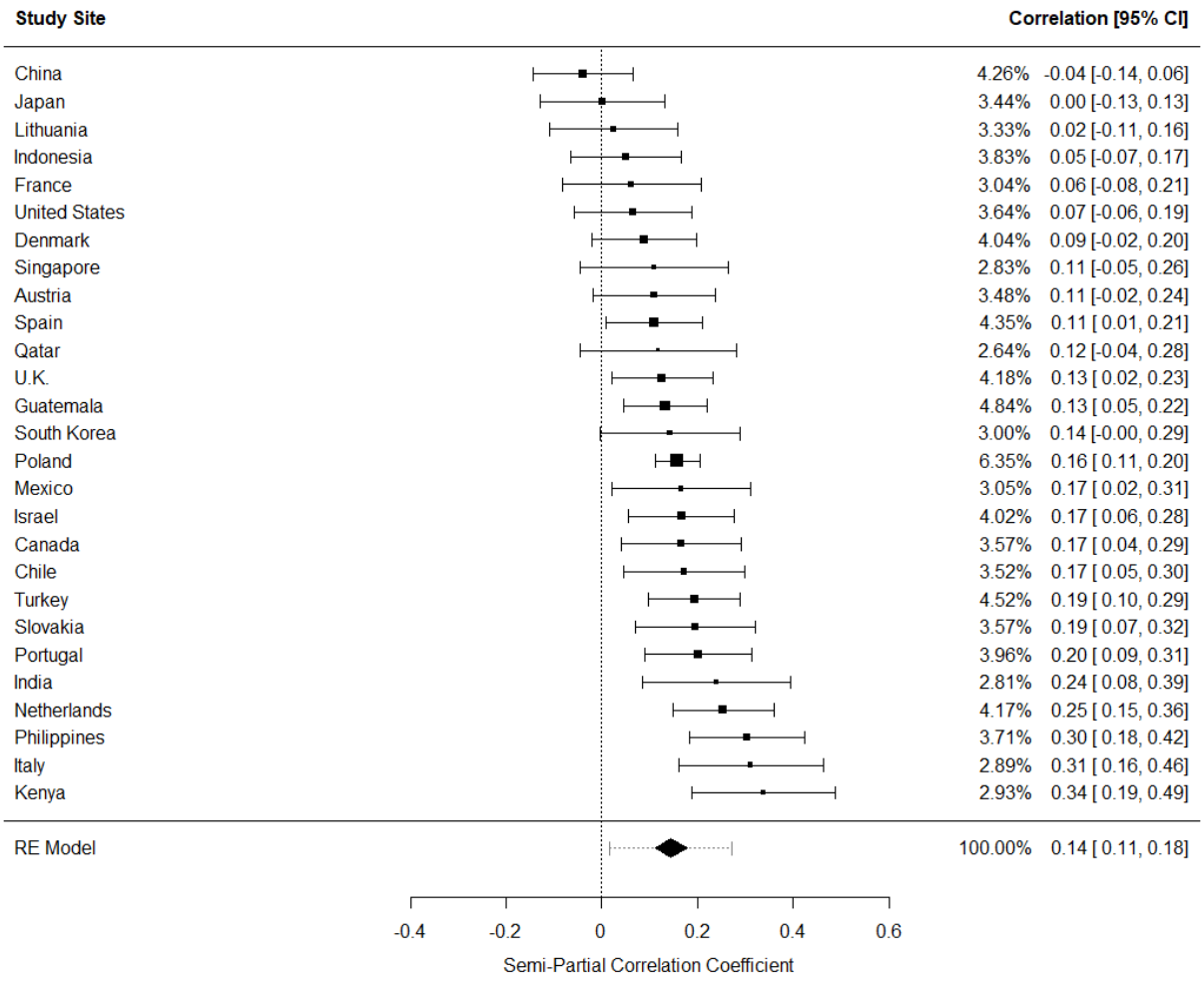

Figure S7. Results of random-effects meta-analysis examining the semi-partial correlation between the COVID-19 public health precautions composite and the COVID-19 religious precautions composite after adjusting for the eight demographic and COVID-related covariates. Compare to Figure 1 in the main text.

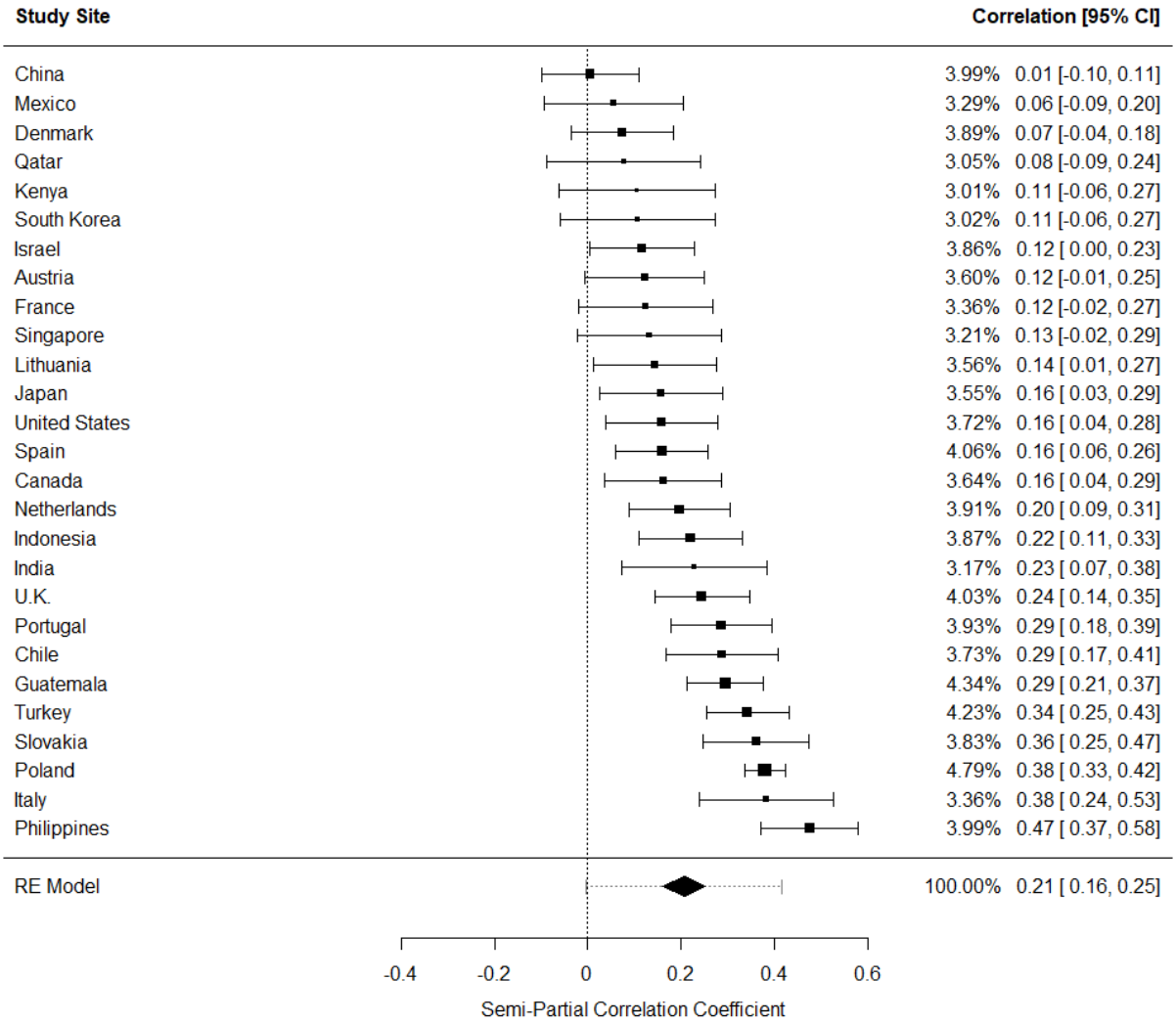

Figure S8. Results of random-effects meta-analysis examining the semi-partial correlation between the traditionalism composite and the COVID-19 religious precautions composite after adjusting for the eight demographic and COVID-related covariates. Compare to Figure 3 in the main text.

