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Greater Traditionalism Predicts COVID-19 Precautionary Behaviors Across 27 Societies.

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Abstract

People vary both in their embrace of their society's traditions, and in their perception of hazards as salient and necessitating a response. Over evolutionary time, traditions have offered avenues for addressing hazards, plausibly resulting in linkages between orientations toward tradition and orientations toward danger. Emerging research documents connections between traditionalism and threat responsivity, including pathogen-avoidance motivations. Additionally, because hazard-mitigating behaviors can conflict with competing priorities, associations between traditionalism and pathogen avoidance may hinge on contextually contingent tradeoffs. The COVID-19 pandemic provides a real-world test of the posited relationship between traditionalism and hazard avoidance. Across 27 societies (N = 7,844), we find that, in a majority of countries, individuals' endorsement of tradition positively correlates with their adherence to costly COVID-19-avoidance behaviors; accounting for some of the conflicts that arise between public health precautions and other objectives further strengthens this evidence that traditionalism is associated with greater attention to hazards.

Introduction

Traditionalism—the tendency to embrace what are perceived to be the longstanding norms and values of one's group, while rejecting changes to them—varies across individuals[1]. Given the centrality of sociality and culture for humans, individuals' orientations toward traditions have important downstream consequences. These include the tendency to embrace or reject innovations in the face of environmental change[2], the ability to coordinate actions with fellow group members[3], and the shaping of political attitudes and ideologies in democratic contexts[4]. It is therefore vital to understand factors that contribute to variation in traditionalism.

Emerging research demonstrates associations between individual differences in traditionalism and variation in the propensity to attend, and respond, to hazards[3,5]. Initial evidence indicates that individual variation in traditionalism may in part associate with variation in pathogen avoidance, the motivation to take actions to alleviate the costs of potential pathogen threats[3,6–10]. Hence, what is termed the *traditional norms* account[7] identifies pathogen avoidance as an important factor relating to traditionalism. Consistent with the traditional norms account, multiple evolutionary pathways may lead individuals to leverage adherence to tradition as a way of ameliorating danger[3,7].

First, as a result of cultural evolutionary processes favoring beliefs and practices that benefit individual and group fitness[11], some traditions may have instrumental value for addressing particular pathogen threats[12]. While it is possible that individuals explicitly or implicitly understand the connections between some instrumental norms and their outcomes, the functionality of norms is frequently opaque to those who adopt them[13,14]. If the average instrumental benefit of adhering to traditions when confronting danger outweighs the costs of imprecision resulting from causal opacity, then individuals may be motivated to broadly embrace traditions in pursuit of safety. Co-evolution may have resulted in psychological adaptations or reaction norms connecting traditions to threat if the above cost-benefit structure was common over evolutionary time.

The benefits of sociality generate a second pathway by which an association between traditionalism and the salience of pathogen threats could arise. Adherence to traditional norms might provide broad payoffs via increased social support, for example by signaling in-group identity in cooperative exchanges and systems of indirect reciprocity, and/or by facilitating in-

group coordination[15–17]. Such benefits might plausibly include cost amelioration in the face of pathogen threats, for example by obtaining care and resources during periods of illness[18].

For all of the above possibilities, natural selection could have produced either a) stable dispositional linkages between pathogen-threat concerns and long-term preferences for tradition, b) facultative plasticity, such that individuals prophylactically upregulate their embrace of tradition in response to cues indicating an increased risk of disease, or c) both. Together, these considerations generate the prediction that, ceteris paribus, relative to individuals less invested in tradition, those who evince greater traditionalism will be more inclined to attempt to diminish the risk of acquiring transmissible disease.

Note that the theorized connection between traditionalism and threat avoidance mirrors a similar putative relationship between social conservatism and threat avoidance, where socially conservative beliefs reflect support for tradition [see 19,20] in contexts where people hold political ideologies. Indeed, much of the theoretical work connecting traditional attitudes with threat reactivity comes out of political psychology, where extensive prior research has long recognized the role that motives to mitigate uncertainty, fear, and threat—particularly disease threats and threats to the stability of the social system—play in shaping socially conservative ideology[19,21–23].

In the present research, our focus is on traditionalism writ large rather than social conservatism in particular. Political ideologies are culturally relevant in some contexts but not others. In contrast, by virtue of their translatability across cultural and political contexts, attitudinal antecedents such as traditionalism are better suited for large-scale cross-cultural investigation. That said, the underlying evolutionary logic presented here draws on, and is consistent with, seminal theoretical perspectives in political psychology that identify the

existential motivations (compare to the proximate motivation to reduce threat), epistemic motivations (compare to the potential instrumental value of traditionalism/conservatism in reducing threat), and relational motivations (compare to the potential sociality benefit of traditionalism/conservatism in reducing threat) that underly political ideologies [24].

Although adherence to tradition can provide benefits, it can also entail costs. In addition to political considerations, there are often tangible costs to sticking to the tried-and-true – most notably because innovations may generate higher payoffs than existing practices. Any given manifestation of a linkage between threat-mitigating behavior and traditionalism may therefore depend in part on how individuals assign weights to the cost-benefit structure characterizing the specific context, and exceptions to that connection should be expected when competing priorities arise. Moreover, behaviors that mitigate the costs of a threat may lead to costs in other areas, either directly, or indirectly due to the zero-sum nature of the time, attention, and resources available. Taken in sum, the relationship between traditionalism and pathogen avoidance may not be straightforward if responses to pathogen threats are perceived to clash with other priorities.

Much of the previous literature on the relationship between traditionalism and pathogen avoidance does not take account of the costs of the latter. Investigators often rely on subjective responses to hypothetical scenarios[(e.g. 19, 20)]—for example, feeling sick after witnessing someone vomit—that do not distinguish the real-world contexts, conflicting goals, or costs of the relevant behaviors (such as opportunity costs, allocation tradeoffs between—or vulnerabilities to—different threats, etc.). Using hypothetical scenarios is sensible in research that aims to measure emotional and/or behavioral tendencies—which may correlate with general behavioral tendencies[27]—while holding contextual factors equal. However, hypotheticals cannot capture the

specific tradeoffs that likely determine how such propensities play out in consequential real-world decision making.

Past research predominantly employs samples from a narrow range of societies. Given that cost-benefit structures are likely culturally variant, the observed associations between traditionalism and pathogen avoidance may be rooted in aspects of particular practices, values, or beliefs within those societies. Hence, at present, the extent to which traditionalism and threat-avoidance behaviors are related across the highly variable traditional practices and beliefs of diverse societies is not fully known.

Encouragingly, research has begun to take the costs of pathogen avoidance into account[10,28,29]. Likewise, though relying on hypothetical scenarios, a recent study examined the relationship between disgust sensitivity and traditionalism in a large cross-cultural sample [7]. However, to date, no large-scale international investigation has addressed the relationship between pathogen avoidance and traditionalism in a real-world context, or assessed the potential for conflicts between pathogen avoidance and competing goals to impact said relationship. The COVID-19 pandemic affords such research.

The pandemic involves a pathogen threat that is both salient for much of the world's population[30] and has had marked effects on behavior[31]. Further, these real-world behaviors are inherently costly[32], and may epitomize the kinds of cost-benefit tradeoffs individuals face when various priorities are perceived to clash. Moreover, individuals are influenced by their information environments, which can in turn shape perceptions of costs and benefits regardless of the actual underlying distribution. Concordantly, from an error management perspective [33], individuals must balance the relative costs and frequencies of type 1 and type 2 errors when it comes to disease threats (i.e. the cost of taking insufficient precautions

against a hazardous disease versus the social and opportunity costs entailed by being overly cautious). Indeed, individuals appear to be influenced by decision processes that reduce the probability of committing the more costly error in the context of disease avoidance [34,35]. In addition to the tradeoffs between disease avoidance and social opportunities, in social ecologies wherein COVID-19 precautions are positively or negatively moralized, error-management considerations will likely also include the reputational costs of locally counter-normative behavior.

The traditional norms account of the relationship between traditionalism and threat avoidance predicts that, all else equal, precautionary COVID-19 health behaviors should correlate with traditionalism, given that such behaviors can accurately index general pathogen avoidance motivations by virtue of occurring in a real-world context. Specifically, if traditionalism and pathogen avoidance motivations are linked, then the extent to which individuals engage in COVID-19 prophylaxis should correspond with the extent to which they embrace traditions.

Despite the apparent simplicity of the above prediction, all else may not be equal in the case of reactions to the current pandemic, as group-level and individual-level contextual factors may parochially shape the perceived cost-benefit structure of COVID-19 health precautions. For example, at the group level, precautions promulgated by public health authorities may be seen as threatening economic prosperity or personal liberty to a greater extent in some cultural contexts than in others. Individual assessments of those countervailing tradeoffs, shaped by the social and political environment, will likely vary as well. Furthermore, some public health precautions may directly interfere with traditional practices; for example, social distancing restrictions preclude the kinds of ritual gatherings that are often important for religious services and other activities

central to in-group identity. Finally, as stated above, individuals' characterizations of the cost-benefit structures may or may not be accurate: miscalculations or erroneous beliefs can arise. In particular, for politically, ideologically, and socially salient issues such as the pandemic, individuals' information environments may shape inaccurate beliefs about such tradeoffs. In sum, these clashes potentially reduce, or even reverse, the observed relationship between pathogen avoidance behaviors—in this case, COVID-19 health precautions—and traditionalism.

Recent research has found support for both the traditional norms account and the presence of tradeoffs. At the national level, consistent with the logic connecting traditions and threat mitigation, researchers have found that greater cultural tightness (i.e. stronger and more heavily enforced social norms and constraints) correlated negatively with COVID-19 incidence rates[36]. At the individual level, two recent studies in the U.S[10] found that variables such as greater economic conservatism and lower trust in scientists statistically suppressed the traditionalism-COVID-19 precautions relationship. Concordantly, consonant with the close relationship between traditionalism and social conservatism[4], other research provides evidence for an increase in social conservatism in the U.S., Poland, and the U.K. following the start of the pandemic[8,37–38, but see 39]. However, these results come from only three societies, and may be contingent on the parochial conditions obtaining therein, notably including the extensive politicization of the pandemic in the U.S. and Poland[40,41]. We therefore investigated the relationship between COVID-19 precautions and traditionalism across 27 countries, examining both the zero-order relationships and the direct relationships after statistically accounting for indirect effects (i.e., mediation or suppression) of variables related to the perception that COVID-19 precautions exacerbate other threats or otherwise conflict with competing priorities.

Research questions:

1. Do COVID-19 health precautions, as potential manifestations of general pathogen avoidance tendencies, positively correlate with traditionalism across diverse societies?

Our primary goal was to assess whether the hypothesis that traditionalism and pathogen avoidance covary at the individual level obtains across a wide array of cultural contexts. Specifically, we were interested in whether individuals' choices to adopt precautionary COVID-19 behaviors positively associated with their own endorsement of traditionalism. We used individuals' self-reports of their actual COVID-19 precautionary health behaviors (such as mask wearing, social distancing, and supplement taking) as a complex, real-world manifestation of pathogen avoidance behavior. We selected precautionary behaviors that had been widely adopted across the globe, and that had been plausibly viewed as medically- or public health-derived preventative measures by experts and/or laypeople. The actual efficacy of the precautions in question varied. In contrast to previous methods that left the costs of pathogen avoidance unspecified, individuals' decisions about COVID-19 precautions intrinsically embody the kinds of tradeoff calculations discussed above.

Because specific traditions and cultural practices vary substantially across societies, to measure traditionalism, we examined individuals' general tendency to endorse or reject the traditional norms and values of their society writ large, rather than the specific content of those traditions themselves. This allowed us to measure traditionalism in a relatively consistent manner across study sites, affording comparisons despite wide variation in the contents of traditions.

Testing the individual-level relationship between traditionalism and COVID-19 precautions across many cultural contexts was important for at least two reasons. First, given claims of an evolved link between traditionalism and general pathogen avoidance, it is critical to

184 determine whether that relationship is evident across a broad swath of humanity. Second, given
185 that clashes between pathogen avoidance and other priorities are likely often parochial as a
186 function of different cultural values and beliefs, examining the individual-level traditionalism-
187 pathogen avoidance relationship across many societies affords identification of overarching
188 patterns despite local variation.
189
190 **2. Do perceived tradeoffs between health precautions and other priorities influence the**
191 **traditionalism-precautions relationship?**
192 Parochial factors interacting with individual preferences may conceal direct relationships
193 between pathogen avoidance and traditionalism. For example, a recent study found evidence
194 that, in the U.S., greater economic conservatism, greater social dominance orientation (SDO),
195 and lower trust in science statistically suppressed the direct precautions-traditionalism
196 relationship[10]. Consistent with the importance of tradeoffs in shaping the relationship between
197 pathogen avoidance and traditionalism, we expect such suppression to occur when competing
198 priorities that also associate with traditionalism, such as personal liberties, are perceived to clash
199 with COVID-19 precautions.
200 It is an open question whether, in other societies, individuals similarly weight the
201 components of the cost-benefit tradeoffs previously identified in the U.S. On the one hand, many
202 aspects of the U.S.' socio-political environment are unlikely to generalize beyond its borders. On
203 the other hand, pathogen avoidance precautions—particularly in the case of COVID-19—may
204 commonly be perceived to clash with benefits derived from social interaction, including both
205 economic and community activity. Therefore, in the present study, we also sought to investigate

the extent to which the suppressive dynamics identified in previous research in the U.S.[10] emerge across a much broader range of socio-political contexts.

Drawing on the previous research conducted in the U.S., we tested seven theoretically relevant variables that may suppress traditionalism-precautions relationships in some cultural contexts. First, we measured concerns over personal liberties and the economy, as well as perceived tradeoffs between personal liberties, the economy, and the practice of traditions on the one hand, and COVID-19 public health precautions on the other. Here, we explicitly pitted public health precautions against priorities that have been commonly perceived to clash in some societal contexts. Second, we measured trust in scientists regarding COVID-19 information. Because many scientific explanations for natural phenomena are incompatible with many traditional explanations thereof, trust in scientists may negatively correlate with traditionalism in many cultural contexts. If this is the case, and if COVID-19 public health precautions are perceived to derive from the advice of scientists, traditionalists may discount these precautions, resulting in suppression of any direct positive relationships between traditionalism and COVID-19 precautions. The precise configuration, however, will depend on culturally parochial relationships between traditional and scientific meaning systems.

Finally, related to the logic regarding trust in scientists, we included a measure of SDO. SDO contributes to distrust in both scientists and various scientific findings, likely because scientists are more likely to be viewed as actors seeking to disrupt the social hierarchies preferred by individuals with higher SDO[42]. This may be particularly true when hierarchy-promoting authoritarian leaders denounce the legitimacy of scientists in the context of COVID-19, or imply that their recommended practices are only for the weak. Likewise, SDO may reflect preferences for fewer constraints on individual liberties regardless of their effects on public

goods[43]. Because traditionalism also intersects with preferences for authoritarian leaders[1], and associates with SDO in some socio-political contexts[44,45], SDO might act as a statistical suppressor of any direct relationship between traditionalism and COVID-19 precautions when the above conditions are met.

We did not make specific predictions about the effects of each of the above variables at each of the study sites, and we did not expect to find suppression across all countries given the likelihood that many of these tradeoff dynamics are parochial. Further, this was not an exhaustive test of every possible dynamic that may be relevant to the zero-order relationship across individual societies. Rather, we sought to explore the generalizability of the extent to which the particular factors operating in the U.S. also exert suppressive effects elsewhere, perhaps reflective of some relatively common ways in which pathogen avoidance behaviors can clash with competing priorities.

Results

Baseline relationships between COVID-19 precautions and traditionalism across study sites:

Treating each study site as a separate sample, we conducted a random effects meta-analysis to test the extent to which overall indices of COVID-19 precautions and traditionalism were related across study sites (see Figures 1 and 2). At the majority of study sites (16 of 27), the relationship between traditionalism and COVID-19 precautions was positive and significant, as was the overall meta-analyzed point estimate representing a weighted average of the effects found for each study site (r = .19, 95% confidence interval [.14, .24]; note that the 95% confidence interval for the overall estimate does not overlap with zero). There was also

substantial variation across study sites, as indicated by observed levels of heterogeneity (I^2 = 78.34%; 95% prediction interval [-.03, .41]); concordantly, the 95% prediction interval overlapped with zero, suggesting that if similar nations were randomly added to the sample, some of their true effect sizes would be null, or even negative[46].

These results 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 Figure S5; see Methods section for details on COVID-19-related covariates). Additionally, the reliability of the traditionalism composite varied widely across study sites (αs .39 - .88, mean α = .74; see Table S8). To address this, a) we performed item-by-item meta-analyses using each item from the traditionalism composite separately (see Supplement page S44)—results were conceptually unchanged compared to the composite, and were similar across items, with some variation in effect size—and b) given the possibility of measurement error contributing to unreliability, we performed random effects meta-analyses using the traditionalism composite that disattenuated for unreliability[47], see Figure S7. These analyses used averages of raw scores to create composite indices for traditionalism and COVID-19 precautions, where item inclusion was based on the results of factor analyses (see Methods section and Supplement pages S30 and S38 for details). While averaged composites are easier to interpret, they may make unrealistic assumptions about the relative weights of each item in the composites. We therefore tested whether using factor scores instead of raw averages for the traditionalism and COVID-19 precautions indices conceptually altered the results. Factor scores were highly correlated with the raw average composites (marginal R2s = .96-.98), and using them in place of the raw average composites did not conceptually change results (see Supplement page S62 for details). Finally, country-specific estimates of COVID-19 prevalence at the time of data collection did not explain

any of the variance in effect sizes between study sites when tested in a meta-regression (see Supplement page S23), although the reliability of officially reported prevalence numbers may vary across study sites.

Exploring the effects of potential suppressor variables:

To test the generalizability of suppression phenomena originally observed in the U.S. socio-political context, we examined the extent to which the potential suppressor variables assessed in those studies affected the zero-order precautions-traditionalism relationship across study sites. Here, suppression refers to variables that result in a negative indirect relationship between traditionalism and health precautions in a mediation analysis, such that accounting for them in a regression increases (rather than decreases, as in a traditional mediation analysis) the effect size of the direct positive traditionalism-precautions relationship[48]. We therefore conducted a second random effects meta-analysis on the traditionalism-precautions relationship accounting for the effects of potential suppressor variables.

In order to use the same set of candidate suppressors for each study site in the meta-analysis, we first identified suppressors in a pooled sample across all study sites. Using bootstrapping procedures to determine confidence intervals, we utilized mixed-effects mediation analyses with study site set as a random effect to test whether any of the seven candidate variables were suppressing the precautions-traditionalism relationship in the pooled sample. Of the seven variables, we identified five suppressors in the pooled sample (see Table S1): SDO; distrust in scientists; and perceived tradeoffs between COVID-19 public health efforts and personal liberties, the economy, and personal traditions, respectively. See Supplement pages S66-S71 for information on mean levels of each suppressor variable across study sites.

Next, we assessed the combined effects of all five suppressors at each study site (see Table S2). We observed a wide range of indirect effects across study sites, ranging from suppression in slightly less than half of the study sites, all the way to partial mediation at three of the sites. This suggests that while the suppression effects originally observed in the U.S. *are* shared with some other societies, the effects of these five variables on the traditionalism-precautions relationship are parochial, and contingent on socio-political dynamics and perceptions that vary widely across societies.

We then ran a new set of random effect meta-analyses examining the relationship between traditionalism and overall COVID-19 health precautions, adjusting for the joint effects of the five aforementioned variables (see Figure 3). While the overall meta-analyzed point estimate was conceptually indistinguishable from the effect size of the zero-order meta-analysis, accounting for the five variables resulted in the following observations: a) the amount of heterogeneity in effect sizes across study sites was substantially reduced (I^2 = 56.39%; 95% prediction interval [.08, .33]); b) the 95% prediction intervals suggest that if similar nations were randomly added to the sample, their true effect sizes would be positive and significant if adjusted for the five variables; and c) the traditionalism-precautions relationship was now positive and significant in 21 out of 27 study sites. Taken together, these results suggest that the suppressive effects of these five variables emerge in a variety of socio-political contexts across the countries included in this study, and adjusting for their effects reveals a more consistent positive relationship in the direct pathway between pathogen avoidance and traditionalism across societies in our models. Note that these results remain robust after accounting for the same demographic and COVID-19-related covariates used previously (see Figure S6), as well as when disattenuating for scale unreliability (see Figure S8); when using factor scores in place of raw

average composites (see Supplement page S62); and when conducting item-by-item analyses of the traditionalism composite items (see Supplement page S44).

External-facing versus internal-facing precautions:

As discussed in the Methods section, exploratory factor analysis revealed that the COVID-19 health precaution items can be decomposed into two factors, interpretable as distinguishing between actions in which other actors are salient, and which are often publicly visible (e.g., mask wearing and social distancing; hereafter *external-facing precautions*), versus actions in which other actors are not salient, and which often occur in private (e.g., hand washing and surface disinfection; hereafter *internal-facing precautions*). Because we did not predict this factor structure in advance, and therefore did not have a priori predictions about how it would affect the precautions-traditionalism relationship, the following analyses are exploratory.

To examine whether the relationship between traditionalism and COVID-19 precautionary behaviors varies as a function of whether precautions are external- or internal-facing, we assessed whether subscale moderated the traditionalism-precautions relationship in a mixed linear regression. We found that the strength of the traditionalism-precautions relationship was greater for internal-facing precautions relative to external-facing precautions (see Figure 4).

Discussion

Consistent with a postulated link between traditionalism and motivations to mitigate dangers, across 27 nations, we found evidence that at the individual level, traditionalism associates positively with health precautions aimed at a global pathogen threat. In addition, in some socio-political contexts, perceived tradeoffs between health precautions and priorities

concerning the economy, personal liberties, and the ability to practice traditions statistically suppressed the zero-order relationship between traditionalism and COVID-19 precautions, as did low trust in scientists and high social dominance orientation. Importantly, accounting for the effects of the suppressor variables resulted in a more consistent positive correlation between traditionalism and COVID-19 precautions. This suggests that when individuals' weightings of the costs, benefits, and tradeoffs of pathogen-threat mitigation and competing priorities—many of which are themselves tied to traditionalism—are taken into account, statistical associations between traditionalism and pathogen avoidance are more likely to be detected within any given cultural context.

These results both support the traditional norms account of the relationship between traditionalism and threat avoidance, and underscore the importance of parochial, countervailing preferences, many of which concern competing threat responses. Understanding the weights accorded to the costs and benefits of particular pathogen-avoidance behaviors in the real world is thus critical when assessing the extent to which traditionalism and pathogen avoidance covary among individuals. As expected, we found considerable heterogeneity in effect sizes across study sites, further highlighting the importance of parochial factors, and the contribution of cultural variation in shaping traditionalism-pathogen avoidance relationships. Indeed, given the nested relationship between cultural evolution and the production of traditional norms, any evolutionary explanation for relationships between pathogen avoidance and traditionalism must take into account the possibility of substantial variation within cultures across contexts, and across cultures. For example, the extent to which traditions protect against pathogen threats may depend in part upon the content of those traditions, either via traditions' instrumental effects, or via the effects of adherence on ingroup cooperation and/or coordination.

Consistent with prior research on the tradeoffs attending COVID-19 prophylactic behaviors[29], we found that the relationships between traditionalism and COVID-19 precautions were stronger for internal-facing precautions (e.g., hand washing) than for external-facing precautions (e.g., mask wearing). This may owe to differences in the extent to which these two types of precautions are constrained by factors outside of personal control. Because external-facing precautions are more likely to be regulated by government rules—such as mask mandates—individuals may have less leeway to align their behavior with their preferences. Alternately, because they are more likely to conflict with the pursuit of a wide variety of benefits obtained through sociality, external-facing precautions may reflect valuation of the latter to a greater extent than internal-facing precautions. Indeed, external-facing precautions are probably more likely to clash with traditions, as precautions such as social distancing will often interfere with activities such as traditional religious practices. There are thus multiple plausible potential reasons why traditionalism covaries with external-facing precautions to a lesser extent than with internal-facing ones.

This study has multiple limitations. First, samples were recruited on the basis of convenience, and were not representative of their countries more broadly. In particular, given that participants needed access to computing devices and internet connectivity, and because some samples were comprised of students, socio-economic status and levels of formal education are not representative. Of equal importance, in addition to a lack of representativeness within study sites, the countries included were not globally representative. Countries from the Global North were overrepresented, while countries from Africa and South America were especially underrepresented. In both cases, our sampling procedures limit the generalizability of our findings. In particular, the relatively high frequency at which suppression was observed using a

limited variable set derived from prior work conducted in the U.S. may reflect the over-representation of countries having shared cultural and political histories.

The effect sizes that we observed, though analogous in magnitude to those obtained in similar previous research[7,10], are relatively small. This likely owes in part to the fact that traditionalism is complex and multidetermined, and variation in it is not solely explained by pathogen-avoidance motivations. The same logic applies with regard to COVID-19 health precautions. Other sources of measurement error are also possible, such as the translatability and coherence of folk concepts and terminologies across societies and languages. In particular, our use of a broad but shallow assessment of traditionalism was likely one source of noise.

We measured the general proclivity to endorse one's society's traditions without examining the actual content of those traditions. This facilitated comparison across study sites irrespective of the particulars of any given society's traditions; point estimates indicate the relationships between traditionalism and precautions as construed at each particular study site. Nevertheless, by leaving the content of those traditions unspecified, this approach is unable to explore the rich cultural particulars that may importantly drive variation across study sites. Such particulars likely vary markedly across social contexts and across cultures. Hence, we think it is inappropriate to closely compare the magnitudes of precise point estimates between the 27 study sites, or test causal explanations for heterogeneity in those estimates, especially given the issue of non-independence in country-level analyses[49]. Additionally, our samples were collected on a convenience basis, and none can be considered nationally representative. Although putative cultural dimensions such as tightness-looseness and collectivism-individualism might plausibly moderate the individual-level relationship between traditionalism and COVID-19 precautions,[36,50] for all of the aforementioned reasons, these data are not structured in such a

412 way as to test nation-level hypotheses. Relatedly, it is beyond the purview of this project to
413 unpack why effects may have obtained in specific study sites but not others, although we
414 encourage future research that delves into particular social contexts more deeply, as well as
415 possible culture-level moderators.

416 We examined only a relatively narrow set of possible suppressor variables, selected on
417 the basis of their effects in previous research in the U.S. Our intention was to use these variables
418 to probe whether, across diverse cultural contexts, cost-benefit tradeoffs and conflicting attitudes
419 could influence traditionalism-pathogen avoidance relationships, rather than to exhaustively
420 document all such possible tradeoffs. The latter would have been impractical in the present
421 project given the large number of study sites and the diverse parochial factors germane to
422 tradeoffs, and subjective weightings of those tradeoffs, entailed by COVID-19 precautions.
423 Future studies, focused more narrowly on one or a small number of societies, should explore
424 such tradeoffs in detail, including the extent to which politicization influences how individuals
425 perceive cost-benefit structures.

426 Future work should elucidate the proximate mechanisms linking traditionalism and threat
427 responsivity. Are traditionalists prone to perceive threats as relatively more attention-grabbing,
428 and/or important, and/or susceptible to resolution through threat-mitigating action? Or, given the
429 established links between traditionalism and respect for authority figures[1], might traditionalists
430 simply be more adherent to the directives of relevant leaders in times of crisis? Relatedly,
431 traditionalism may be linked with a propensity for collective coalitional action which facilitates
432 threat-responsive behaviors in concert with others. The extent to which any or all of these
433 complementary potential pathways contribute to the link between traditionalism and pathogen-
434 avoidance is currently unknown. More broadly, whereas we have focused here on a real-world

pathogen threat, might comparable dynamics obtain with regard to traditionalism and the propensity to take action in response to threats in other domains, such as intergroup conflict or resource scarcity?

We have approached the construct of traditionalism in an underspecified manner loosely isomorphic with a folk concept of "tradition" that recurs reliably across societies. Having found a cross-culturally replicable association, we encourage investigators to explore the particular facets of traditionalism driving the relationship with COVID-19 precautions. Are there specific in-group practices and/or beliefs of perceived antiquity (i.e., traditions) more closely associated with threat responsivity? If so, are these contingent on the nature of distinct threat domains? (E.g., are the components of traditionalism driving associations with pathogen avoidance distinct from components associated with threat responses to intergroup conflict?) Future work should examine which aspects encompassed by the superordinate construct of tradition are most strongly linked with pathogen-threat responsivity, as well responsivity to contrastive threats. Such work may require focusing on fewer societies to allow more detailed consideration of the relative contributions of parochial beliefs and practices.

Ours is the first study to systematically investigate the relationship between traditionalism and avoidance of a specific infectious disease across a wide range of societies, attending to the kinds of costly, real-world behaviors that reflect the tradeoffs that shape actual decision making. Examining these phenomena at a global scale, we required methods that were coarse with regard to the particulars of the pandemic and its interactions with traditions in any one cultural setting. Despite this lack of granularity, consistent with the thesis that individual differences in the propensity to adhere to traditions are driven in part by differences in threat responsivity, we found evidence of a positive direct relationship between traditionalism and

avoidance of a specific disease. When the individual and/or social contexts facilitated the alignment of traditionalism and health precautions, we observed that relationship at the zero order without needing to take other factors into account. When other preferences were perceived to clash with public health measures against COVID-19, stronger positive relationships between traditionalism and health precautions were detected in many cases after the effects of those clashing objectives were held constant.

Our findings have practical relevance for public health authorities and clinicians seeking to promulgate behavior changes that slow the spread of a disease that has claimed over six million victims worldwide. Whereas casual reflection might suggest that those who adhere to values and practices rooted in the past would be more hesitant to change behaviors or utilize new medical resources in the service of protecting themselves and others from a novel illness, in actuality, these may be the very people for whom, all else being equal, threats such as those posed by COVID-19 evoke mitigating action. The challenge may be that the same disposition to respond to this pathogen threat may also incline traditionalists to respond to other threats having conflicting mitigation requirements. It is thus crucial to recognize and address potential conflicts or tradeoffs that may inhibit tradition-minded individuals from adopting vital prophylactic and treatment practices beneficial to themselves, their societies, and the global community. More broadly, understanding the relationship between traditionalism and the extent to which danger prompts corrective action may prove vital as humanity confronts worldwide threats, from emerging pandemics to climate change, that can only be overcome through innovation and the adoption of new practices.

Methods

Project overview:

This study was approved by the UCLA Office of the Human Research Protection Program, and all methods were performed in accordance with relevant guidelines and regulations. Informed consent was obtained before participation. Complete questionnaire in English, translations, datasets, analysis code, and preregistrations of predictions and methods are available at https://osf.io/6vu5b/?view_only=873259d429c346d2912303fc44df5079. See Supplement page S1 for a list of questionnaire items and composite scales.

Adult participants were recruited online for an observational, cross-sectional survey-based study between October 2020 and July 2021 in 27 countries, with a final N of 7,844. Countries were selected on a convenience basis, and both the range of possible study sites and the representativeness of samples recruited at each were constrained by our use of remote internet-mediated interactions for recruitment and participation. Nevertheless, we endeavored to collect data in a wide range of societies, selected from diverse major culture areas; see Figure S1. Where appropriate, survey materials were translated from English by fluent bilingual speakers. While most participants were unpaid volunteers, recruitment and compensation schemes varied across study sites. A mix of non-student and student populations were used, depending on the study site. See Table S3 in the supplementary materials for a summary of study sites, study site-specific Ns, exclusions, as well as full information on survey languages, recruitment procedures, and participant demographics for each study site. Data were prescreened for minimum completeness and correct answers to attention checks.

Measures:

Measures were consistent across study sites, with some small deviations where necessary (e.g., items addressing education levels differed across study 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 health precautions:

COVID-19 health precautions were measured with a 13-item scale examining participants' self-reported real-world behaviors. Questions addressed behaviors which, at the time, were widely thought by public health authorities to have significant protective value against COVID-19 (e.g., the frequency of mask wearing, hand washing, and social distancing, as well as the importance to the participant of stocking up on supplies such as hand sanitizer). Items were rated on 7-point scales, either from "never" to "as often as possible", or from "not important at all", to "extremely important". Based on the results of an exploratory factor analysis (see Table S4), a composite COVID-19 health precautions variable was created for the purposes of analysis by averaging across the thirteen items. The factor analysis also revealed that this scale can be subdivided into two subscales: *external-facing health precautions* (e.g., observing mask wearing and social distancing), and *internal-facing health precautions* (e.g., washing hands). These factors are consistent with results from prior research on COVID-19 precautions[29]. Main text analyses report results using the combined composite, unless otherwise noted. See Supplement page S31 for details on scale development and factor analysis.

Traditionalism:

Because we were unable to identify a culturally neutral traditionalism scale in the prior literature, we drew upon two instruments that had previously been deployed in large-scale cross-cultural research. These scales jointly assessed the concept of traditionalism, or the tendency to endorse and place importance on the practice of traditional norms. To increase comparability across study sites, questions were designed to measure participants' general tendency to endorse

or reject their own society's traditional social norms and values. The two scales were the conventionalism subscale of the Aggression-Submission-Conventionalism scale[51], which measures the general tendency to endorse one's society's traditional social norms without specifying the content of those traditions (e.g., "Traditions are the foundation of a healthy society and should be respected"), as well as items from the authority subscale from the Moral Foundations Questionnaire Short Version[52,53], 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". After conducting an exploratory factor analysis on items from both scales jointly (see Table S7), a six-item averaged composite traditionalism variable was computed for analyses involving traditionalism. See Supplement page S39 for details on scale development and factor analysis.

Potential suppressor variables:

We included seven variables related to potential perceived conflicts between COVID-19 health precautions and other priorities: distrust in science regarding the COVID-19 pandemic; SDO (measured using the 4-item short form scale[30]); concern about the effects of the COVID-19 pandemic on the economy and personal liberties; and perceptions that COVID-19 health precautions were clashing with personal liberties, one's own traditions, and the health of the economy, respectively. Unless otherwise noted, these variables were measured using single items.

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

Participants indicated their gender identity and age, and their income relative to others in their country. Education was also measured, but because different countries in the study have different educational systems, levels of education examined varied across study sites. For the purposes of analysis, education was therefore coded into a universal four-level structure: primary school, secondary school, undergraduate-level, and postgraduate-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. Finally, we included several attention checks.

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Author Contributions

T.S. designed the study, analyzed the data, contributed to data curation and visualization, and wrote the original manuscript. D.M.T.F. and C.H. designed the study, and contributed to writing the original manuscript. A.M.S. designed the study, contributed to writing the original manuscript, and contributed to data curation and visualization. L.A. collected data, translated study materials, and contributed to editing the original manuscript. P.B., D.N.P., and J.M.T.

collected data and contributed to editing the original manuscript. C.G.B., M.T.B., R.B., J.C., B.C., M.D.P.G., P.E., P.F., A.M.F., R.F., L.G., P. Giraldo-Perez, P. Gul, F.H., Y.H., T.J., T.K., B.K., T.R.K., M.K., J.L., F.R.L., M.A.M., M.M., C.M., A. Naito., P.P., Y.S., W.O.P.S., S.S., A.O.S., H.V., A.V., J.W., and X.T.W. collected data and translated study materials. A.N.O., E.J.H., S.K., N.P.L., A. Ng'ang'a, and L.K.L.T. collected data. All authors reviewed the manuscript.

Data availability

All relevant data are openly available via the Open Science Framework at the following link: https://osf.io/6vu5b/?view_only=873259d429c346d2912303fc44df5079.

Competing Interests

The authors have declared that no competing interests exist.

References

1. Duckitt, J., Bizumic, B., Krauss, S. W. & Heled, E. A tripartite approach to right-wing authoritarianism: The authoritarianism-conservatism-traditionalism model. *Polit. Psychol.* **31**, 685–715 (2010).
2. Giuliano, P. & Nunn, N. *Understanding cultural persistence and change*. w23617 http://www.nber.org/papers/w23617.pdf (2017) doi:10.3386/w23617.
3. Claessens, S., Fischer, K., Chaudhuri, A., Sibley, C. & Atkinson, Q. The dual evolutionary foundations of political ideology. *Nat. Hum. Behav.* **4**, 1–10 (2020).
4. Jost, J. T., Federico, C. M. & Napier, J. L. Political ideology: Its structure, functions, and elective affinities. *Annu. Rev. Psychol.* **60**, 307–337 (2009).
5. Hibbing, J. R., Smith, K. B. & Alford, J. R. Differences in negativity bias underlie variations in political ideology. *Behav. Brain Sci.* **37**, 297–307 (2014).
6. Murray, D. R. & Schaller, M. Threat(s) and conformity deconstructed: Perceived threat of infectious disease and its implications for conformist attitudes and behavior. *Eur. J. Soc. Psychol.* **42**, 180–188 (2012).
7. Tybur, J. M. *et al.* Parasite stress and pathogen avoidance relate to distinct dimensions of political ideology across 30 nations. *Proc. Natl. Acad. Sci.* **113**, 12408–12413 (2016).
8. Fischer, K., Chaudhuri, A. & Atkinson, Q. *Responses to the COVID-19 pandemic reflect the dual evolutionary foundations of political ideology*. https://psyarxiv.com/qeap8/ (2020) doi:10.31234/osf.io/qeap8.
9. Makhanova, A., Plant, E. A., Monroe, A. E. & Maner, J. K. Binding together to avoid illness: Pathogen avoidance and moral worldviews. *Evol. Behav. Sci.* **13**, 182–204 (2019).

10. Samore, T., Fessler, D. M. T., Sparks, A. M. & Holbrook, C. Of pathogens and party lines: Social conservatism positively associates with COVID-19 precautions among U.S. Democrats but not Republicans. *PLOS ONE* **16**, e0253326 (2021).
11. Henrich, J. & McElreath, R. The evolution of cultural evolution. *Evol. Anthropol. Issues News Rev.* **12**, 123–135 (2003).
12. Murray, D. R., Fessler, D. M. T., Kerry, N., White, C. & Marin, M. The kiss of death: Three tests of the relationship between disease threat and ritualized physical contact within traditional cultures. *Evol. Hum. Behav.* **38**, 63–70 (2017).
13. Henrich, J. A cultural species: How culture drove human evolution. at https://doi.org/10.1037/e519392012-002 (2011).
14. Zwirner, E. & Thornton, A. Cognitive requirements of cumulative culture: teaching is useful but not essential. *Sci. Rep.* **5**, (2015).
15. Navarrete, C. D. & Fessler, D. M. T. Normative bias and adaptive challenges: A relational approach to coalitional psychology and a critique of terror management theory. *Evol. Psychol.* **3**, 147470490500300 (2005).
16. Fessler, D. M. T. Steps toward an evolutionary psychology of a culture-dependent species. in *The Innate Mind: Volume 2: Culture and Cognition* (eds. Carruthers, P., Laurence, S. & Stich, S.) 61–77 (Oxford University Press, 2006).
17. Mcelreath, R., Boyd, R. & Richerson, P. J. Shared norms and the evolution of ethnic markers. *Curr. Anthropol.* **44**, 122–129 (2003).
18. Sugiyama, L. S. Illness, injury, and disability among Shiwiar forager-horticulturalists: implications of health-risk buffering for the evolution of human life history. *Am. J. Phys. Anthropol.* **123**, 371–389 (2004).