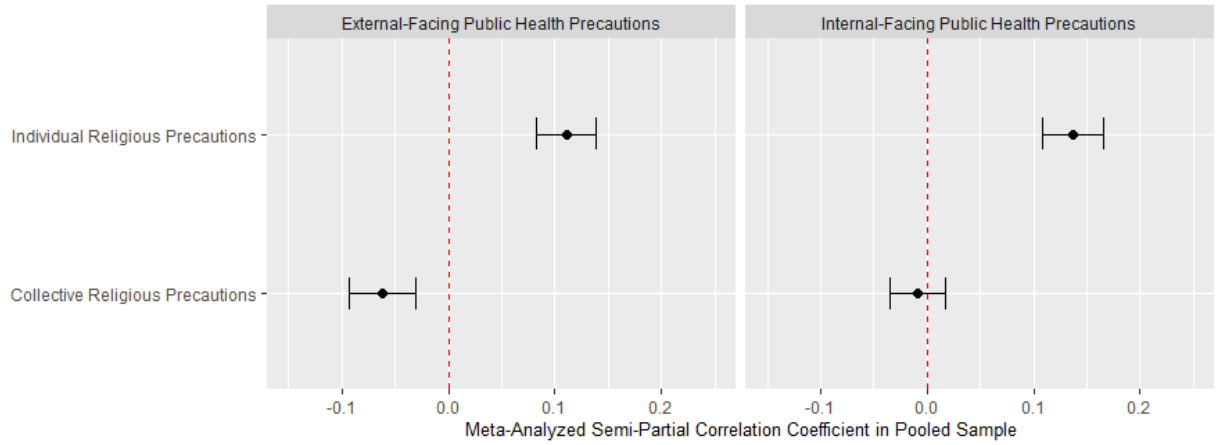

Figure S9. Effect of individual versus collective and internal- versus external-facing precautions on the relationship between religious and public health precautions. Overall results of two random effects meta-analyses, simultaneously regressing internal- and external-facing public health precautions on individual and collective religious precautions respectively, after adjusting for the eight demographic and COVID-related covariates. Compare to Figure 2 in main text.

Interaction	B	SE	*t*
Precautions mode x traditionalism interaction	.27	.02	14.60
Simple slopes			
Public health precautions and traditionalism correlation	.22	.01	15.61
Religious precautions and traditionalism correlation	.48	.01	34.77

Table S3. Results of model testing the interaction between precaution mode (religious versus public health precautions) and traditionalism, after adjusting for the eight demographic and COVID-related covariates. Compare to the model plotted in Figure 4 in the main text.

4. Religious and public health precautions subscales study-site specific relationships

In the Main Text, we report the overall meta-analyzed estimates for the relationship between individual and collective religious precautions, and internal- and external-facing public health precautions (see Figure 2). Here, we provide the forest plots for each of those four estimates, showing cross-study site variation in those relationships (see Figures S10-S13).

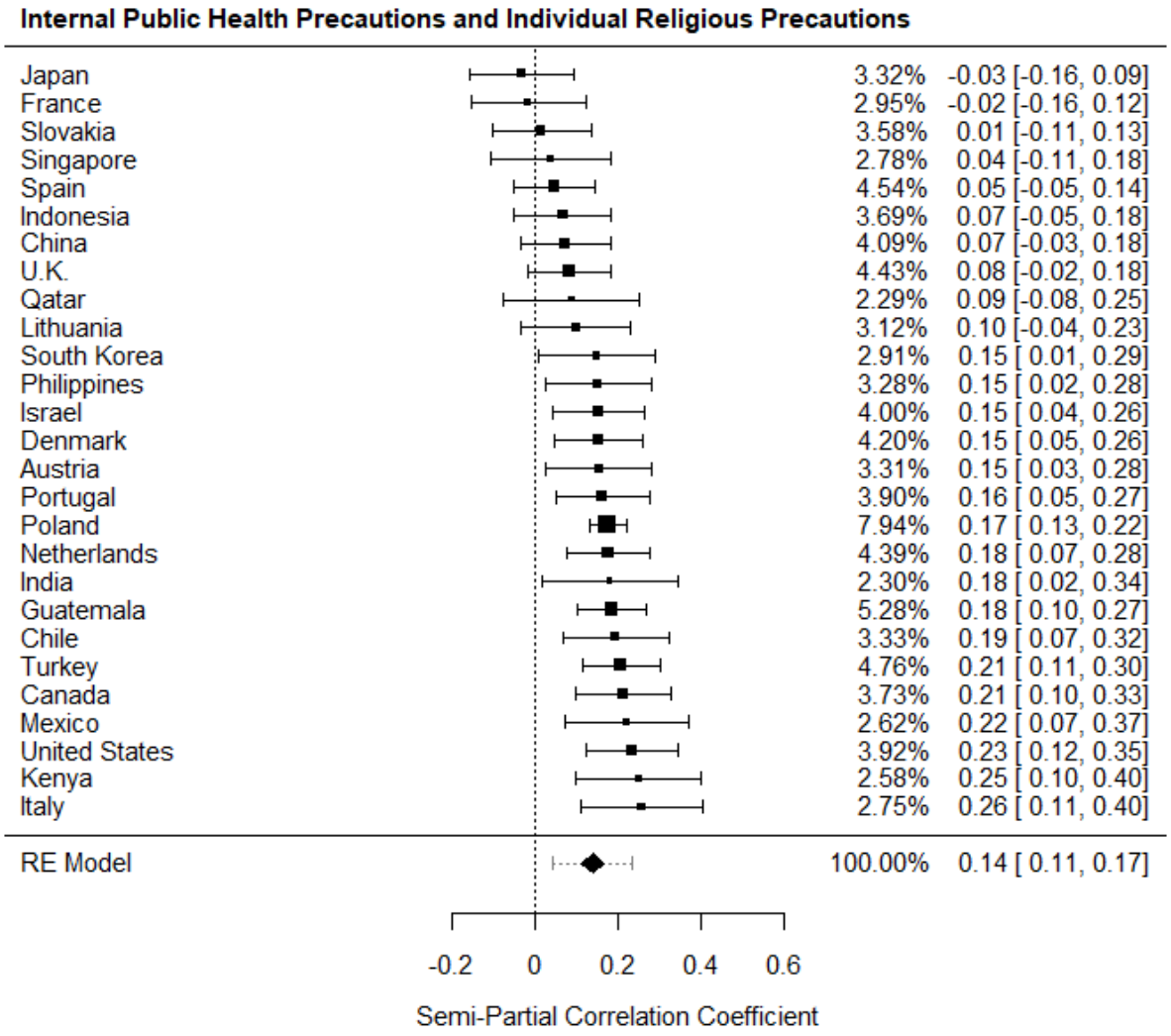

Figure S10. Results of random-effects meta-analysis examining the semi-partial correlation between the internal-facing public health precautions subscale and individual religious precautions, accounting for the effects of collective religious precautions. Forest plot corresponding to the meta-analyzed estimates plotted in Figure 2 in the Main Text.