19. Jost, J. T., Glaser, J., Kruglanski, A. W. & Sulloway, F. J. Political conservatism as motivated social cognition. *Psychol. Bull.* **129**, 339–375 (2003).
20. Conover, P. J. & Feldman, S. The Origins and Meaning of Liberal/Conservative Self-Identifications. *Am. J. Polit. Sci.* **25**, 617–645 (1981).
21. Wilson, G. D. *The psychology of conservatism*. xv, 277 (Academic Press, 1973).
22. Terrizzi, J. A., Shook, N. J. & McDaniel, M. A. The behavioral immune system and social conservatism: a meta-analysis. *Evol. Hum. Behav.* **34**, 99–108 (2013).
23. Jost, J. T., Stern, C., Rule, N. O. & Sterling, J. The politics of fear: is there an ideological asymmetry in existential motivation? *Soc. Cogn.* **35**, 324–353 (2017).
24. Jost, J. T. Ideological asymmetries and the essence of political psychology. *Polit. Psychol.* **38**, 167–208 (2017).
25. Duncan, L. A., Schaller, M. & Park, J. H. Perceived vulnerability to disease: Development and validation of a 15-item self-report instrument. *Personal. Individ. Differ.* **47**, 541–546 (2009).
26. Olatunji, B. O. *et al.* Confirming the three-factor structure of the disgust scale—Revised in eight countries. *J. Cross-Cult. Psychol.* **40**, 234–255 (2009).
27. Karinen, A., Tybur, J. M. & de Vries, R. E. The disgust traits: Self-other agreement in pathogen, sexual, and moral disgust sensitivity and their independence from HEXACO personality. at https://doi.org/10.1037/emo0000795 (2019).
28. Tybur, J. M., Lieberman, D., Fan, L., Kupfer, T. R. & de Vries, R. E. Behavioral immune trade-offs: Interpersonal value relaxes social pathogen avoidance. *Psychol. Sci.* **31**, 1211–1221 (2020).

29. Gul, P. *et al.* Disease avoidance motives trade-off against social motives, especially mate-seeking, to predict social distancing: Evidence from the COVID-19 pandemic. *Soc. Psychol. Personal. Sci.* 19485506211046464 (2021) doi:10.1177/19485506211046462.
30. Ritchie, H. *et al.* Coronavirus pandemic (COVID-19). *Our World Data* (2020).
31. Hensel, L. *et al.* Global behaviors, perceptions, and the emergence of social norms at the onset of the COVID-19 pandemic. *J. Econ. Behav. Organ.* **193**, 473–496 (2022).
32. Czeisler, M. É. *et al.* Mental Health, Substance Use, and Suicidal Ideation During the COVID-19 Pandemic - United States, June 24-30, 2020. *MMWR Morb. Mortal. Wkly. Rep.* **69**, 1049–1057 (2020).
33. Haselton, M. G. & Buss, D. M. Error management theory: a new perspective on biases in cross-sex mind reading. *J. Pers. Soc. Psychol.* **78**, 81–91 (2000).
34. Galperin, A. & Haselton, M. G. Error management and the evolution of cognitive bias. in *Social thinking and interpersonal behavior* 45–63 (Psychology Press, 2013).
35. Neuberg, S. L., Kenrick, D. T. & Schaller, M. Human threat management systems: Self-protection and disease avoidance. *Neurosci. Biobehav. Rev.* **35**, 1042–1051 (2011).
36. Gelfand, M. J. *et al.* The relationship between cultural tightness–looseness and COVID-19 cases and deaths: a global analysis. *Lancet Planet. Health* **5**, e135–e144 (2021).
37. Karwowski, M. *et al.* When in danger, turn right: does COVID-19 threat promote social conservatism and right-wing presidential candidates? *Hum. Ethol.* **35**, 37–48 (2020).
38. Rosenfeld, D. L. & Tomiyama, A. J. Can a pandemic make people more socially conservative? Political ideology, gender roles, and the case of covid-19. *J. Appl. Soc. Psychol.* **51**, 425–433 (2021).

672 39. Leeuwen, F. van, Jaeger, B., Sleegers, W. & Petersen, M. B. Do experimental manipulations
673 of pathogen avoidance motivations influence conformity? at
674 https://doi.org/10.31234/osf.io/t3bcw (2021).
675 40. Pennycook, G., McPhetres, J., Bago, B. & Rand, D. G. Beliefs about COVID-19 in Canada,
676 the United Kingdom, and the United States: A novel test of political polarization and
677 motivated reasoning. *Pers. Soc. Psychol. Bull.* 01461672211023652 (2021)
678 doi:10.1177/01461672211023652.
679 41. Carothers, T. & O'Donohue, A. Polarization and the Pandemic. *Carnegie Endowment for*
680 *International Peace* https://carnegieendowment.org/2020/04/28/polarization-and-pandemic-
681 pub-81638 (2020).
682 42. Kerr, J. R. & Wilson, M. S. Right-wing authoritarianism and social dominance orientation
683 predict rejection of science and scientists. *Group Process. Intergroup Relat.* **24**, 550–567
684 (2021).
685 43. Pratto, F. *et al.* Social dominance in context and in individuals: Contextual moderation of
686 robust effects of social dominance orientation in 15 languages and 20 countries. *Soc.*
687 *Psychol. Personal. Sci.* **4**, 587–599 (2013).
688 44. Roccato, M. & Ricolfi, L. On the correlation between right-wing authoritarianism and social
689 dominance orientation. *Basic Appl. Soc. Psychol.* **27**, 187–200 (2005).
690 45. Wilson, M. S. & Sibley, C. G. Social dominance orientation and right-wing authoritarianism:
691 Additive and interactive effects on political conservatism: SDO, RWA, and conservatism.
692 *Polit. Psychol.* **34**, 277–284 (2013).
693 46. Spineli, L. M. & Pandis, N. Prediction interval in random-effects meta-analysis. *Am. J.*
694 *Orthod. Dentofacial Orthop.* **157**, 586–588 (2020).

47. Hunter, J. & Schmidt, F. *Methods of meta-analysis corrected error and bias in research findings*. *Educational Researcher* vol. 20 (2004).
48. MacKinnon, D. P., Krull, J. L. & Lockwood, C. M. Equivalence of the mediation, confounding and suppression effect. *Prev. Sci. Off. J. Soc. Prev. Res.* **1**, 173 (2000).
49. Claessens, S. & Atkinson, Q. The non-independence of nations and why it matters. at https://doi.org/10.31234/osf.io/m6bsn (2022).
50. Maaravi, Y., Levy, A., Gur, T., Confino, D. & Segal, S. "The Tragedy of the Commons": How Individualism and Collectivism Affected the Spread of the COVID-19 Pandemic. *Front. Public Health* **9**, (2021).
51. Dunwoody, P. & Funke, F. The aggression-submission-conventionalism scale: Testing a new three factor measure of authoritarianism. *J. Soc. Polit. Psychol.* **4**, 571–600 (2016).
52. Graham, J. *et al.* Mapping the moral domain. *J. Pers. Soc. Psychol.* **101**, 366–385 (2011).
53. Graham, J., Haidt, J. & Nosek, B. A. Questionnaires | Moral Foundations Theory. https://moralfoundations.org/questionnaires/ (2008).
54. Aloe, A. M. & Thompson, C. G. The synthesis of partial effect sizes. *J. Soc. Soc. Work Res.* **4**, 390–405 (2013).
55. Pituch, K. A. & Stevens, J. P. *Applied multivariate statistics for the social sciences*. (Routledge, 2016).

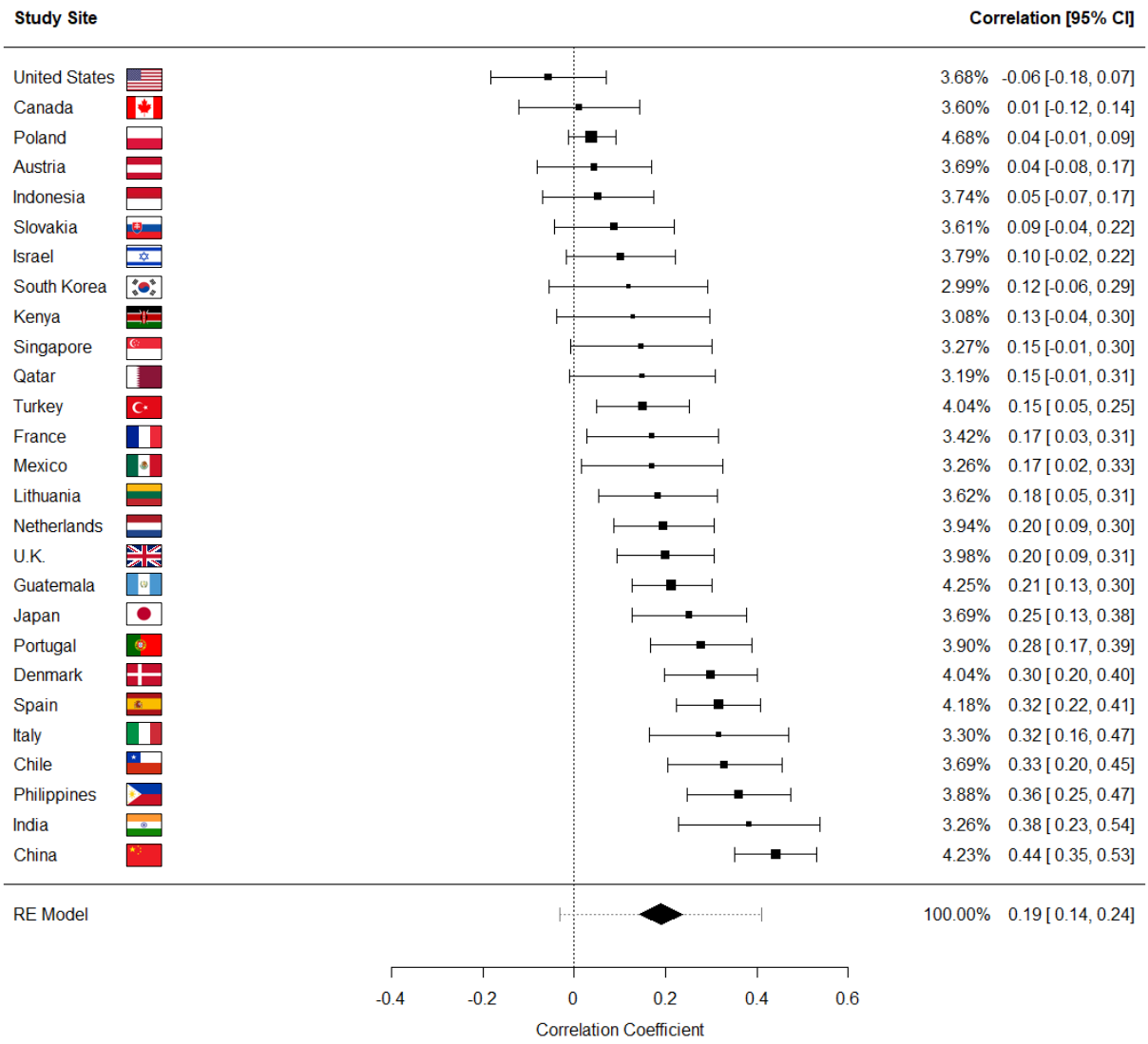

Figure 1. Results of a random effects, restricted maximum likelihood meta-analysis in which each study site was treated as a separate sample. Plot shows zero-order product-moment correlations between traditionalism and COVID-19 health precautions at each study site, ordered by effect size. For the individual 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, the 95% confidence interval does not overlap with zero, while the 95% prediction interval does.

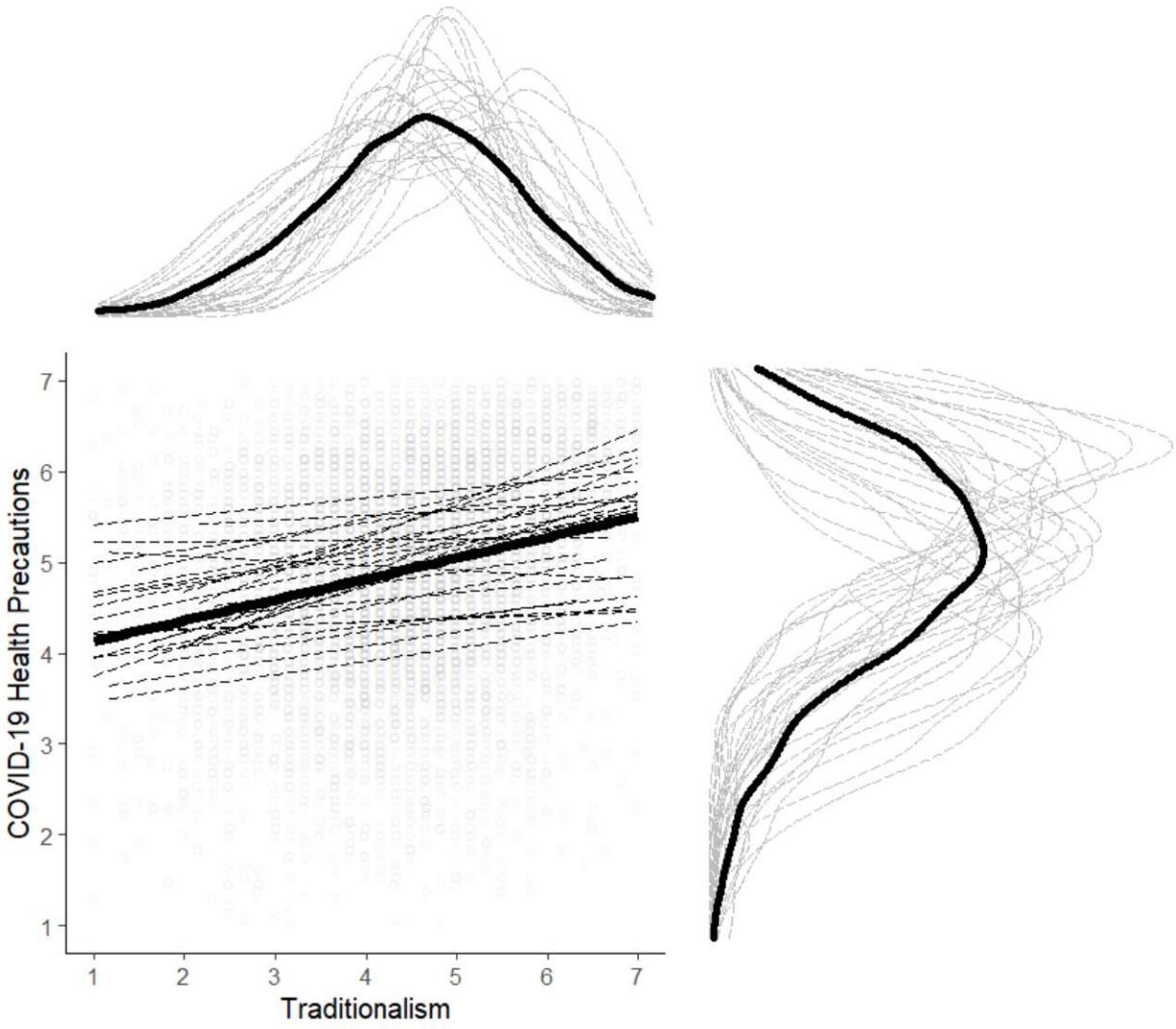

Figure 2. Graphical visualization of the country-specific correlations listed in Figure 1. Dotted lines are study site-specific product-moment correlations between traditionalism and COVID-19 health precautions. The solid thick line is the unweighted product-moment correlation in the pooled sample across all study sites. Dots show individual data points, jittered along the x- and y-axes to aid interpretability. Density plots along the x- and y-axes represent the raw distributions of the traditionalism and COVID-19 health precautions composites. Thin grey lines show density distributions at individual study sites, whereas the thick black lines show the overall distribution in the pooled sample across all study sites. Study sites are unlabeled to improve readability. For labeled study-site specific correlations and density distributions, see Figures S2-S4 in the Supplement.

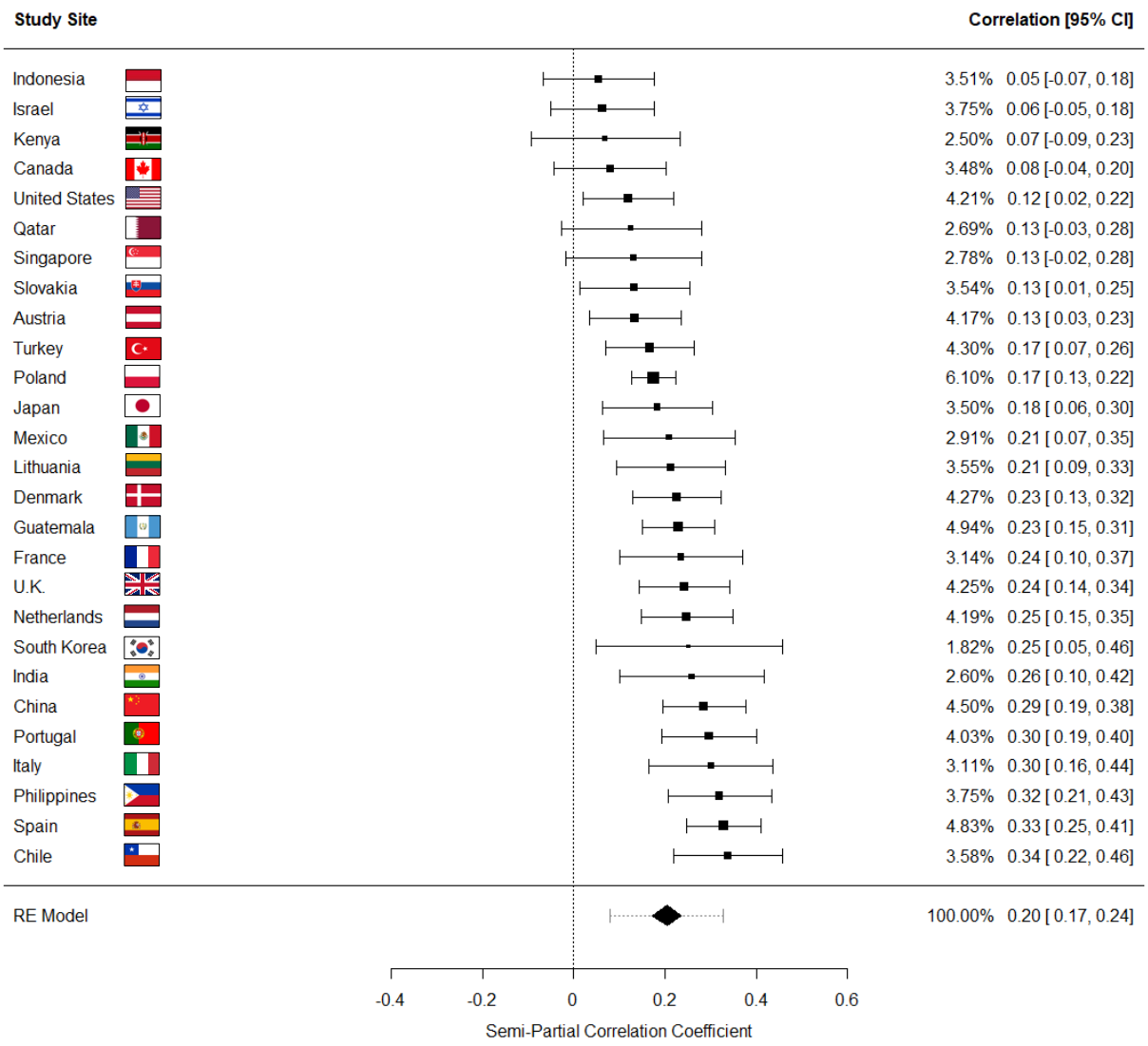

Figure 3. Results of a random effects, restricted maximum likelihood meta-analysis in which each study site was treated as a separate sample. The plot shows semi-partial correlations[54,55] between traditionalism and COVID-19 health precautions at each study site, after adjusting for the effects of the five identified suppressor variables in multiple linear regressions where health precautions were regressed on traditionalism and each of those five variables. Covariates were identical across study sites. Note that the semi-partial correlations indicate the variance in health precautions uniquely explained by the aspects of traditionalism separate from the five suppressor variables, and the effect sizes can be interpreted using the same metrics applied to product-moment correlations. 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.

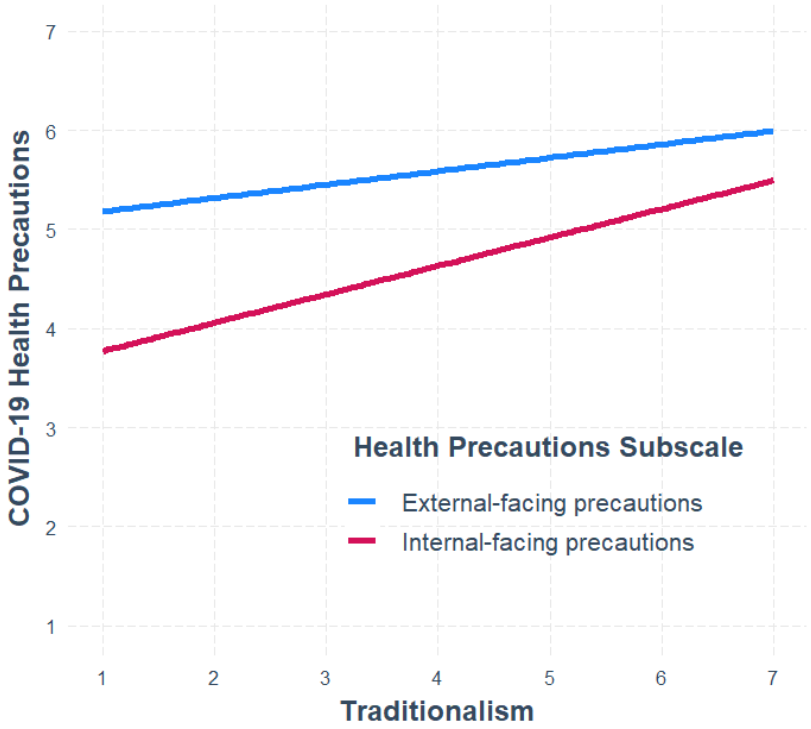

Figure 4. Results of a restricted maximum likelihood moderated mixed linear regression in which COVID-19 health precautions were regressed on traditionalism, a health precautions indicator variable (e.g., either internal-facing or external-facing), and the interaction between those two variables in the pooled sample. The model included participants nested within study sites as random effects. To test this interaction, there were two observations for each participant; the first observation contained each participants' internal-facing precautions score, and the second their external-facing precautions score. We simultaneously created an indicator variable specifying which health precautions subscale corresponded with each observation. Simple slopes were then plotted in the figure.

There was an interaction between health precautions subscale and traditionalism (B = .16, SE = .01, $t(7{,}535) = 12.76$, $p < .001$). A simple slopes analysis revealed that the correlation between traditionalism and internal-facing precautions (B = .29, SE = .01, $t(7{,}535) = 23.17$, $p < .001$) was about twice as strong as the correlation between traditionalism and external-facing precautions (B = .14, SE = .01, $t(7{,}535) = 10.84$, $p < .001$).

Note that these results were robust to the inclusion of demographic and COVID-19-related covariates, and they were not conceptually affected when the five suppressor variables were included as covariates (see Supplement page S26). Further, results did not conceptually change when using factor scores instead of averaged composites (see Supplement page S63). Finally, we considered the possibility that the presence—or lack of presence—of planning precautions may be confounding our interpretation of the external- and internal-facing precautions subscales. Specifically, the internal-facing subscale has more items related to planning precautionary behaviors (such as the importance of obtaining prophylactic supplies), whereas the external-facing subscale has more items related to actual precautionary behavior (such as wearing a mask when outside the home). To address this possibility, we created a modified internal-facing precautions composite that excluded all planning-related precautions. Using the planning-less internal-precautions composite did not conceptually affect these results (see Supplement S26), suggesting that planning behaviors versus actual behaviors are not confounding our explanation for the moderating effect of external- versus internal-facing precautions.

Supplementary Information for

Greater Traditionalism Predicts COVID-19 Precautionary Behaviors Across 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[1], 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[2].

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).

Social dominance orientation composite: Four-item Short Social Dominance Orientation Scale[3]

> There are many types of groups in the world: men and women, ethnic and religious groups, nationalities, political factions, etc. Please select a number to rate the degree to which you oppose or favor each statement about groups, where higher numbers mean you favor the statement more, and lower numbers mean you oppose the statement more. [1 – extremely oppose … 7 – extremely favor]

1. In setting priorities, we must consider all groups. (r)
2. We should not push for group equality.
7. Group equality should be our ideal. (r)
8. Superior groups should dominate inferior groups.

Single item suppressor variables:

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. Concern over the effects of COVID-19 on the economy:
   > How concerned are you about the economic effects of the COVID-19 pandemic? [1 – not at all concerned … 7 – extremely concerned]
3. Concern over the effects of COVID-19 on personal liberties:
   > How concerned are you about losing personal rights because of the COVID-19 pandemic? [1 – not at all concerned … 7 – extremely concerned]
4. Perceived tradeoffs between the COVID-19 pandemic and personal rights
   > The public health benefits of policies addressing the COVID-19 pandemic are not worth the potential costs to personal rights [1 – strongly disagree … 7 – strongly agree]
5. Perceived tradeoffs between the COVID-19 pandemic and the economy
   > The public health benefits of policies addressing the COVID-19 pandemic are not worth the potential costs to the economy [1 – strongly disagree … 7 – strongly agree]
6. Perceived tradeoffs between the COVID-19 pandemic and practicing traditions
   > Following my traditional cultural practices is more important than following public health recommendations about COVID-19 when those guidelines interfere with my traditional cultural practices [1 – strongly disagree … 7 – strongly agree]

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. In addition to listing these reserved variables below, they can also be found in the full surveys in the open archive.

  Reserved measures:

  1. COVID-19 religious precautions subscale (see items above)
  2. Pathogen disgust sensitivity scale[4]
  3. Belief in a dangerous world scale[5]
  4. Generalized social trust item (not included at every study site)
  5. Social conservatism item (not included at every study site)
  6. Economic conservatism item (not included at every study site)
  7. Belief in a deity/deities (not included at every study site)
  8. Various measures that were included at individual study sites only (see study-site specific full surveys in open archive for details).
  9. Parental status

- *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.
- *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[6], RStudio[7], and the R-packages devtools[8], ggplot2[9], GPArotation , gridExtra[10], interactions[11], kableExtra[12], lavaan[13], lme4[14], lmerTest[15], MASS[16], Matrix[17], mediation[18], metafor[19], mvtnorm[20,21], parameters[22], psych[23], report[24], sandwich[25,26], scales[27], sjPlot[28], and tidyverse[29] 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

- Session info ---

version R version 4.1.1 (2021-08-10)

os Windows 10 x64 (build 19043)

system x86_64, mingw32

ui RStudio

language (EN)

collate English_United States.1252

ctype English_United States.1252

date 2022-06-18

rstudio 2021.09.0+351 Ghost Orchid (desktop)

pandoc 2.14.0.3 @ C:/Program Files/RStudio/bin/pandoc/ (via rmarkdown)

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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.

Analyses Supporting Main Text

1. Traditionalism-precautions correlations and density distributions by study site

In the caption for Figure 2 in the main text, we noted that study-site-specific labeled regression plots and density distribution plots for traditionalism and COVID-19 health precautions could be found in the Supplement. Here, we provide those plots (Figures S2-S4).

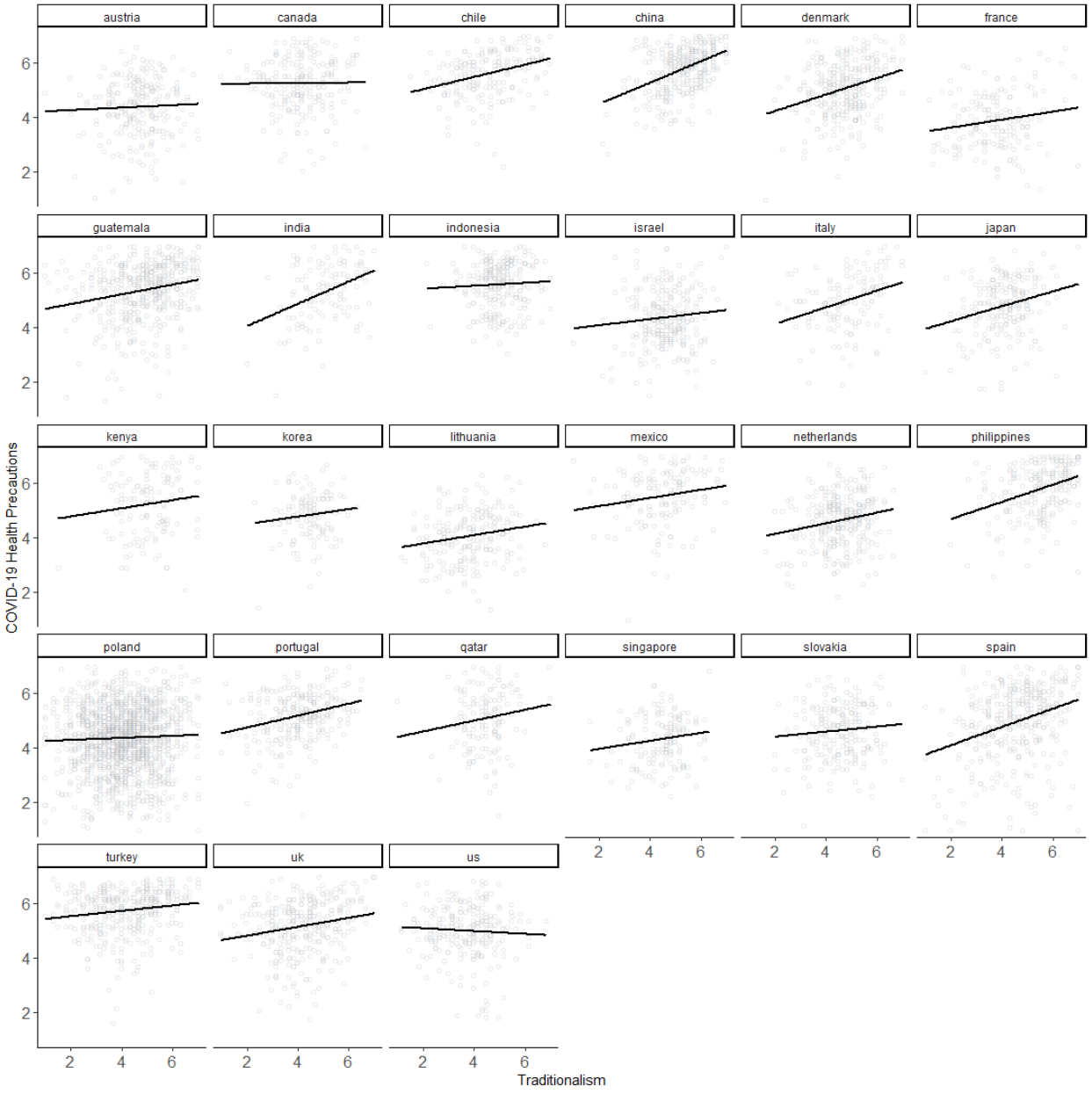

Figure S2. Regression lines plotting zero-order correlations between traditionalism and COVID-19 health precautions at each study site individually. Beans show raw data points. Compare to Figure 2 in the main text.

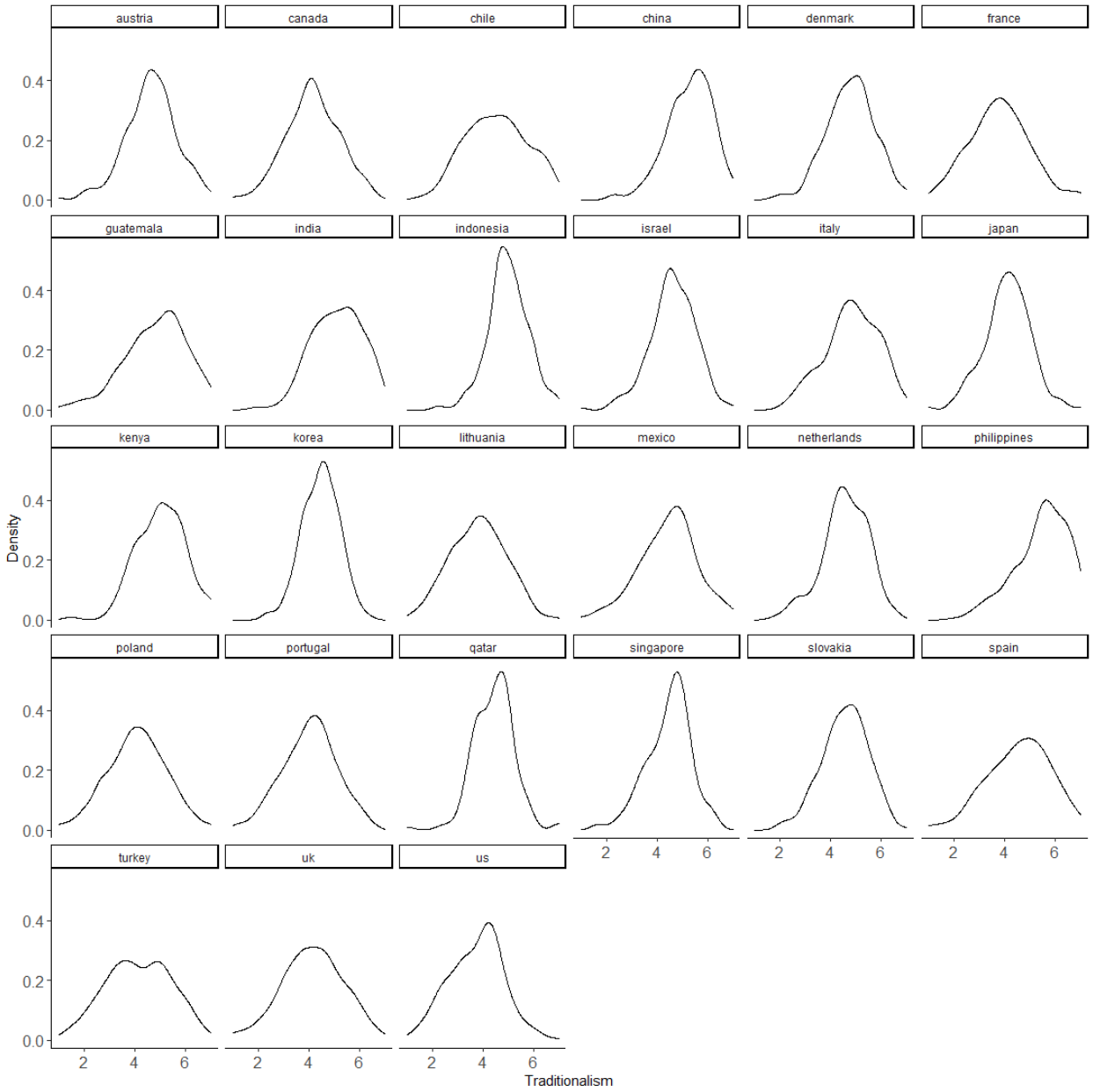

Figure S3. Raw density distributions of traditionalism composite across each study site individually. Compare to Figure 2 in the main text.

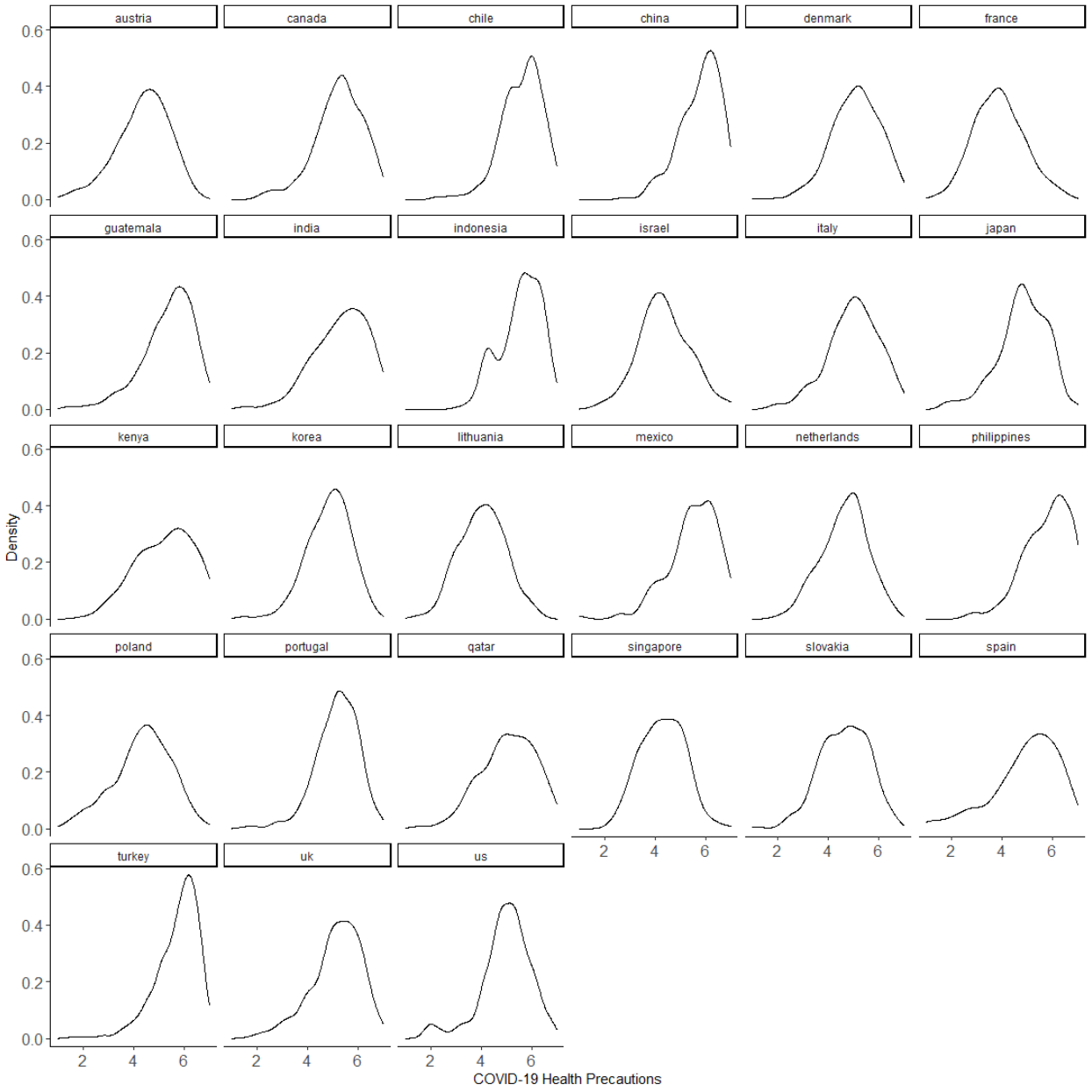

Figure S4. Raw density distributions of COVID-19 health precautions composite across each study site individually. Compare to Figure 2 in the main text.

2. Traditionalism-precautions relationship adjusting for covariates

In the main text, we noted that the bivariate correlation between COVID-19 health precautions and traditionalism is robust to the inclusion of the following demographic controls and COVID-19 related covariates: age; gender; education; relative income, perceived COVID

prevalence in participants' local communities; the population density of those communities; whether participants' jobs required that they leave home; and whether participants had certain pre-existing medical conditions that may put them at higher risk for severe disease. To test this, we conducted a random-effects, restricted maximum likelihood meta-analysis in which each study site was treated as a separate sample. We examined the semi-partial correlation between traditionalism and health precautions after adjusting for the effects of those seven variables in multiple linear regressions where health precautions were regressed on traditionalism and the seven covariates. Covariates were identical across study sites. As seen in Figure S5, adjusting for these demographic and COVID-related controls did not conceptually change the results.