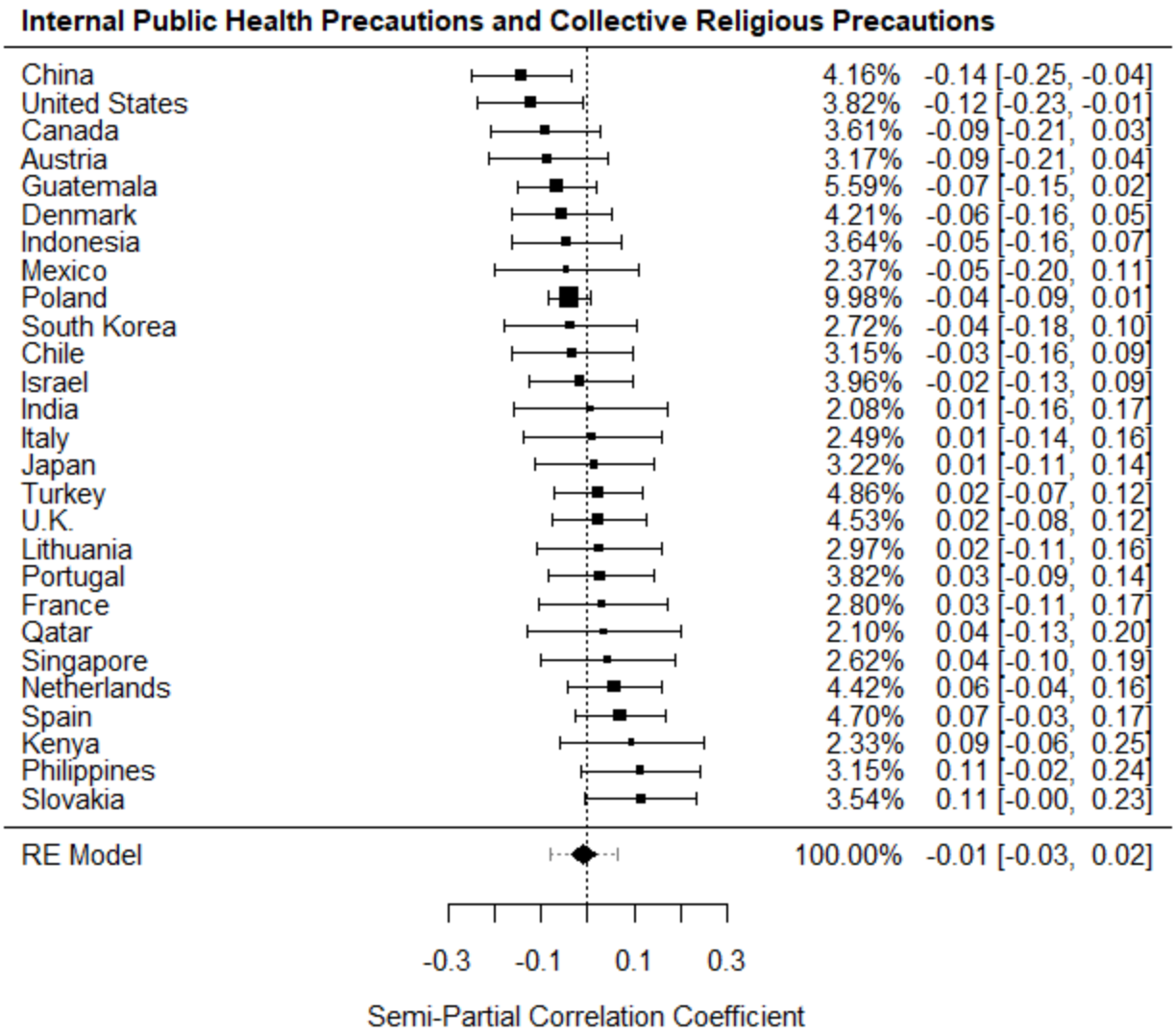

Figure S11. Results of random-effects meta-analysis examining the semi-partial correlation between the internal-facing public health precautions subscale and collective religious precautions, accounting for the effects of individual religious precautions. Forest plot corresponding to the meta-analyzed estimates plotted in Figure 2 in the Main Text.

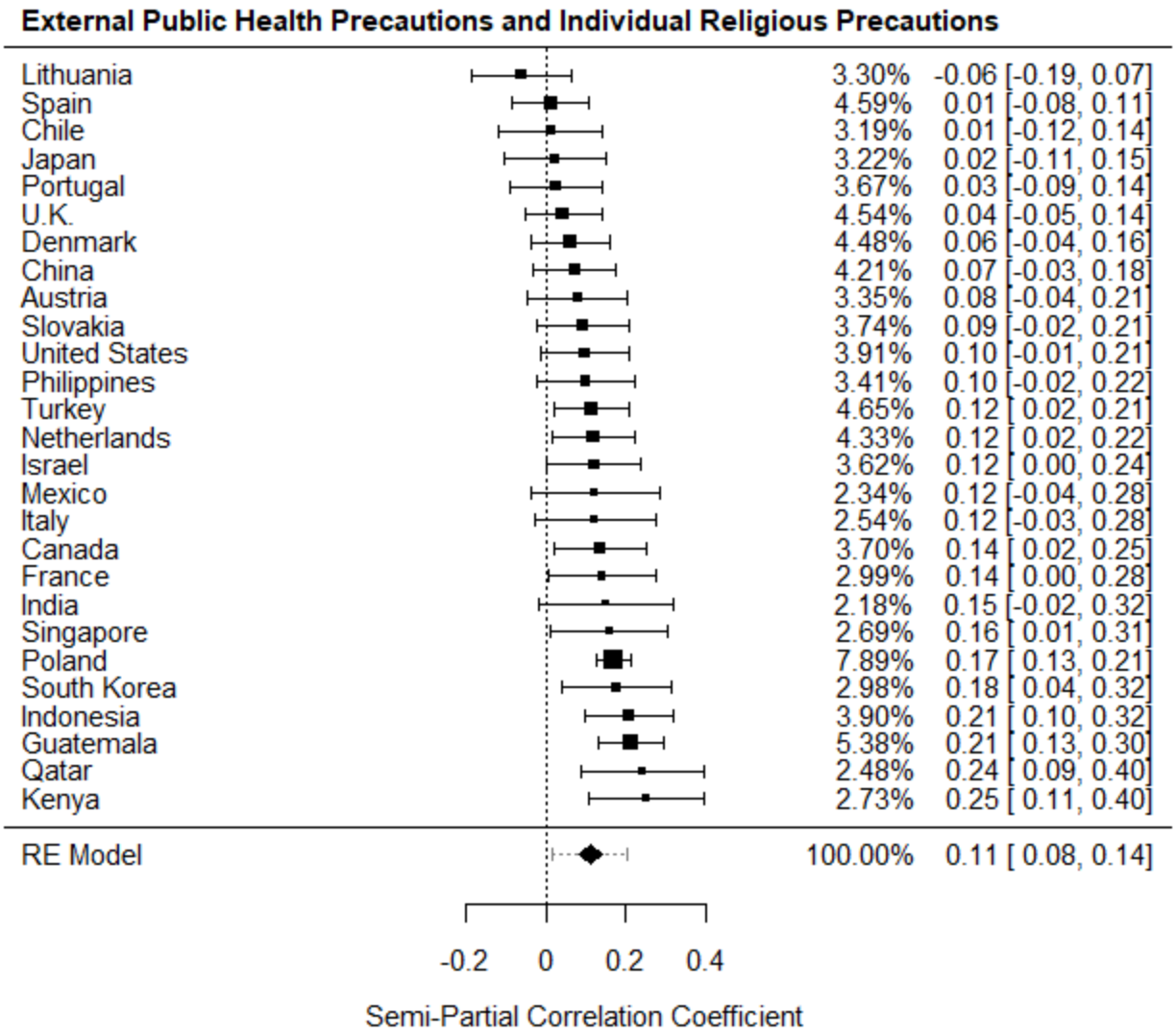

Figure S12. Results of random-effects meta-analysis examining the semi-partial correlation between the external-facing public health precautions subscale and individual religious precautions, accounting for the effects of collective religious precautions. Forest plot corresponding to the meta-analyzed estimates plotted in Figure 2 in the Main Text.

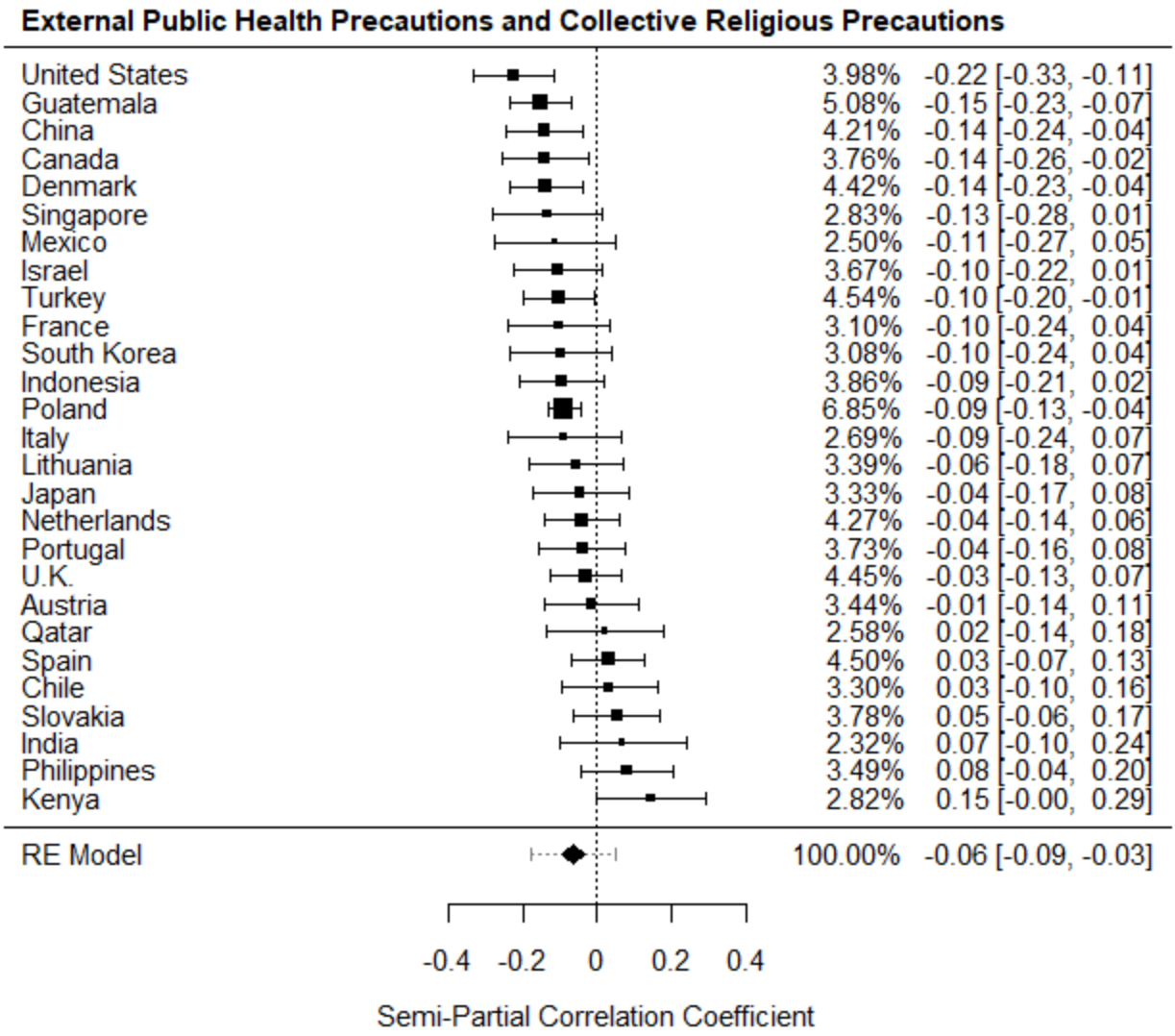

Figure S13. Results of random-effects meta-analysis examining the semi-partial correlation between the external-facing public health precautions subscale and collective religious precautions, accounting for the effects of individual religious precautions. Forest plot corresponding to the meta-analyzed estimates plotted in Figure 2 in the Main Text.

5. Meta-analyses versus mixed-effects regressions

In the Main Text, we explained that random effects meta-analyses were used for most analyses given their affordances for easily comparing effects and heterogeneity across study sites. However, for the moderator analyses depicted in Figure 4, we employed mixed-effects linear regressions in order to more effectively visualize the interactions and simple slopes. However, in the Main Text, we claimed that the results were not conceptually affected by the decision to use meta-analyses versus mixed-effects linear regressions with random slopes and intercepts for study site. Here, we show that using mixed-effects regressions instead of meta-analyses, and vice versa, produces conceptually similar results.

First, we tested the relationship between religious and public health precautions in a pooled sample across all study sites by regressing public health precautions on religious precautions, with random slopes and intercepts for study site. There was a significant relationship (B = .13, SE, = .01, p = 5.37e-10). That is, every one unit increase in religious precautions (along a 1 to 7 scale) was associated with a .13 unit increase (also along a 1 to 7 scale) in public health precautions, consistent with the modest meta-analyzed correlation reported in Figure 1.

Second, we tested the relationship between internal- and external-facing public health precautions, and individual versus collective religious precautions. In order to test the relative associations between these different subscales, we conducted two maximum likelihood linear mixed regressions in the overall sample, with random slopes and intercepts set for study site. In the first model, internal -facing public health precautions were regressed simultaneously on individual and collective religious precautions. In the second model, external - facing public health precautions were simultaneously regressed on the same two religious precautions measures. The coefficients of the fixed effects for both models are plotted in Figure S14. Note that the effects from the mixed-effects regression conceptually match the meta-analyzed estimates plotted in Figure 2.

Third, we tested the relationship between religious precautions and traditionalism in a pooled sample across all study sites by regressing public health precautions on religious precautions, with random slopes and intercepts for study site. There was a significant relationship (B = .35, SE, = .04, p = 6.48e-10). That is, every one unit increase in traditionalism (along a 1 to 7 scale) was associated with a .35 unit increase (also along a 1 to 7 scale) in religious precautions, consistent with the meta-analyzed correlation reported in Figure 3.