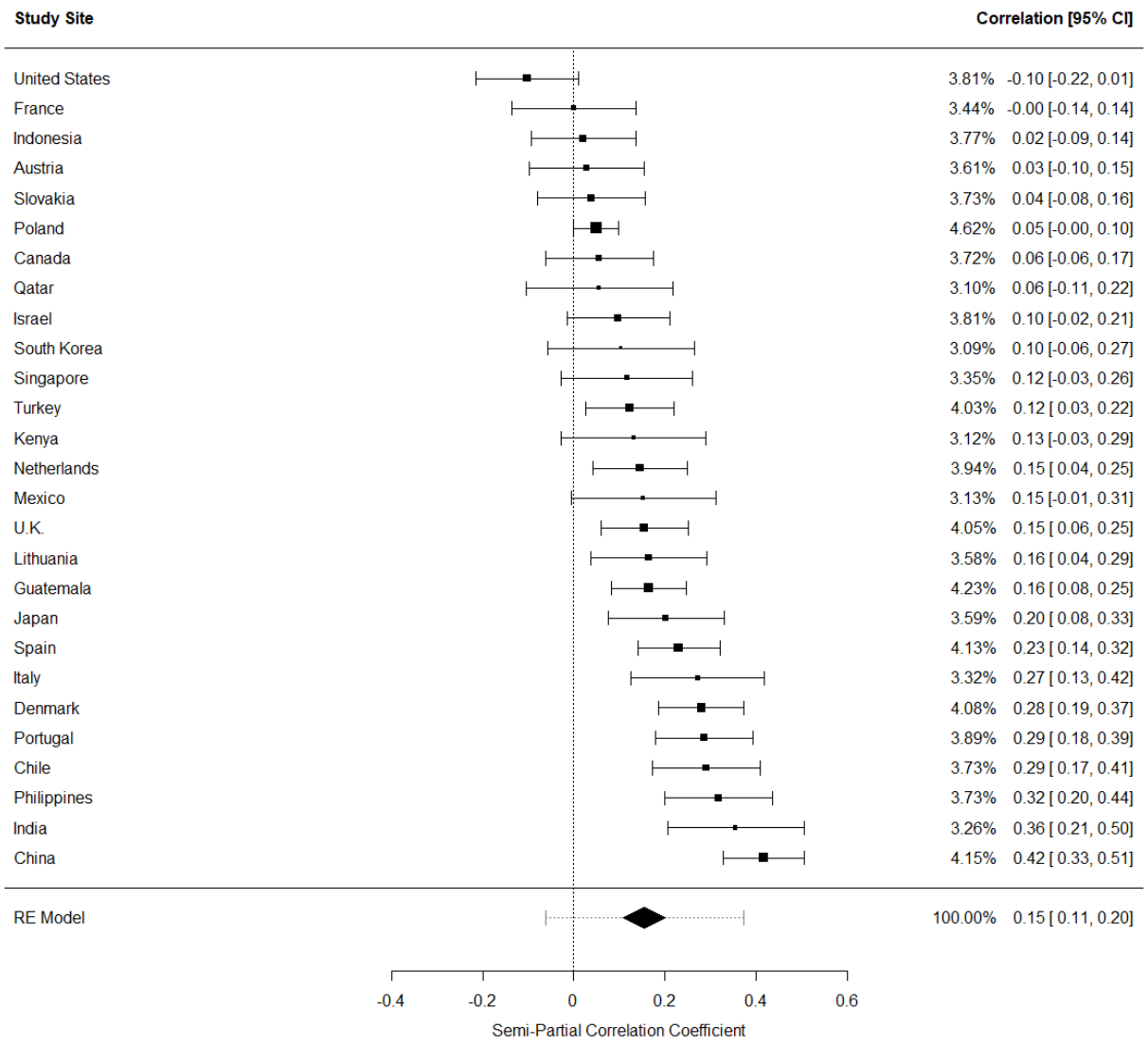

Figure S5. Results of random-effects meta-analysis examining the relationship between traditionalism and COVID-19 health precautions after adjusting for demographic variables and COVID-relevant covariates. See Figure 1 in the main text for a description of how to interpret the forest plot.

We also noted in the main text that the same set of demographic and COVID-related covariates did not conceptually change the precautions-traditionalism relationship after adjusting for the effects of the identified suppressor variables. To test this, we ran a meta-analysis similar to the one conducted for Figure S5, however this time also including the five suppressor variables as covariates in the regression models. As seen in Figure S6, adjusting for these demographic and COVID-related controls did not conceptually change the results.

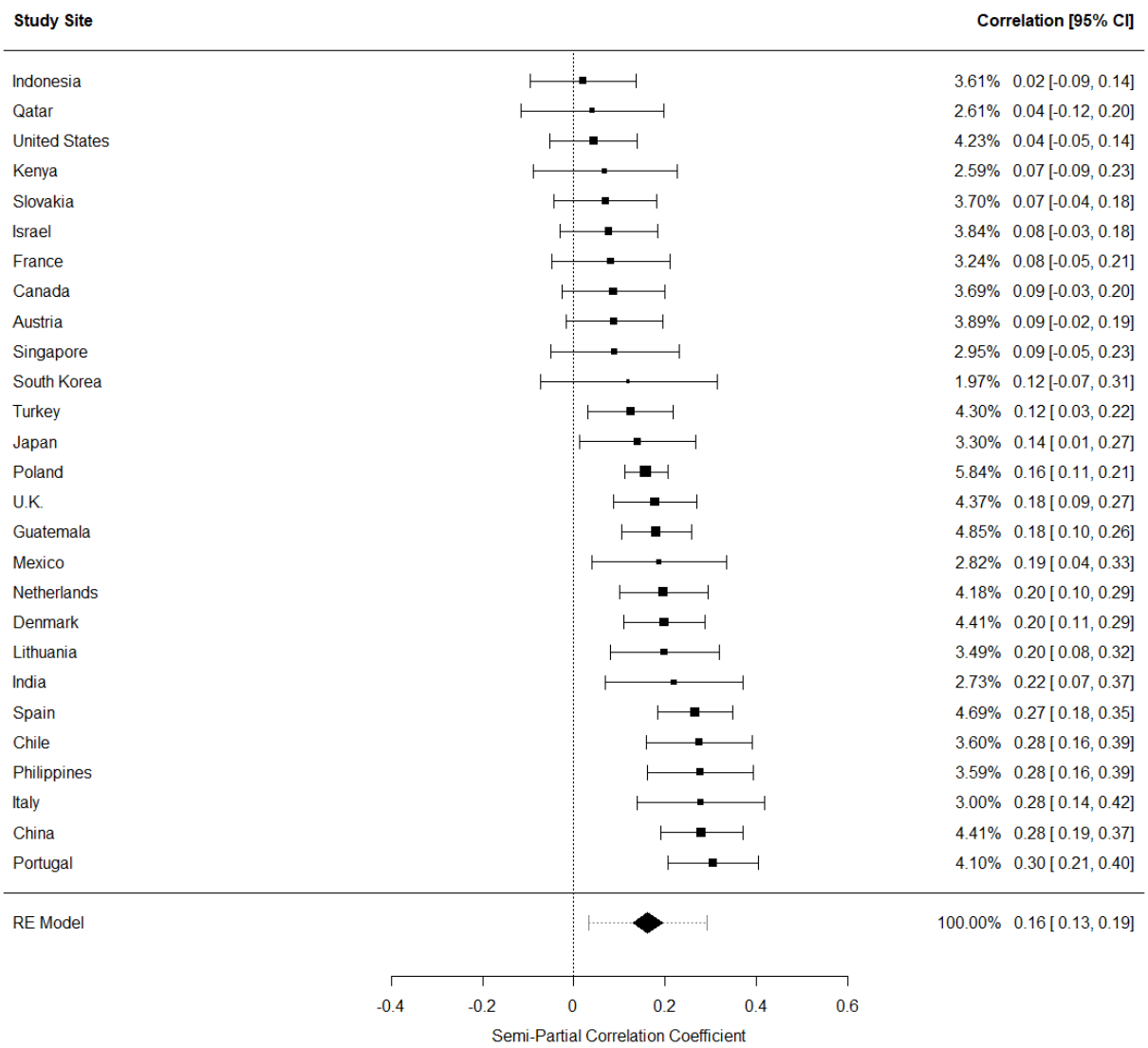

Figure S6. Results of random-effects meta-analysis examining the relationship between traditionalism and COVID-19 health precautions after adjusting for suppressor variables, as well as demographic variables and COVID-relevant covariates. See Figure 1 in the main text for a description of how to interpret the forest plot.

3. Precautions-traditionalism relationship disattenuated for unreliability

Given variation in scale reliability across study sites (see Table S8), we conducted meta-analyses on the traditionalism-precautions relationship that disattenuated for unreliability. In the main text, we noted that disattenuating for unreliability did not conceptually affect the results. First, we conducted a meta-analysis on the zero-order correlation between traditionalism and COVID-19 health precautions that disattenuated for unreliability; results are shown in Figure S7.

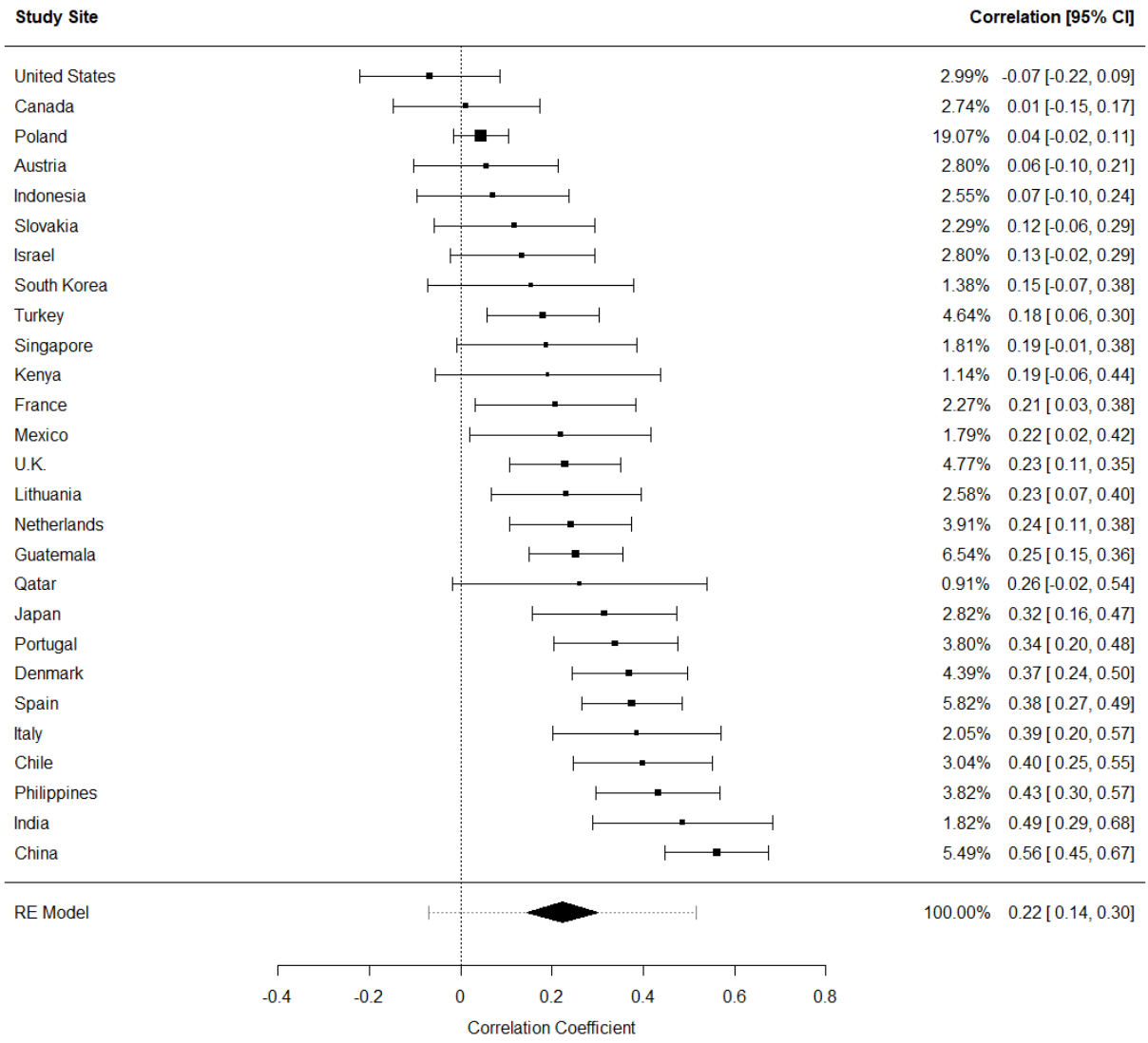

Figure S7. Results of random-effects meta-analysis examining the relationship between traditionalism and COVID-19 health precautions after disattenuating for scale unreliability across study sites. See Figure 1 in the main text for a description of how to interpret the forest plot.

Second, we conducted a meta-analysis examining the semi-partial correlation between COVID-19 health precautions and traditionalism after adjusting for the effects of the five suppressor variables, while also disattenuating for scale unreliability (see Figure S8). In both cases, findings reported in the main text were not conceptually changed by disattenuating for unreliability.

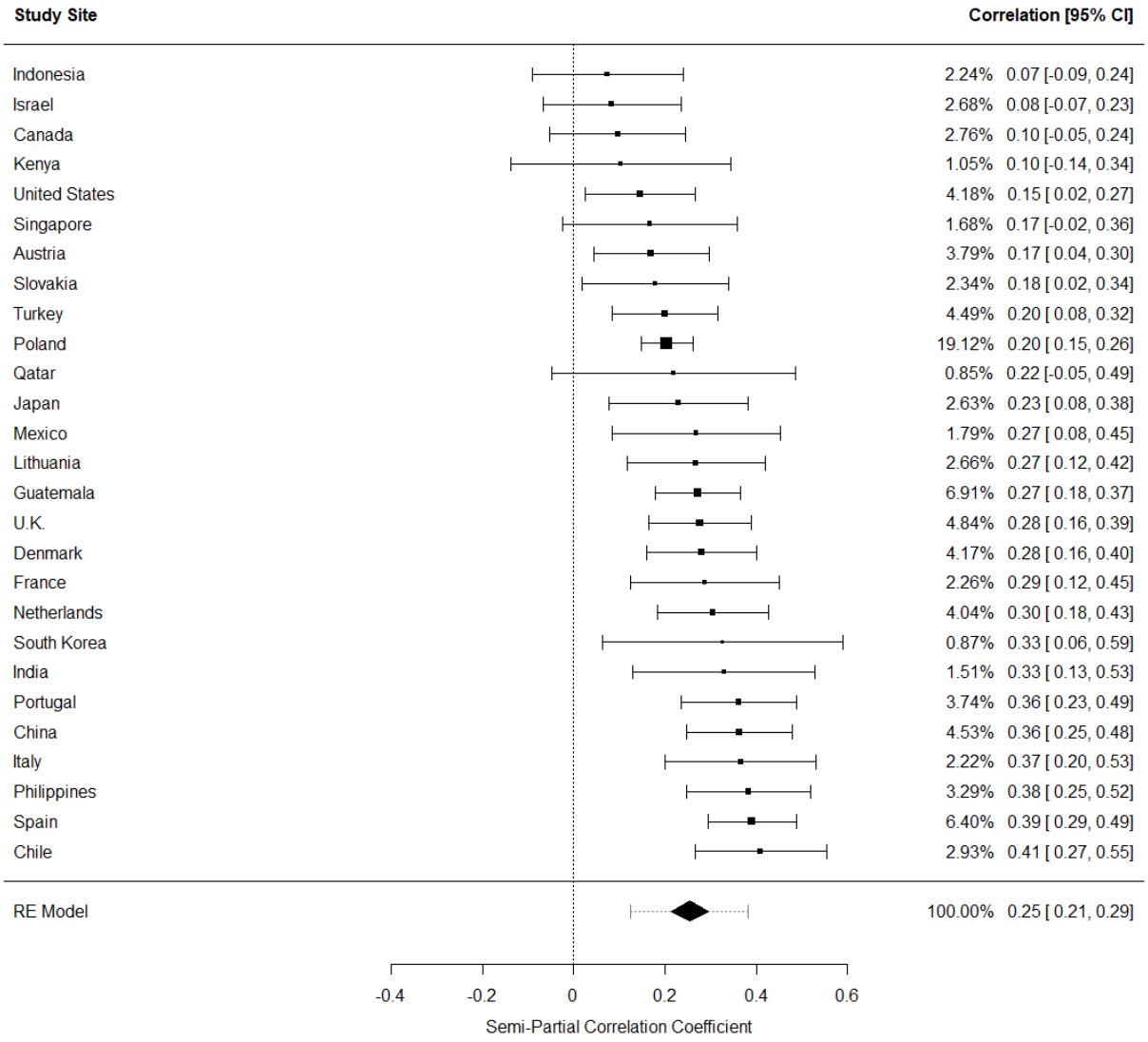

Figure S8. Results of random-effects meta-analysis examining the relationship between traditionalism and COVID-19 health precautions after adjusting for the five suppressor variables, and disattenuating for scale unreliability across study sites. See Figure 1 in the main text for a description of how to interpret the forest plot.

4. Effects of COVID-19 prevalence on study estimates of traditionalism-precautions relationship

In the main text, we noted that country-specific rates of COVID-19 prevalence did not explain any meaningful variance in effect sizes between study sites. To test this, we conducted two meta-regressions using two different measures of national COVID-19 prevalence. First, we calculated national average daily confirmed cases per million people over the specific period of data collection at each study site, obtained from Our World in Data[30]. Second, we calculated national total cumulative cases per million people since the start of the pandemic at the end of the specific period of data collection at each study site, obtained from the same source. For both meta-regressions, we tested whether the two COVID-19 prevalence metrics moderated the zero-order correlation between traditionalism and COVID-19 health precautions, and thus whether they accounted for any of the variance in heterogeneity in effect sizes across study sites. Neither average daily cases (QM = .51, p = .474, R^2 = .00) nor cumulative cases (QM = 1.67, p = .198, R^2 = .04) moderated the precautions-traditionalism relationship.

5. Identifying suppressor variables

The study included seven variables (see Methods section in main text for details) that were tested for possible suppressive effects on the health precautions-traditionalism relationship. As stated in the main text, we conducted mediation analyses to test for suppression across the pooled sample, where suppression was indicated by the presence of negative indirect effects (in contrast to the positive indirect effects that characterize mediation). See the Results section in the main text for further details on the statistical procedure. In the main text, we stated that we identified five suppressor variables in the pooled sample using this procedure, shown here in Table S1.

Suppressor Candidate	Indirect effect	Lower 95% CI	Upper 95% CI
SDO	-.018	-.022	-.013
Trust in scientists	-.015	-.023	-.008
Concern over economy	.009	.006	.012
Concern over personal liberties	.000	-.001	.001
Liberties-public health tradeoffs	-.014	-.017	-.010
Economy-public health tradeoffs	-.022	-.027	-.018
Traditions-public health tradeoffs	-.037	-.043	-.031

Table S1. Results of mediation analyses testing for suppression of the precautions-traditionalism relationship using a pooled sample across all 27 study sites. Each of the seven candidates were tested separately, and five variables were identified as suppressors. Note that coefficients are unstandardized betas (all seven candidate variables were measured on 1-to-7 Likert-type scales).