Fourth, in the Main Text, we regressed COVID-19 precautions on the interaction between precautions type (public health versus religious) and traditionalism in the pooled sample, with a random effect set for study site. There was a significant interaction (B = .26, SE = .02, t(7538) = 14.45). Here, we conduct the same regression at each study site separately, and then meta-analyzed the interaction term. Results are conceptually similar to those obtained with the mixed linear regression, although there is variation across study sites. See Figure S15.

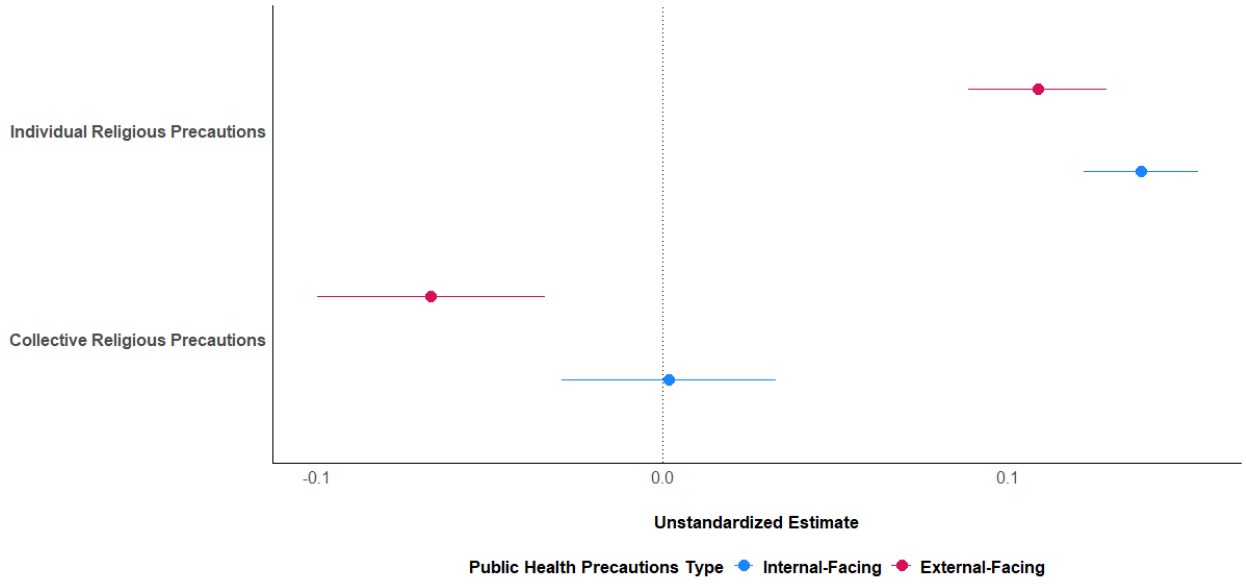

Figure S14. Effect of individual versus collective and internal - versus external -facing precautions on the relationship between religious and public health precautions. Results of two linear mixed models, simultaneously regressing internal - and external -facing public health precautions on individual and collective religious precautions respectively. Lines indicate 95% confidence intervals. Compare to Figure 3 in Main Text.

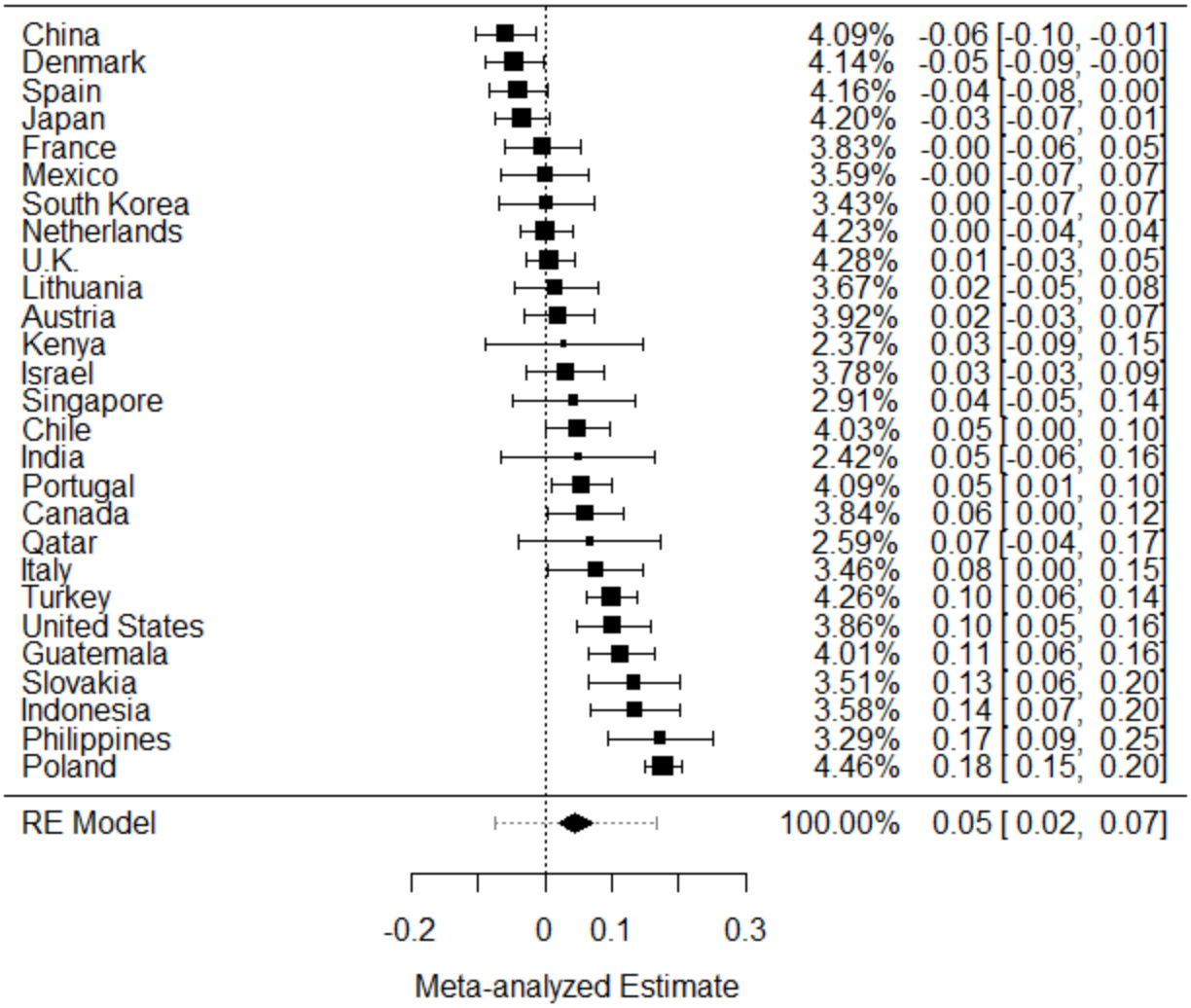

Figure S15. Results of random-effects meta-analysis examining the interaction between precautions type and traditionalism on precautions intensity.