Next, we assessed the combined suppressive effects of the five variables at each study site individually, in order to understand whether those suppressors were acting in some socio-political contexts but not others. To test for the combined effects of the suppressors, all five variables were simultaneously entered in an individual mediation analysis for each study site using the R package *lavaan*[13]. As seen in Table S2, the effects of the suppressor variables varied substantially across study sites. Indeed, at two of the study sites, the combined effects of those five variables actually resulted in partial mediation—not suppression—of the health precautions-traditionalism relationship.

country	Bootstrapped indirect effect	Lower 95% CI	Upper 95% CI
Poland	-0.17	-0.21	-0.13
US	-0.17	-0.26	-0.09
Austria	-0.10	-0.18	-0.01
France	-0.07	-0.15	0.00
Canada	-0.07	-0.15	-0.01
Netherlands	-0.06	-0.11	0.00
UK	-0.05	-0.09	0.00
Slovakia	-0.05	-0.13	0.03
Chile	-0.03	-0.08	0.03
Spain	-0.03	-0.10	0.04
Lithuania	-0.03	-0.08	0.02
Portugal	-0.02	-0.06	0.02
Italy	-0.01	-0.09	0.06
Guatemala	-0.01	-0.04	0.03
Turkey	-0.01	-0.05	0.02
Indonesia	-0.01	-0.05	0.03
Mexico	0.00	-0.06	0.06
South Korea	0.00	-0.13	0.10
Singapore	0.01	-0.07	0.09
Philippines	0.03	-0.01	0.09
Qatar	0.03	-0.06	0.14
Israel	0.04	-0.02	0.11
Kenya	0.05	-0.05	0.15
Denmark	0.07	0.02	0.14
Japan	0.08	-0.02	0.17
China	0.11	0.07	0.16
India	0.11	0.00	0.21

Table S2. Results of mediation analyses testing for the combined effects of the five suppressors on the health precautions-traditionalism relationship at each of the 27 study sites.

6. Precautions subscale interaction adjusting for covariates, suppressor variables, and planning items

In the main text, we report that the interaction between traditionalism and external-versus-internal precautions subscale (see Figure 4) was robust to the inclusion of the seven previously used demographic and COVID-19-related covariates, as well as the five suppressor variables. Here, we report those results.

When controlling for the demographic and COVID-19-related covariates, there was an interaction between health precautions subscale and traditionalism (B = .15, SE = .01, t(7,274) = 12.39, p < .001). A simple slopes analysis revealed that the correlation between traditionalism and internal-facing precautions (B = .27, SE = .01, t(7,274) = 21.66, p < .001) was about twice as strong as the correlation between traditionalism and external-facing precautions (B = .11, SE = .01, t(7,274) = 9.24, p < .001).

When controlling for the five suppressor variables, there was an interaction between health precautions subscale and traditionalism (B = .16, SE = .01, t(7,122) = 12.50, p < .001). A simple slopes analysis revealed that the correlation between traditionalism and internal-facing precautions (B = .33, SE = .01, t(7,122) = 26.95, p < .001) was about twice as strong as the correlation between traditionalism and external-facing precautions (B = .17, SE = .01, t(7,122) = 14.11, p < .001).

Finally, when controlling for both the suppressor and demographic variables, there was an interaction between health precautions subscale and traditionalism (B = .16, SE = .01, t(6,882) = 12.26, p < .001). A simple slopes analysis revealed that the correlation between traditionalism and internal-facing precautions (B = .30, SE = .01, t(6,882) = 24.73, p < .001) was about twice as strong as the correlation between traditionalism and external-facing precautions (B = .14, SE = .01, t(6,882) = 11.82, p < .001).

In addition, in the main text, we report that the interaction between health precautions subscale and traditionalism does not appear to be confounded by the fact that the internal-facing precautions subscale has more items concerning planning precautions compared to the external-facing precautions (thus providing a plausible alternative framing to the distinction between the two subscales that is driving the reported interaction). To address this possibility, we computed a modified internal-facing precautions composite that excluded all planning-related precautions (we removed the first three items listed under the internal-facing precautions header, see page S2). We then re-conducted the analyses reported in Figure 4 in the main text, however using the modified internal-facing precautions composite in place of the full composite. Using the planning-less composite did not conceptually affect the results, suggesting that the interaction is not being driven by differences between planning versus non-planning precautions. Specifically, there was an interaction between health precautions subscale and traditionalism (B = .18, SE = .01, t(7,535) = 13.96, p < .001). A simple slopes analysis revealed that the correlation between traditionalism and planning-less internal-facing precautions (B = .32, SE = .01, t(7,535) = 24.66, p < .001) was about twice as strong as the correlation between traditionalism and external-facing precautions (B = .14, SE = .01, t(7,535) = 10.69, p < .001).

7. Summary statistics and other information by study site

Table S3, 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) Traditionalism Factor Composite	Mean (SD) COVID-19 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	4.64 (1.00)	4.38 (1.04)	205.84
Canada	English	Students	Subject pools	Course credit	221	19.34 (2.40)	77	4.16 (1.04)	5.25 (.96)	109.18
Chile	Spanish	Students; general population	Social media; classrooms	Volunteer	195	31.91 (12.71)	67	4.56 (1.21)	5.61 (.83)	359.77
China	Mandarin Chinese	General population	Online workers (Weidiaocha)	CNY ¥6	317	25.27 (6.21)	55	5.30 (.91)	5.78 (.81)	.02
Denmark	Danish	General population	Online workers (YouGov)	75 YouGov points	307	50.11 (18.23)	50	4.77 (.96)	5.07 (.97)	233.77
France	French	Students; general population	Social media; classrooms	Volunteer	176	29.80 (13.29)	66	3.78 (1.18)	3.88 (.99)	52.18
Guatemala	Spanish	General population	Social media	Volunteer	457	39.65 (12.67)	80	4.83 (1.22)	5.36 (1.03)	41.00
India	English	Students	Classrooms	Volunteer	118	28.33 (9.01)	62	5.12 (.99)	5.33 (1.06)	8.60

Indonesia	Indonesian	Students; general population	Classrooms; social media	Volunteer	257	31.10 (9.97)	76	5.00 (.80)	5.57 (.82)	32.02
Israel	Hebrew	Students	Subject pools	Course credit	267	22.49 (2.44)	51	4.63 (.91)	4.37 (1.01)	609.52
Italy	Italian	General population	Social media	Volunteer	135	35.31 (15.50)	61	4.83 (1.05)	4.99 (1.02)	235.94
Japan	Japanese	Students	Subject pools; classrooms	Course credit or volunteer	231	22.36 (4.36)	46	4.10 (.92)	4.81 (.98)	19.40
Kenya	English	Students; general population	Classrooms; snowball recruitment	Course credit or volunteer	133	23.60 (4.91)	50	5.04 (.96)	5.22 (1.12)	8.60
South Korea	Korean	Students	Subject pools; classrooms	Course credit or volunteer	167	23.25 (3.92)	63	4.47 (.73)	4.86 (.87)	11.05
Lithuania	Lithuanian	Students; general population	Social media; classrooms	Volunteer	211	28.03 (10.33)	80	3.81 (1.08)	4.05 (.92)	213.78
Mexico	Spanish	Students; general population	Social media; classrooms	Volunteer	153	28.75 (10.97)	65	4.44 (1.13)	5.51 (1.00)	29.02
Netherlands	Dutch	General population	Online workers (Prolific Academic)	€ 1.10	300	29.58 (10.22)	41	4.56 (.92)	4.63 (.92)	340.18
Philippines	English	Students; general population	Social media	Volunteer	229	21.17 (3.64)	75	5.44 (1.05)	5.76 (.92)	67.20
Poland	Polish	Students; general population	Social media; classrooms	Volunteer	1,665	22.98 (7.54)	74	4.08 (1.17)	4.35 (1.15)	240.09

Portugal	Portuguese	General population	Subject pools	Raffle (5 prizes worth € 10.00)	264	27.58 (8.82)	76	4.03 (1.08)	5.18 (.85)	53.41
Qatar	Arabic	Students; general population	Social media; classrooms	Volunteer	146	24.23 (6.84)	82	4.44 (.81)	5.08 (1.08)	279.66
Singapore	English	Students	Subject pools	Course credit	155	21.58 (2.03)	78	4.46 (.88)	4.31 (.87)	2.77
Slovakia	Slovak	Students	classrooms	Volunteer	222	21.90 (3.89)	77	4.56 (.92)	4.63 (.96)	389.92
Spain	Spanish	General population	Social media	Volunteer	365	40.15 (13.74)	79	4.56 (1.24)	4.94 (1.32)	562.56
Turkey	Turkish	Students; general population	Social media; classrooms	Volunteer	352	31.71 (16.28)	77	4.15 (1.28)	5.72 (.84)	287.61
U.K.	English	General population	Online workers (Prolific Academic)	£0.82	316	36.81 (13.87)	70	4.16 (1.21)	5.15 (.99)	340.47
U.S.	English	General population	Social media	Volunteer	241	33.08 (18.91)	83	3.74 (1.06)	4.98 (.98)	305.59
Pooled Sample	-	-	-	-	7,844	28.91 (12.95)	70	4.44 (1.16)	4.90 (1.14)	186.64

Table S3. Summary statistics and other information by study site

8. COVID-19 health precautions scale development

In the main text, we report a 12-item composite scale used to measure COVID-19 health precautions, as well as two-subscales—external-facing health precautions, and internal-facing health precautions. Here, we provide details on the scale development procedures and factor analyses used to produce these composites.

Based on a measure of COVID-19 precautions that we used in previous research[31], participants were asked 15 questions concerning precautionary behaviors in response to COVID-19. Most items inquired about health behaviors, including the frequency of mask wearing, hand washing, social distancing, and disinfecting, and the importance to the participant of stocking up on supplies such as hand sanitizer and household disinfectants. Participants were also asked the extent to which they were following local lockdown restrictions, and whether they had been careful to physically distance from people outside their household. In addition to health behaviors, participants were also asked about religious precautions undertaken to prevent COVID-19 infection. Items were rated on 7-point scales, either from "never" to "as often as possible", or from "not important at all", to "extremely important". See pages S1-S2 for full measures.

We ran an exploratory factor analysis on the pooled sample across all study sites to determine the structure of COVID-19 precautions. First, we used the Kaieser-Meyer-Olkin (KMO) and Bartlett's test to determine whether these items were suitable for structure detection. The KMO test suggested that the strength of the relationships among the variables was high (KMO = .89), and Bartlett's test was significant ($\chi 2$ (105) = 48,012.74, $p < .001$), suggesting that the use of factor analysis was appropriate.

The R package *parameters*[22] was then used to determine how many factors to extract. There was the most agreement between methods for a three-factor solution (see Figure S9).

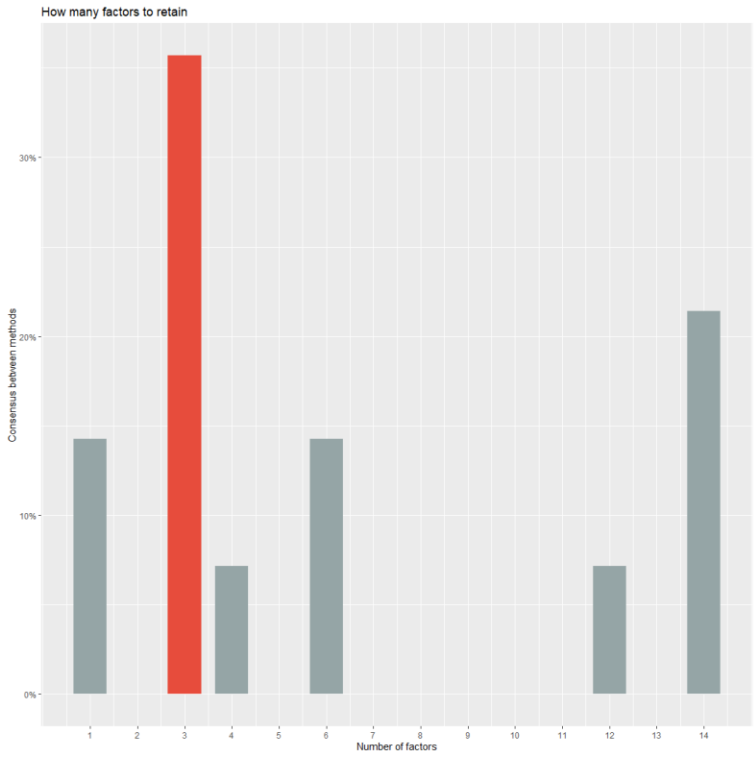

Figure S9. Graphical representation showing agreement between different methods for determining the number of factors to retain.

A factor analysis was then conducted with minimum residual extraction, promax rotation, and a Pearson's correlation matrix. Three factors were extracted. The three factor values had sums of squared loadings of 3.94, 2.86, and 1.76, and explained 26%, 19%, and 12% of the variance, respectively. When extracted, these three factors were conceptually coherent (see Table S4). For each factor, items with factor loadings greater than .40 were averaged together, producing the composite measures used in analyses. We labeled these factor composites as follows: *internal-facing or non-interpersonal health precautions* (e.g., washing hands), *external-facing or interpersonal health precautions* (e.g., observing mask wearing and social distancing), and *religious precautions* (e.g., engaging in prayer). The internal-facing and external-facing composites were largely reliable across study sites, although there was cross-society variation with low alphas in some countries; see Table S5 for study site-specific reliability tests for each composite. Note that we reserve the analyses of the religious precautions composite for a separate project, hence they are not included here.

Factor Analysis

	Factor 1	Factor 2	Factor 3
Importance of cleaning hands	0.61	0.14	-0.06
Importance of disinfecting home surfaces	0.73	0.02	0.12
Importance of consuming things to boost immune system	0.40	0.01	0.25
Importance of acquiring household disinfectants	0.87	-0.05	0.03
Importance of soap or hand sanitizer	0.84	0.00	-0.07
Importance of acquiring personal protective equipment	0.65	0.04	-0.11
General importance of taking COVID-19 precautions	0.16	0.69	-0.00
Frequency of mask wearing	-0.01	0.57	-0.07
Frequency of glove wearing	0.17	0.21	0.26
Frequency of physical distancing	-0.10	0.74	-0.02
Frequency of surface disinfection	0.42	0.25	0.19
Pursuit of social distancing	-0.04	0.73	0.03
Practicing individual religious behaviors in response to COVID	0.02	0.05	0.77
Practicing collective religious behaviors in response to covid	-0.04	-0.07	0.71
Change in precautionary behaviors since start of COVID pandemic	0.15	0.55	0.06

Table S4. Factor loadings from an exploratory factor analysis on COVID-19 precautions items.

Country	Combined COVID-19 Health Precautions Composite	Internal-Facing COVID-19 Health Precautions Composite	External-Facing COVID-19 Health Precautions Composite
Austria	0.86	0.81	0.82
Canada	0.86	0.80	0.86
Chile	0.80	0.80	0.56
China	0.86	0.84	0.66
Denmark	0.86	0.83	0.81
France	0.84	0.79	0.81
Guatemala	0.88	0.83	0.84
India	0.89	0.85	0.78
Indonesia	0.83	0.86	0.66
Israel	0.82	0.80	0.80
Italy	0.85	0.85	0.76
Japan	0.86	0.84	0.68
Kenya	0.87	0.85	0.74
South Korea	0.85	0.84	0.61
Lithuania	0.79	0.76	0.80
Mexico	0.87	0.84	0.79
Netherlands	0.86	0.84	0.79
Philippines	0.86	0.87	0.73
Poland	0.89	0.84	0.83
Portugal	0.81	0.81	0.68
Qatar	0.85	0.81	0.76
Singapore	0.80	0.82	0.61
Slovakia	0.82	0.79	0.80
Spain	0.90	0.87	0.87
Turkey	0.85	0.85	0.71
UK	0.88	0.84	0.80
US	0.86	0.81	0.86

Table S5. Cronbach's alphas for the combined health precautions composite, and the two internal-facing and external-facing subscale composites by study site.

We then fit a random-intercepts linear mixed model (estimated using REML) to examine the relationship between the internal-facing and external-facing precaution composites. The model included country as random effect. The two composites were highly correlated ($\beta = .50$, 95% CI [.48, .52), $t(7{,}837) = 56.95$, $p < .001$). Given this strong correlation, and for ease of interpretability in the analyses presented in the main text, we created an overall COVID-19 health precautions composite comprised of the raw average of all the items in both the internal-facing and external-facing composites. This combined composite was reliable across study sites (see Table S5), suggesting that these items cohere together. Where main text analyses were presented with the single composite factor (see Figures 1, 2, and 3), results did not conceptually change when using either of the two precautions subscales instead (see Figure S10-S13), although effect sizes were lower for the external-facing subscale, consistent with the interaction reported in Figure 4 in the main text.

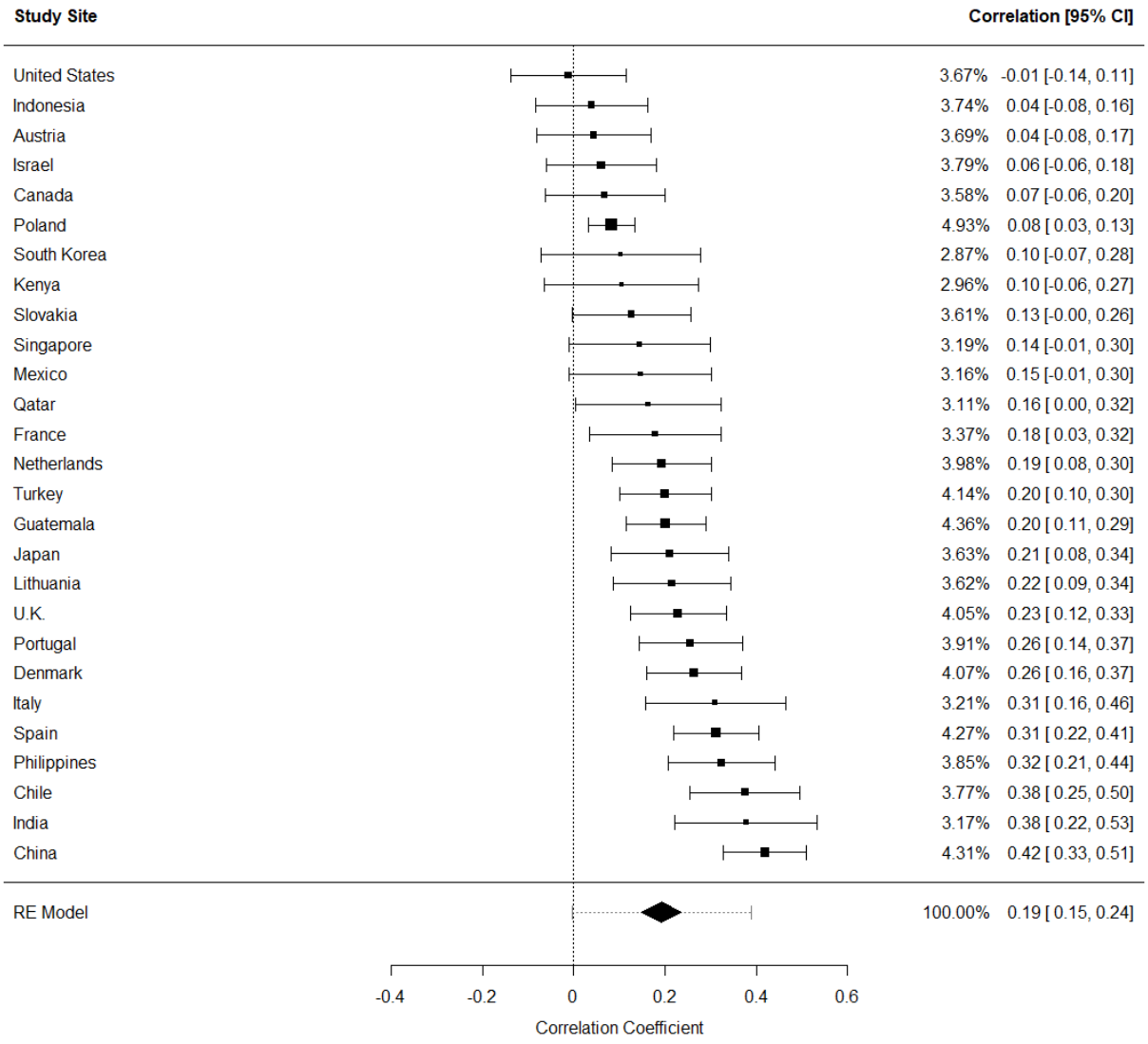

Figure S10. Results of random-effects meta-analysis examining the *zero-order correlation* between traditionalism and the *internal-facing precautions composite*. Compare to Figure 1 in the main text.