6. Traditionalism Facets

In the Main Text, we discussed the possibility that the traditionalism results could be explained by various sub-facets of the traditionalism items (although an exploratory factor analysis indicated that the items were best explained by a single factor, see Samore et al., 2023). In particular, the six traditionalism items variable related to whether people should a) follow norms broadly, b) respect traditions in particular, and c) respect authority and hierarchy norms. Here, we show that the Main Text results are conceptually consistent across these three facets. First, we created three traditionalism composites corresponding to the above facets; items 2 and 3 (see Table 1 in Main Text) corresponded with a), items 1 and 4 corresponded to b) and items 5 and 6 corresponded with c).

Second, we regressed religious precautions on each of these three traditionalism facets, corresponding to the analyses plotted in Figure 3 in the Main Text. The three meta-analyzed effect sizes were all within the 95% confidence intervals of each other, suggesting that the results were conceptually similar across the three facets, see Figures S16-S18. Second, we re-analyzed the interaction test plotted in Figure 4 in the Main Text, and again found that results were conceptually similar across traditionalism facets, see Table S4.

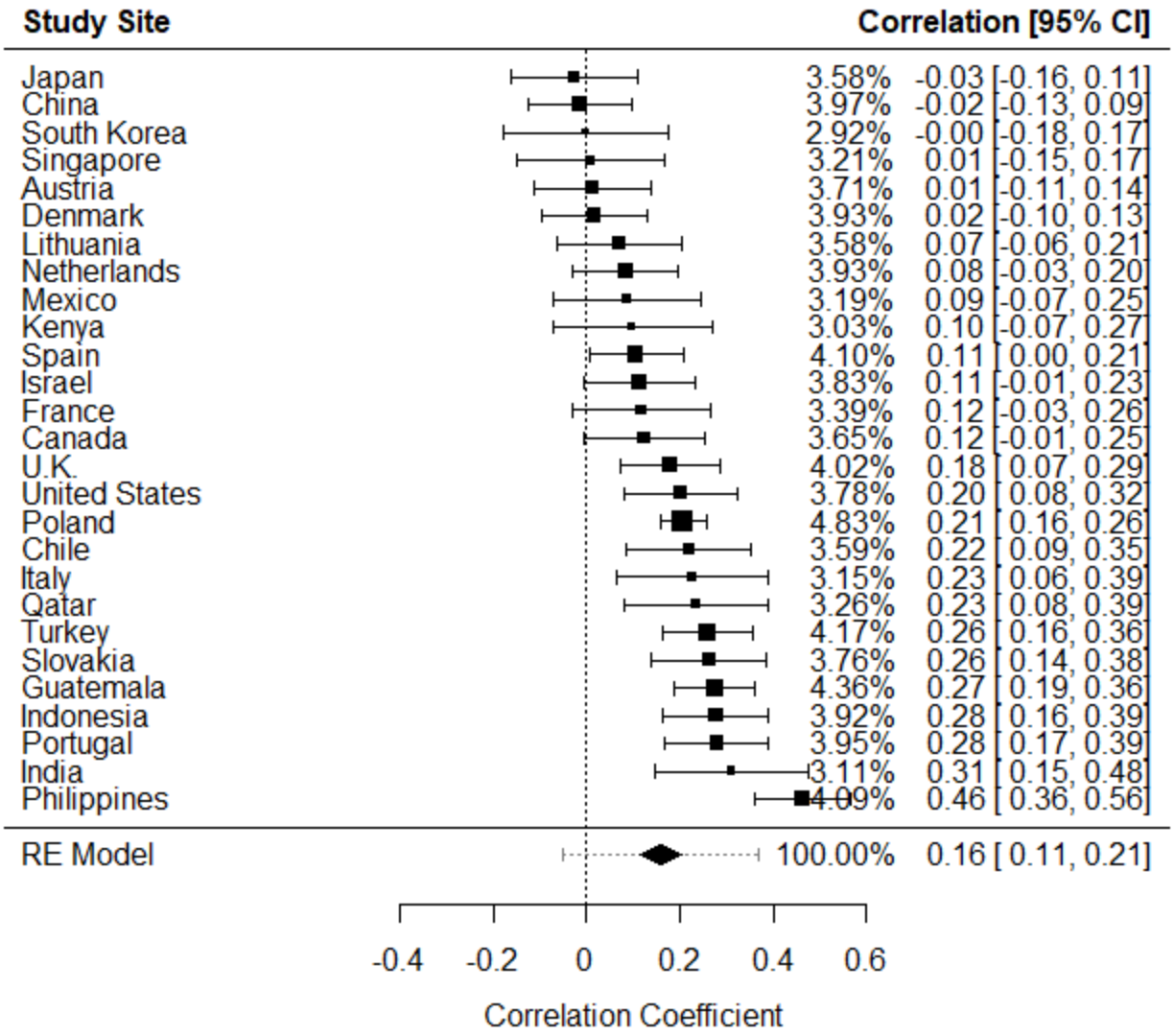

Figure S16. Results of random-effects meta-analysis examining the zero-order correlation between the norms-related items from the traditionalism composite, and the COVID-19 religious precautions composite. Compare to Figure 3 in the main text.

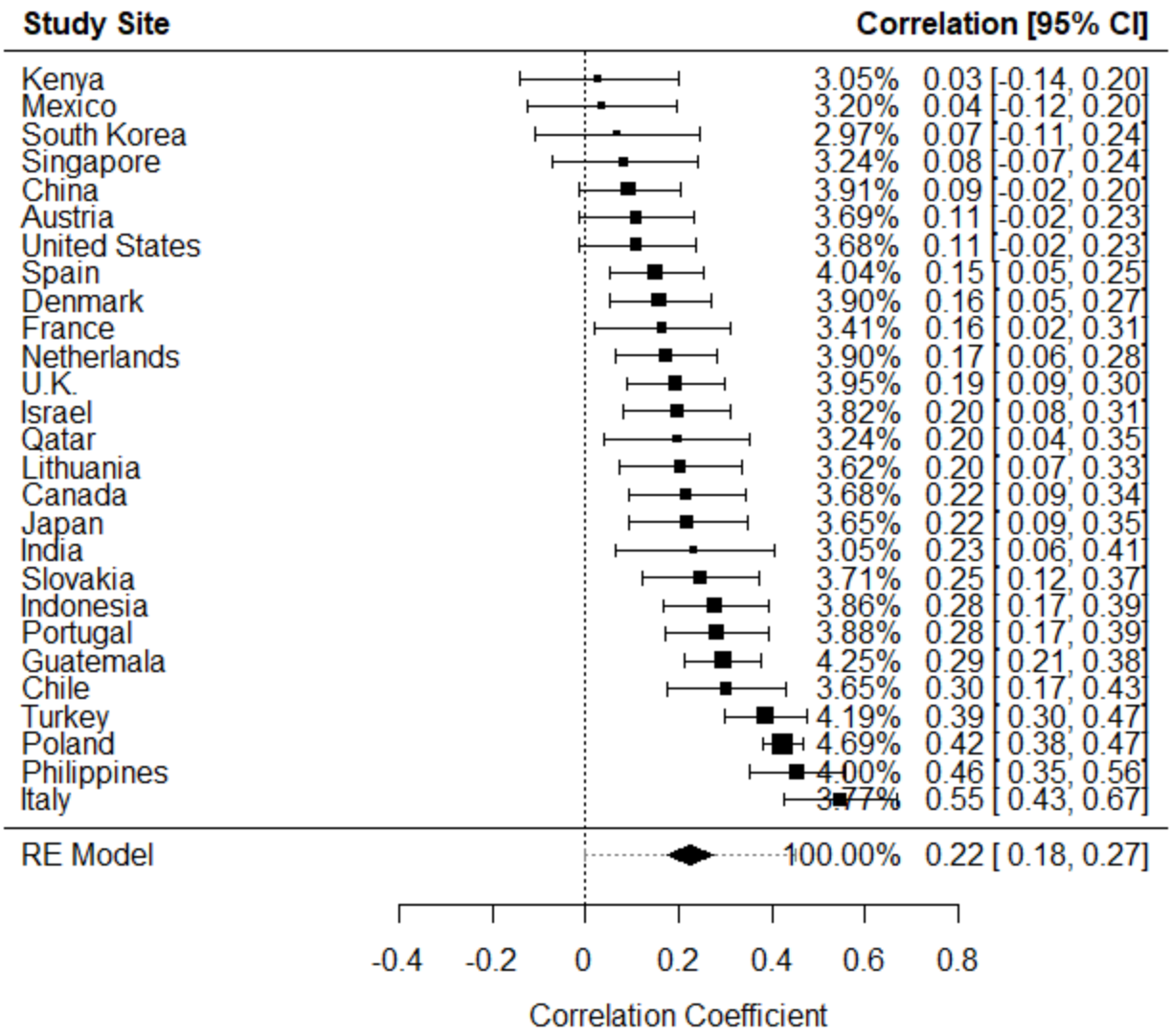

Figure S17. Results of random-effects meta-analysis examining the zero-order correlation between the traditions-related items from the traditionalism composite, and the COVID-19 religious precautions composite. Compare to Figure 3 in the main text.

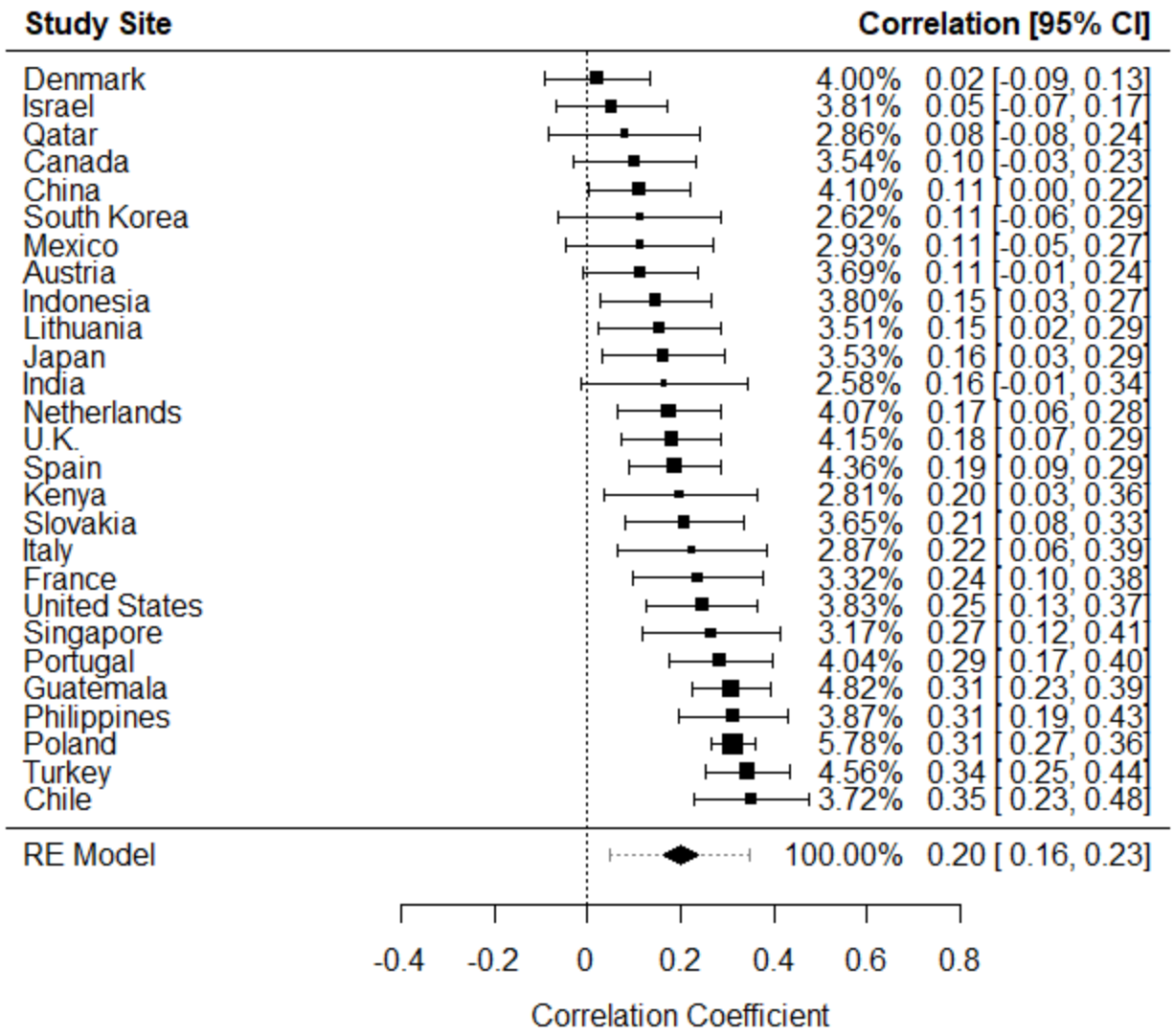

Figure S18. Results of random-effects meta-analysis examining the zero-order correlation between the authority-related items from the traditionalism composite, and the COVID-19 religious precautions composite. Compare to Figure 3 in the main text.

Interaction	B	SE	*t*
Norms-related items	.14	.01	9.86
Tradition-related items	.25	.01	17.15
Authority-related items	.13	.01	9.87
Simple slopes			
Norms-related items - Public health precautions	.14	.01	12.32
Norms-related items - Religious precautions	.27	.01	24.78
Tradition-related items - Public health precautions	.15	.01	13.10
Tradition-related items - Religious precautions	.40	.01	34.91
Authority-related items - Public health precautions	.14	.01	12.72
Authority-related items - Religious precautions	.27	.01	25.20

7. Religionists versus Non-Religionists

In the Main Text, we claimed that the positive relationship between religious and public health precautions obtained among participants who believed in a deity, deities, or higher power, but did not obtain among participants lacking belief. Here, we plot the forest plots (S19-20) corresponding to the meta-analyses reported in the Main Text. Note that these analyses were restricted to study sites where the belief question was asked.