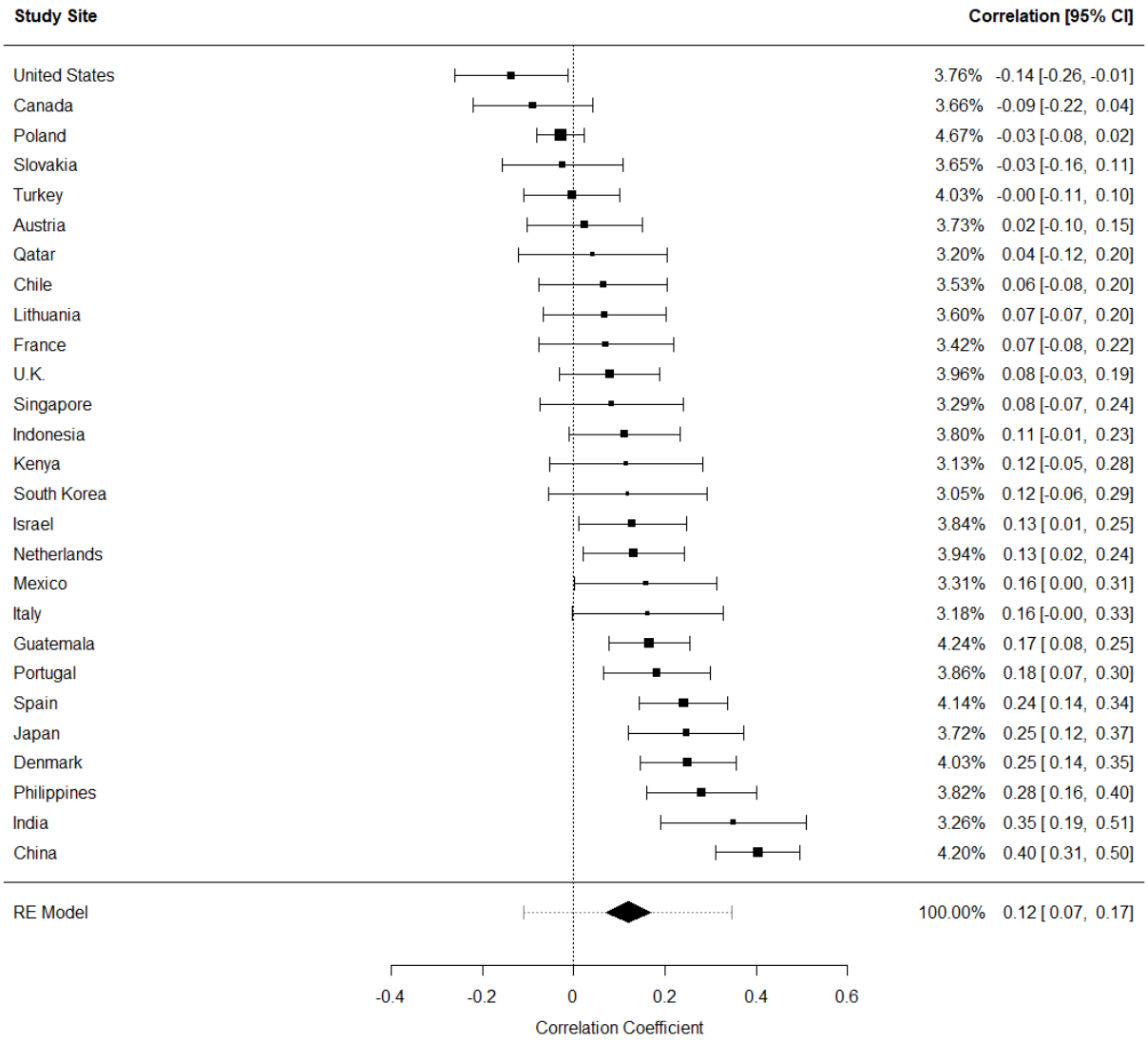

Figure S11. Results of random-effects meta-analysis examining the *zero-order correlation* between traditionalism and the *external-facing precautions composite*. Compare to Figure 1 in the main text.

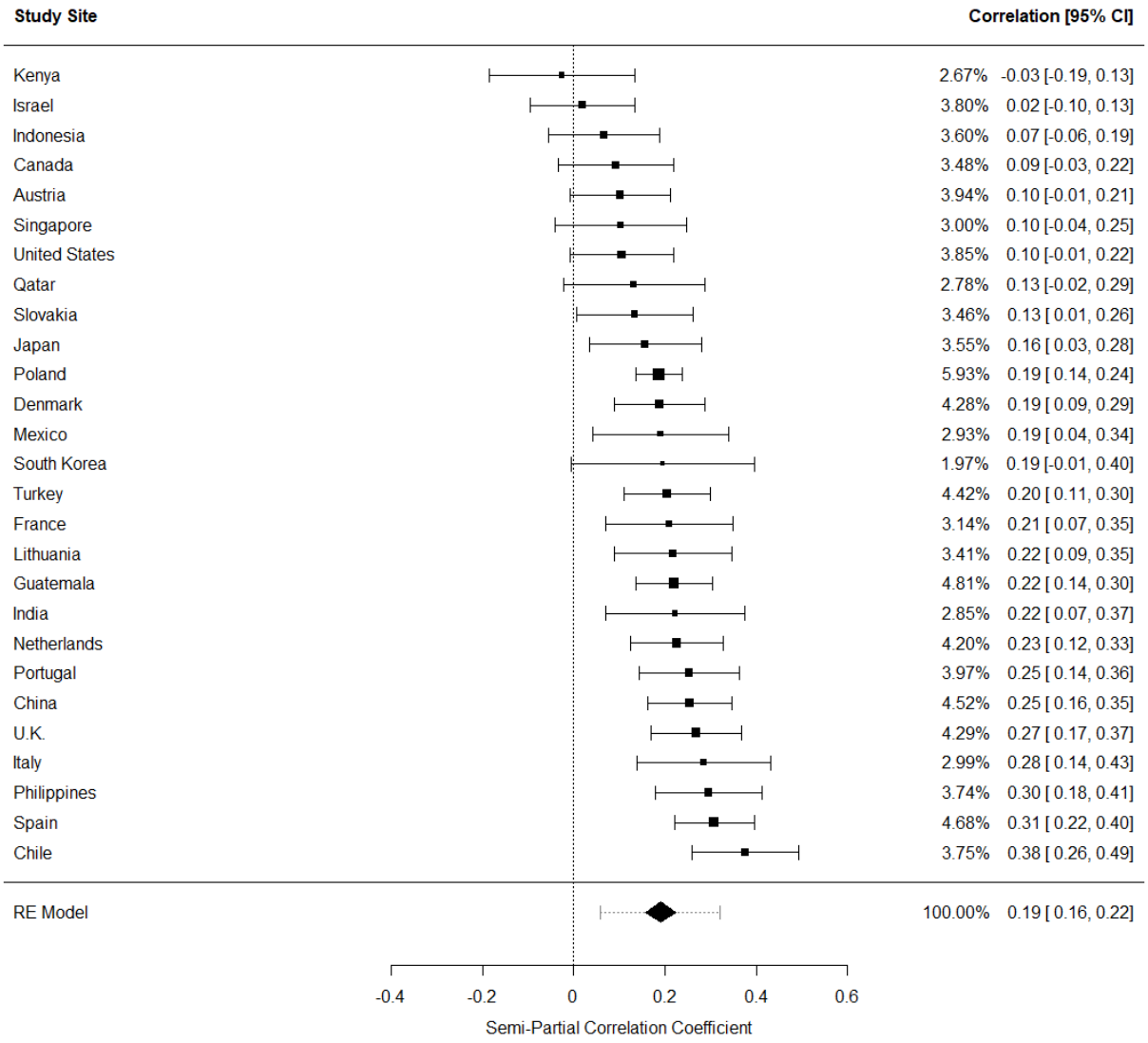

Figure S12. Results of random-effects meta-analysis examining the *semi-partial correlation* between traditionalism and the *internal-facing precautions composite* after *adjusting for the effects of the five suppressor variables*. Compare to Figure 3 in the main text.

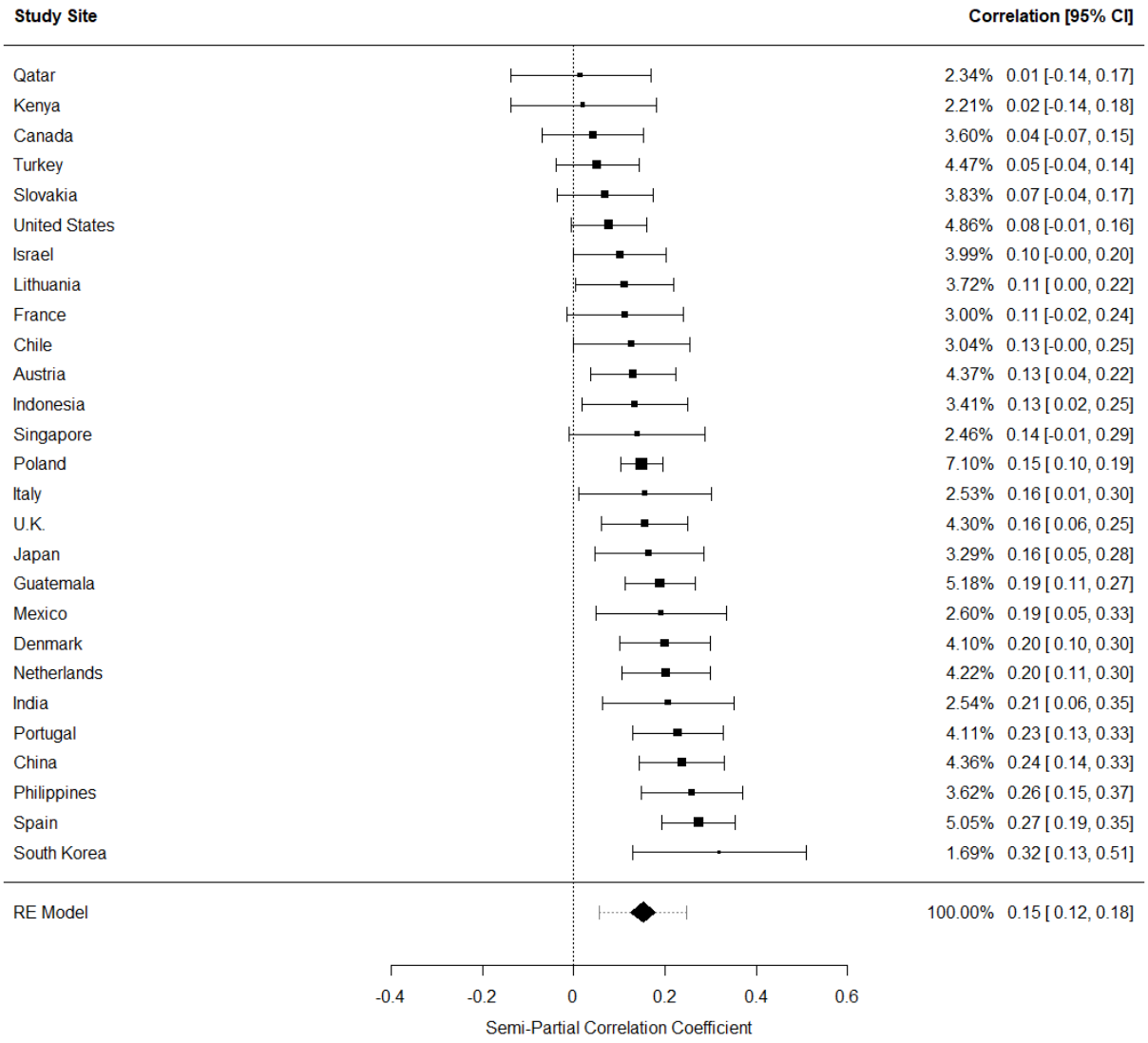

Figure S13. Results of random-effects meta-analysis examining the *semi-partial correlation* between traditionalism and the *external-facing precautions composite* after *adjusting for the effects of the five suppressor variables*. Compare to Figure 3 in the main text.

9. Traditionalism scale development

We included two pre-validated scales in order to measure traditionalism. First, we included the 6-item conventionalism subscale of the Aggression-Submission-Conventionalism scale[1], which measures the general tendency to endorse one's society's traditional social norms, setting aside the actual content of those traditions (e.g., "Traditions are the foundation of a

healthy society and should be respected"). Items were rated on 7-point scales, from "strongly disagree" to "strongly agree", and half of the items were reverse coded (e.g., "People emphasize tradition too much."). Second, we used the 4-item authority subscale from the Moral Foundations Questionnaire Short Version[2,32], 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". In particular, we chose to include the Moral Foundations and Conventionalism items because they have been widely tested in many languages in cross-cultural psychology research[33–35].

Because we wanted to measure the tendency to endorse traditional social norms as a general dimension of individual difference as broadly as possible, we were interested in whether all ten traditionalism items together (six from the Conventionalism scale, and four from the Moral Foundations authority scale) would reliably load onto a single traditionalism factor. First, we examined the correlation structure between the ten items by study site. We observed that, at some study sites, the three reverse-coded items from the conventionalism scale did not strongly and reliably negatively correlate with the positively coded items as would be expected (see Table S6 for the correlation between negatively-coded and positively-coded Conventionalism items by study site). Following a literature review, we found that reverse-coded items may frequently be problematic in cross-cultural psychological research[36–38]. We therefore dropped the three reverse-coded conventionalism items before conducting the factor analysis.

country	r	p-value
china	-0.13	0.018
japan	-0.14	0.039
philippines	0.12	0.065
italy	-0.49	0.000
chile	-0.34	0.000
mexico	-0.06	0.443
portugal	-0.45	0.000
qatar	-0.26	0.001
spain	-0.28	0.000
france	-0.40	0.000
uk	-0.56	0.000
israel	-0.24	0.000
lithuania	-0.39	0.000
guatemala	-0.32	0.000
singapore	-0.25	0.002
turkey	-0.43	0.000
netherlands	-0.48	0.000
korea	-0.24	0.007
indonesia	-0.16	0.009
slovakia	-0.43	0.000
poland	-0.50	0.000
austria	-0.32	0.000
canada	-0.30	0.000
us	-0.29	0.000
kenya	-0.22	0.012
denmark	-0.14	0.012
india	0.27	0.003

Table S6. Product-moment correlations between reverse and non-reverse coded conventionalism items by study site.

We then ran an exploratory factor analysis on the pooled sample across all study sites to determine whether it was appropriate to group the conventionalism and moral foundations authority items (minus the reverse-coded items, see above) into a single factor. First, we used the Kaieser-Meyer-Olkin (KMO) and Bartlett's test to determine whether these items were suitable for structure detection. The KMO test suggested that the strength of the relationships among the variables was moderately high (KMO = .75), and Bartlett's test was significant ($\chi 2$ (21) = 15,315.74, $p < .001$), suggesting that the use of factor analysis was appropriate.

The R package *parameters* [22] was then used to determine how many factors to extract. There was the most agreement between methods for a one-factor solution (see Figure S14).

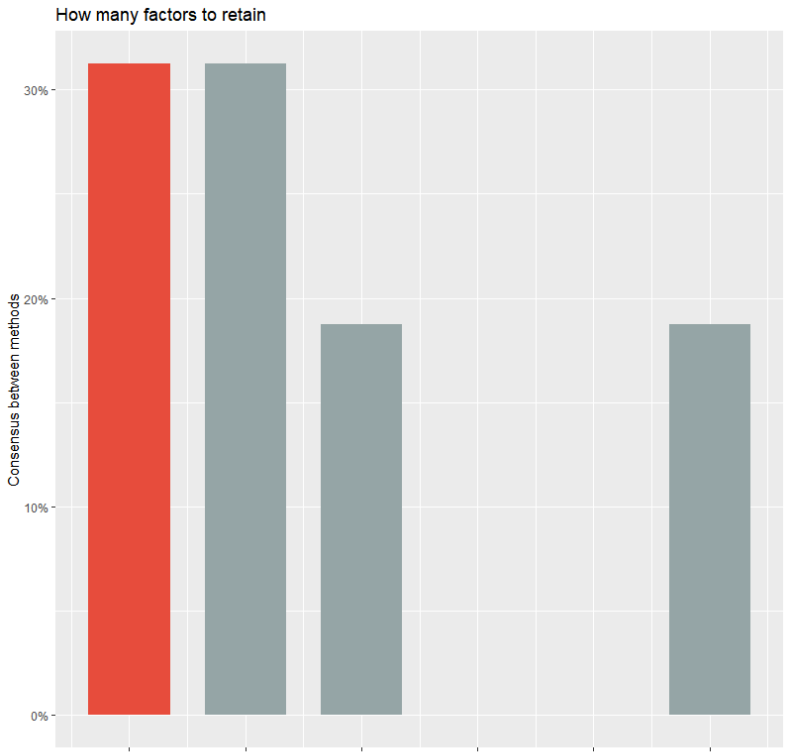

Figure S14. Graphical representation showing agreement between different methods for determining the number of factors to retain.

A factor analysis was then conducted with minimum residual extraction, and a Pearson's correlation matrix. A single factor was extracted. The single factor had a sum of squared loadings of 2.43, and explained 35% of the variance. To create a composite traditionalism factor, we then averaged together those items with factor loadings greater than .5, comprising six out of the seven items (see Table S7). Scale reliability for this composite varied quite widely across study sites (see Table S8).

Factor Analysis

	Factor 1
Traditions should be respected – conventionalism scale	.67
People should follow social norms – conventionalism scale	.63
People should respect social norms – conventionalism scale	.69
Importance of whether people show a lack of respect for authority – moral foundations authority scale	.51
Importance of whether people conform to traditions – moral foundations authority scale	.54
Men and women should have different roles in society – moral foundations authority scale	.44
Children should learn respect for authority – moral foundations authority scale	.60

Table S7. Factor loadings from an exploratory factor analysis on traditionalism items.

Country	Conventionalism scale	Moral Foundations Authority scale	Traditionalism Factor Composite
Austria	0.7105586	0.5655188	0.7309919
Canada	0.7516936	0.6350294	0.7951703
Chile	0.7061326	0.7561902	0.8470702
China	0.5875297	0.6148619	0.7127438
Denmark	0.6435492	0.5634853	0.7534785
France	0.7853885	0.6128833	0.8051261
Guatemala	0.7242010	0.6470017	0.8159033
India	0.2059427	0.6094132	0.6983367
Indonesia	0.5736353	0.2327229	0.6521108
Israel	0.6589104	0.5099610	0.6908832
Italy	0.8017381	0.5443016	0.7965177
Japan	0.6315254	0.5900602	0.7394633
Kenya	0.6007971	0.4363724	0.5270011
South Korea	0.6057268	0.5602076	0.7005701
Lithuania	0.7723525	0.6328137	0.7896508
Mexico	0.5945571	0.5231161	0.7019779
Netherlands	0.7891934	0.6213683	0.7667636
Philippines	0.5385436	0.5892432	0.8055702
Poland	0.8142883	0.6945428	0.8157230
Portugal	0.7958263	0.6911884	0.8254066
Qatar	0.6789908	0.2812414	0.3878252
Singapore	0.6793446	0.6854164	0.7707547
Slovakia	0.7626441	0.4884737	0.6777858
Spain	0.7102364	0.6048047	0.7868105
Turkey	0.7759173	0.7738583	0.8112405
UK	0.8488891	0.7563903	0.8755346
US	0.6949864	0.7360622	0.7846093

Table S8. Cronbach's alphas by study site for the Traditionalism composite used to measure traditionalism in the main text analyses, as well as for the Moral Foundations Authority and Conventionalism subscales included in the survey.

In order to determine whether the lack of scale reliability at some of the study sites was affecting results, we first conducted meta-analyses that replicated the main text analyses (see Figures 1 and 3), disattenuating for unreliability; this did not conceptually change the results (see Figures S7 and S8). Next, we re-ran the main text meta-analyses using each of the six items individually from our traditionalism factor, in place of the composite traditionalism score (see Figures S15-S26). Although effect sizes varied some, results did not conceptually differ across items, suggesting that the pattern of association between traditionalism-related items and precautions is consistent, and low scale reliability at some study sites did not conceptually impact the results.