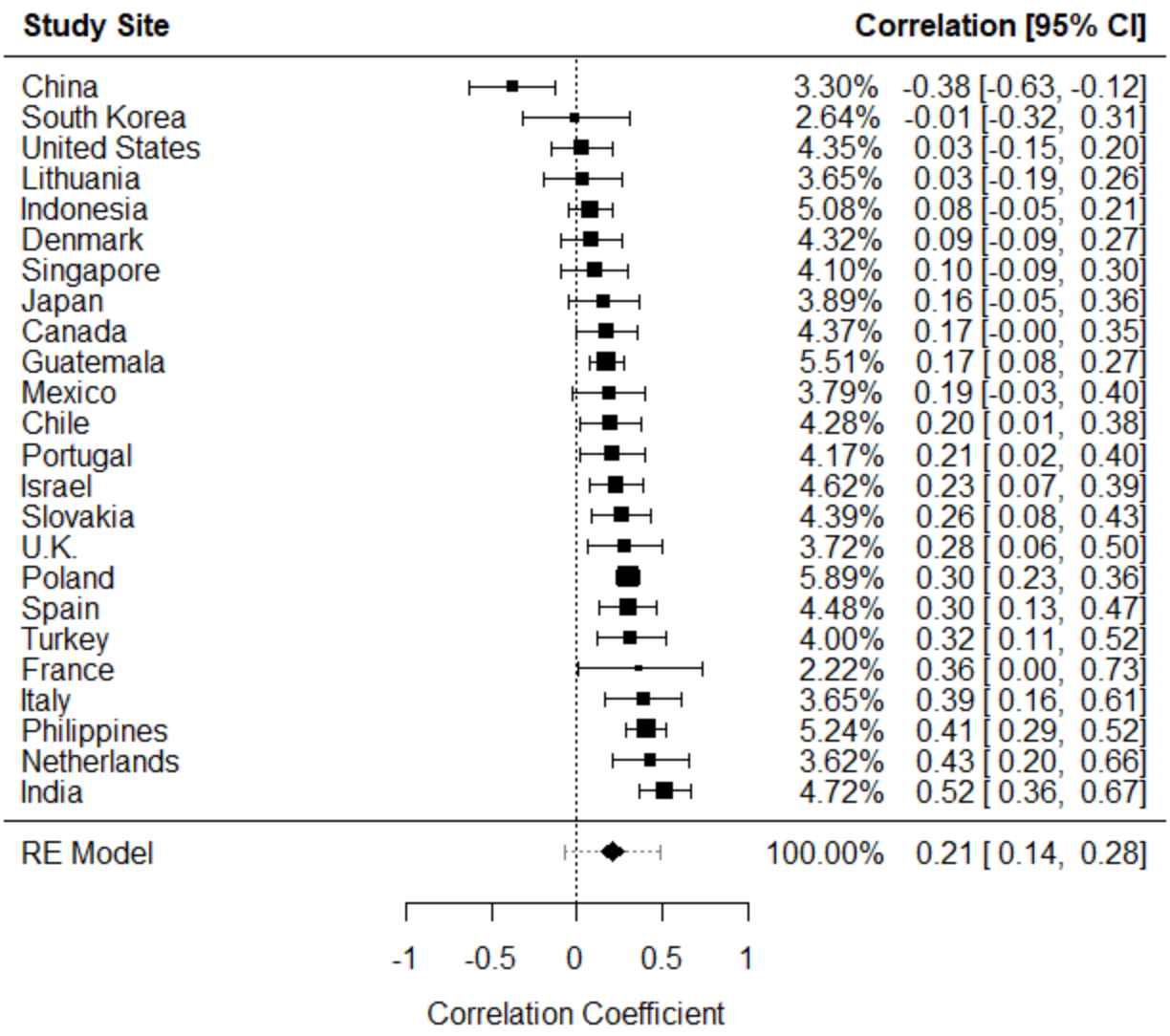

Figure S19. Results of random-effects meta-analysis examining the zero-order correlation between the COVID-19 public health precautions composite and the COVID-19 religious precautions composite among participants who believed in a deity, deities, or higher power. Compare to Figure 1 in the main text.

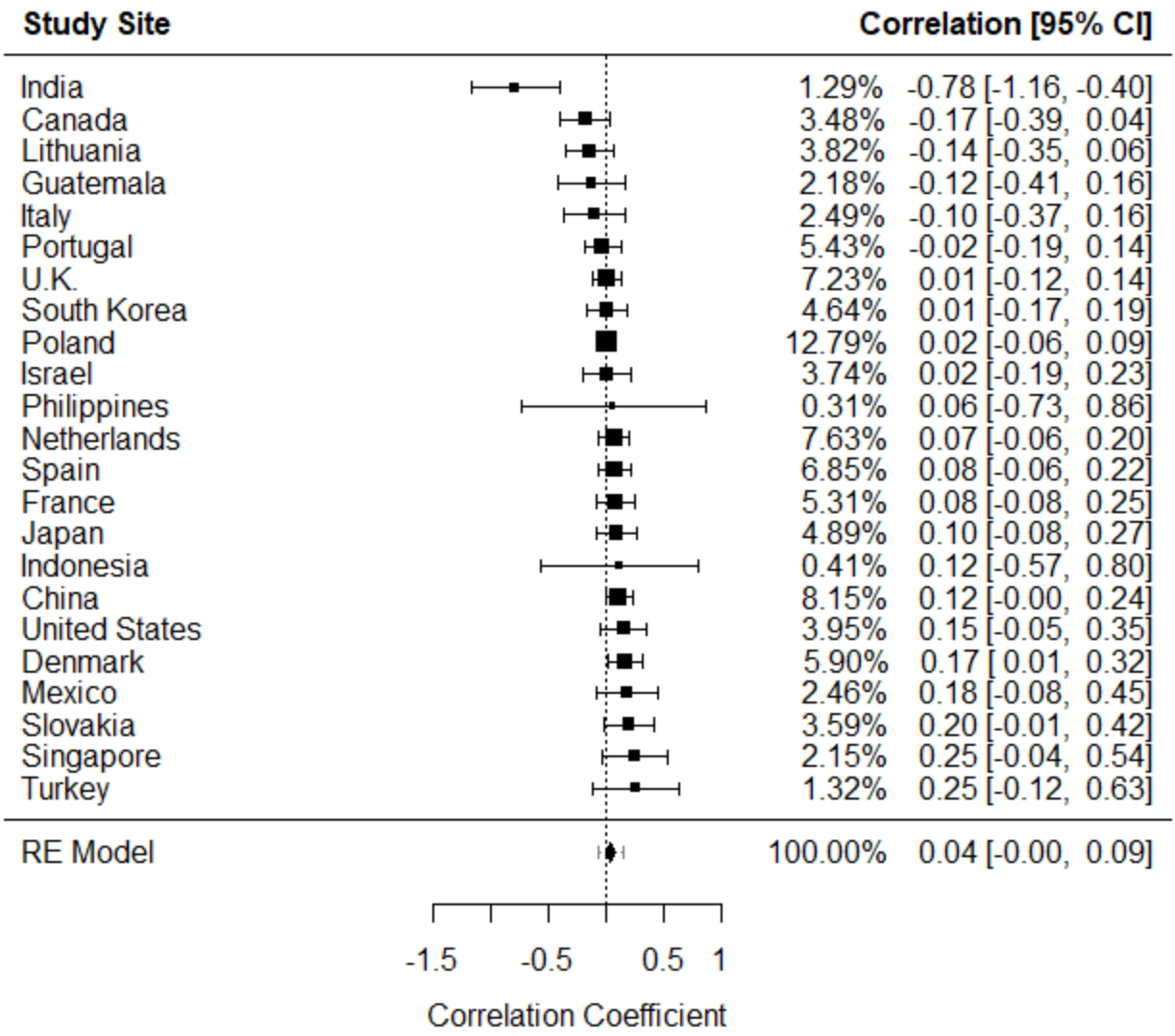

Figure S20. Results of random-effects meta-analysis examining the zero-order correlation between the COVID-19 public health precautions composite and the COVID-19 religious precautions composite among participants who did not believe in a deity, deities, or higher power. Compare to Figure 1 in the main text.

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