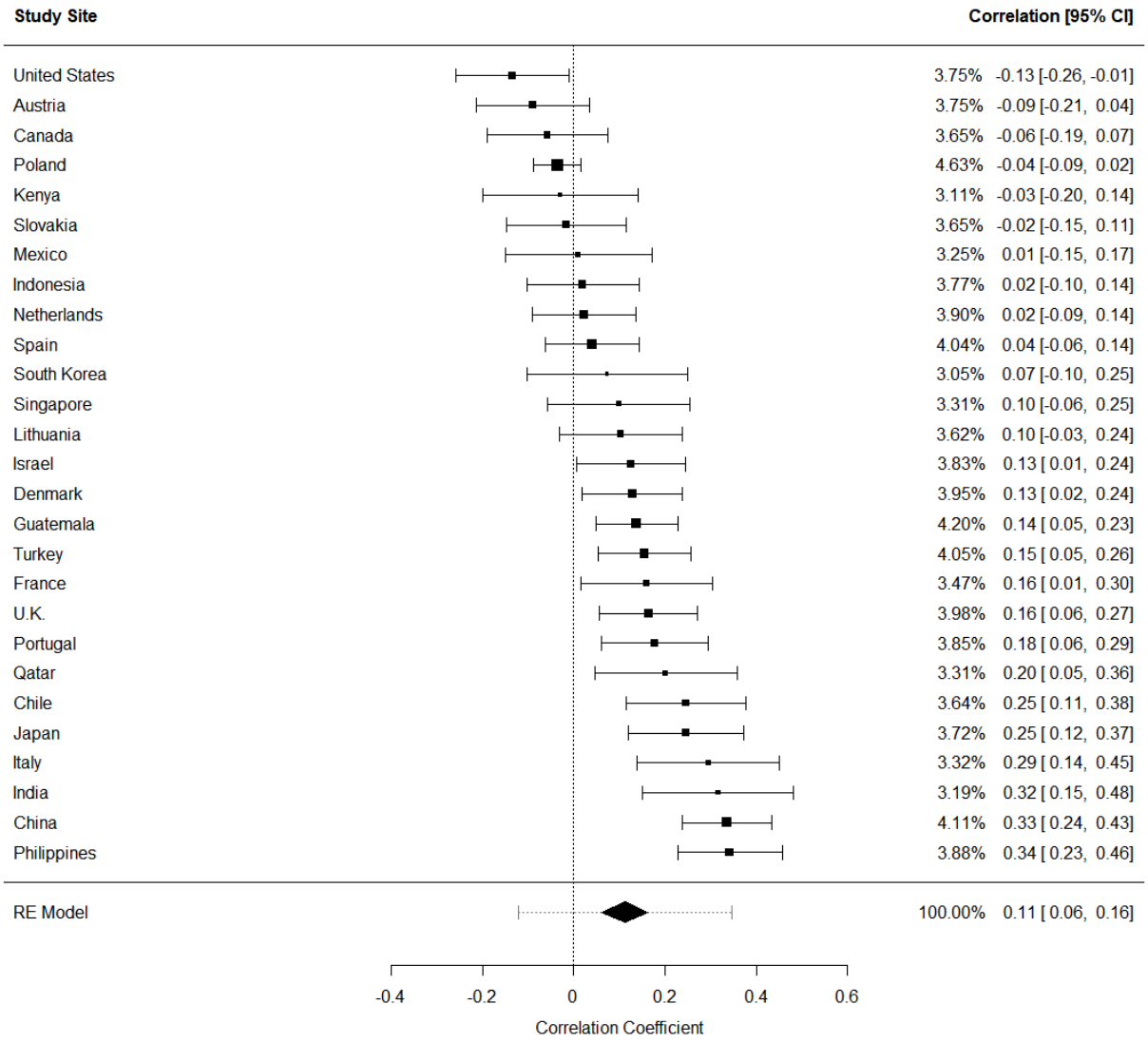

Figure S15. Results of random-effects meta-analysis examining the *zero-order correlation* between the traditionalism item *traditions should be respected* and the COVID-19 health precautions composite. Compare to Figure 1 in the main text.

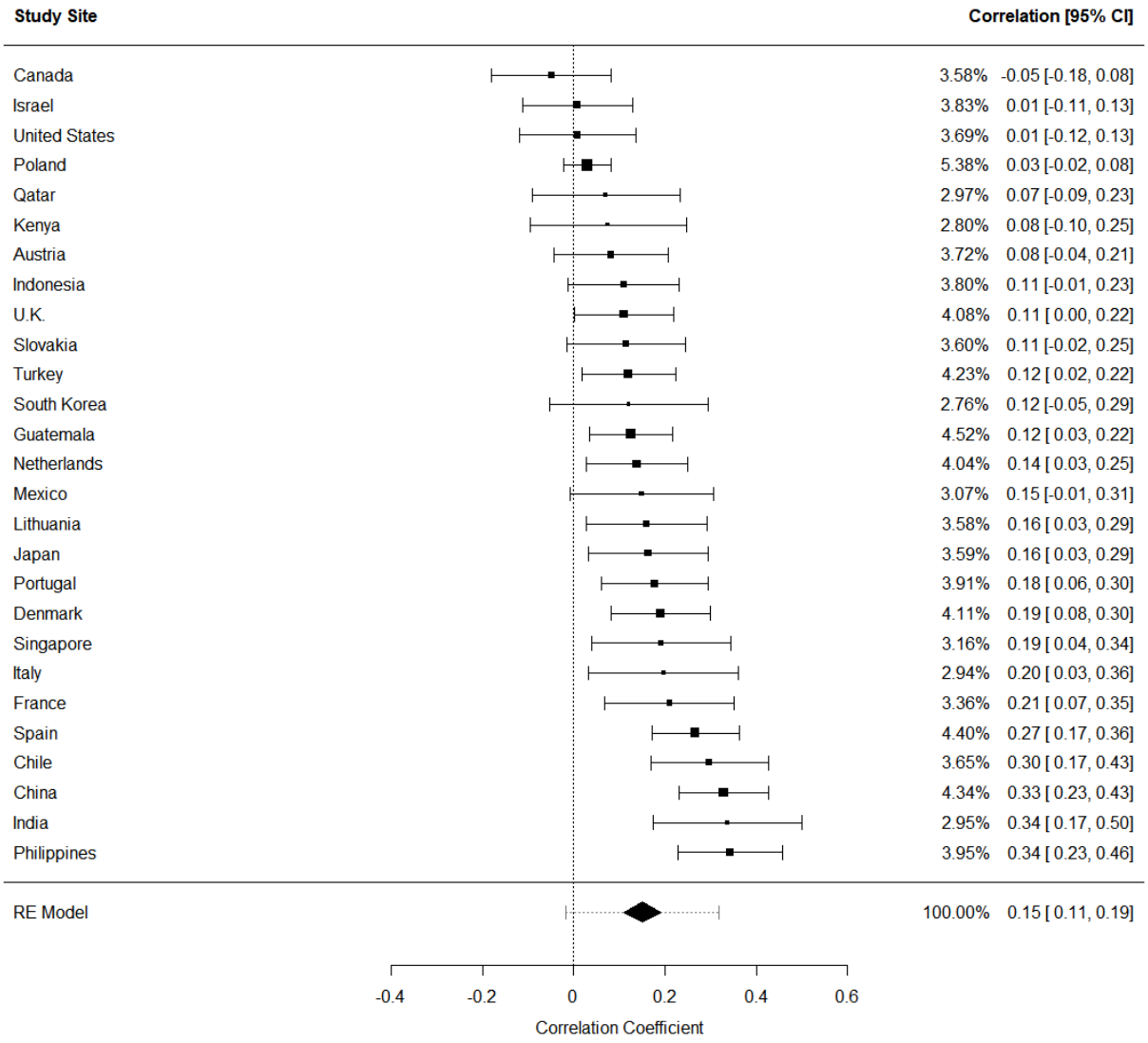

Figure S16. Results of random-effects meta-analysis examining the *zero-order correlation* between the traditionalism item *people should follow social norms* and the COVID-19 health precautions composite. Compare to Figure 1 in the main text.

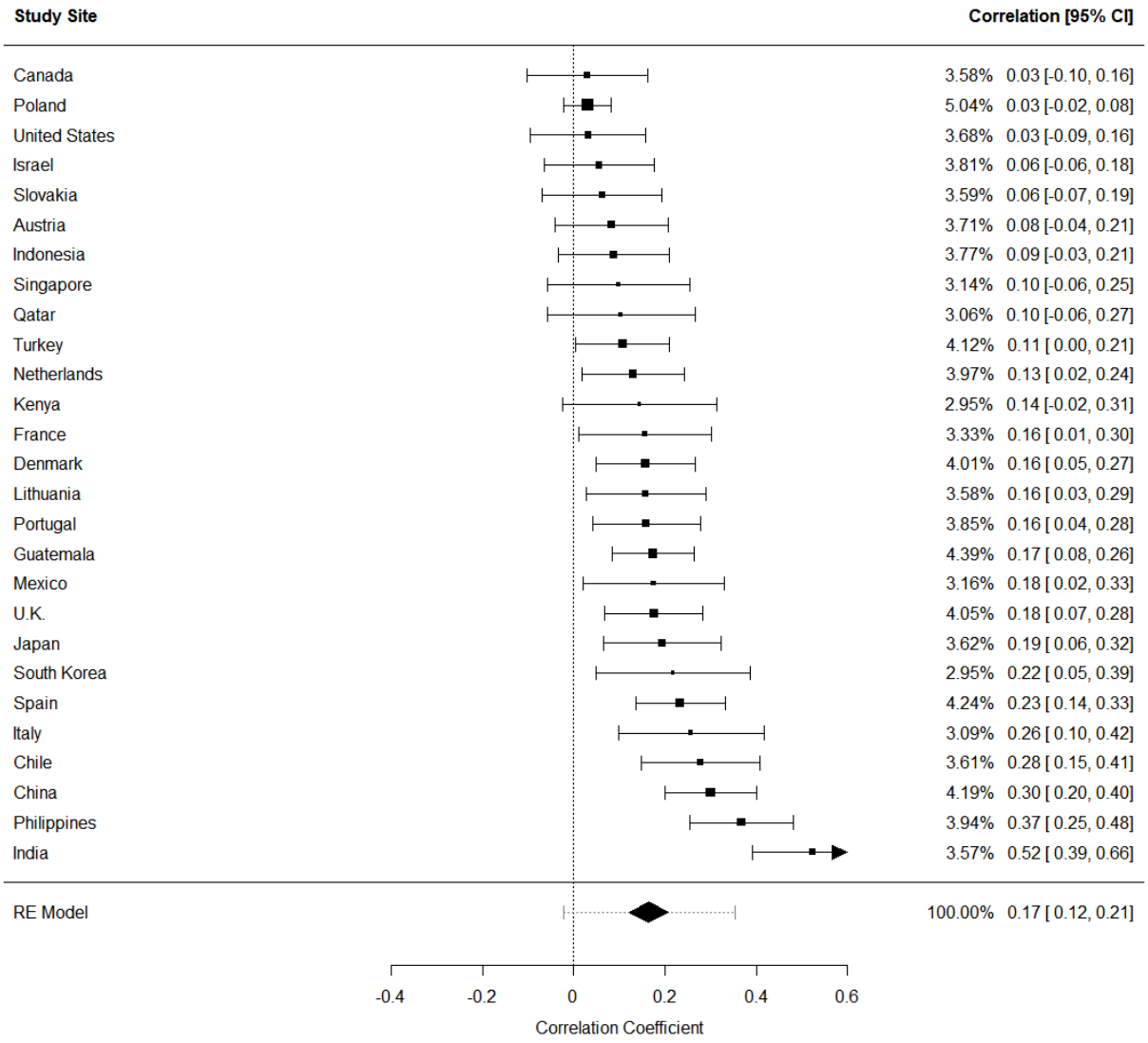

Figure S17. Results of random-effects meta-analysis examining the *zero-order correlation* between the traditionalism item *people should respect social norms* and the COVID-19 health precautions composite. Compare to Figure 1 in the main text.

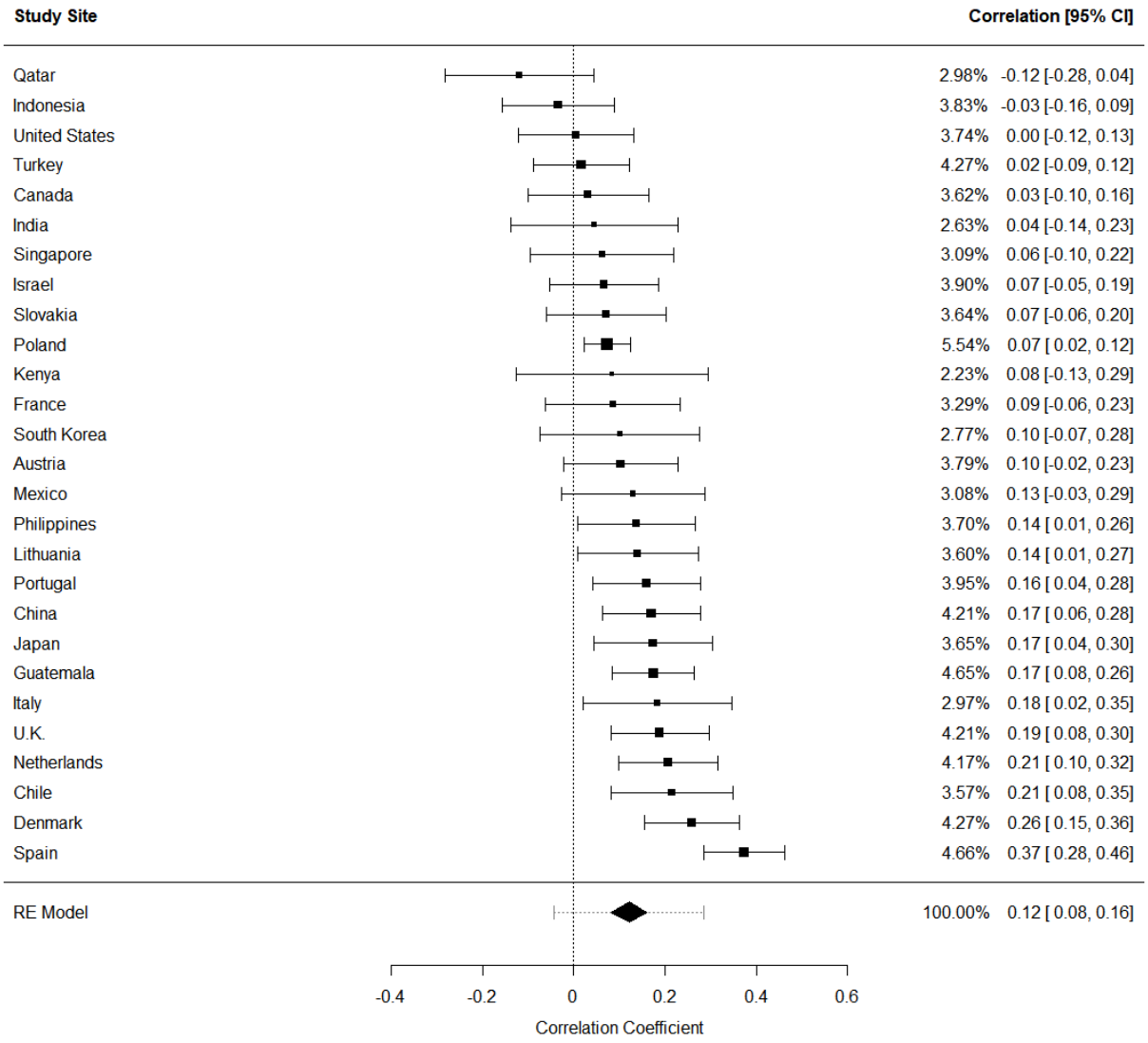

Figure S18. Results of random-effects meta-analysis examining the *zero-order correlation* between the traditionalism item *importance of whether people show a lack of respect for authority* and the COVID-19 health precautions composite. Compare to Figure 1 in the main text.

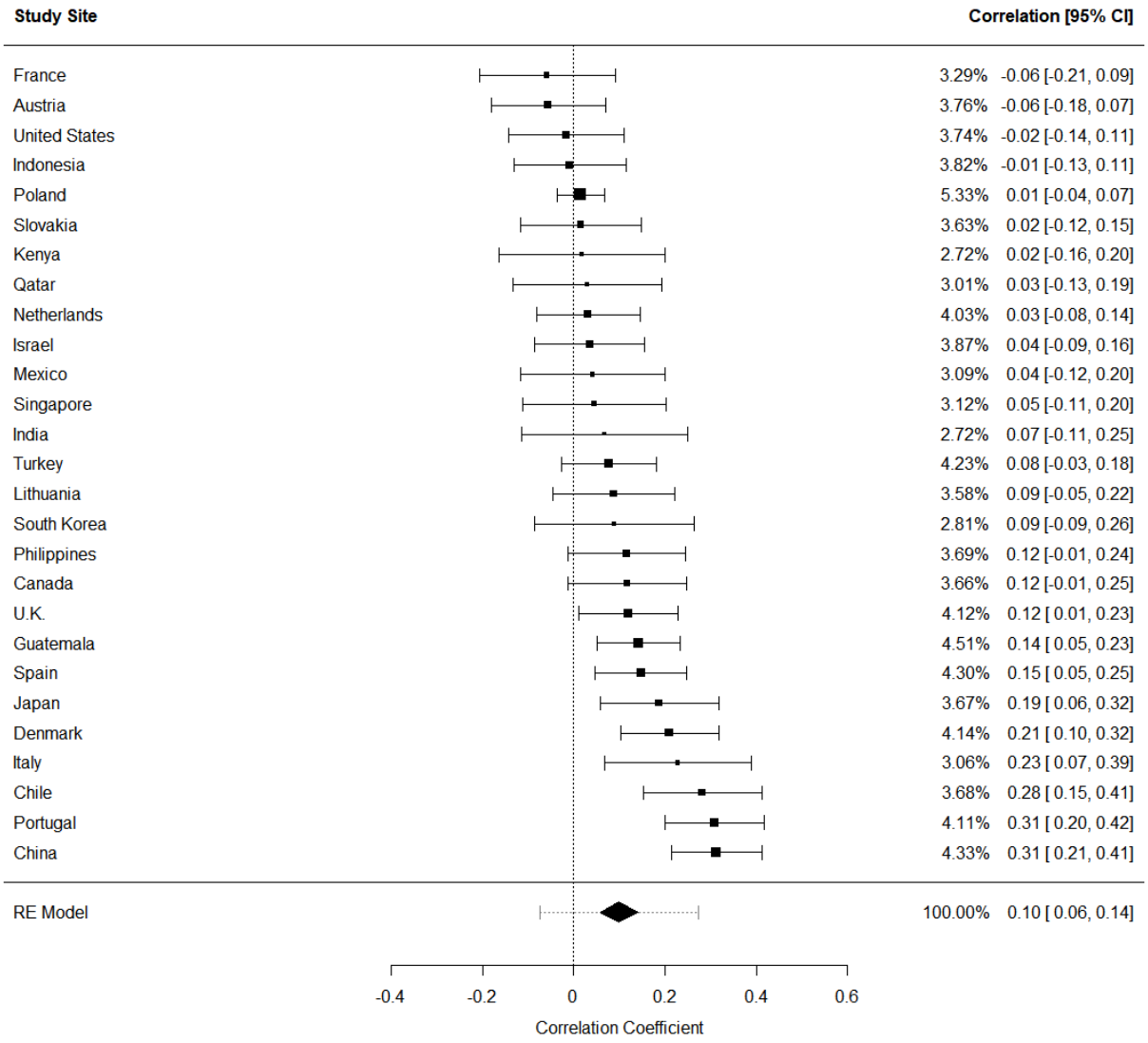

Figure S19. Results of random-effects meta-analysis examining the *zero-order correlation* between the traditionalism item *importance of whether people conform to traditions* and the COVID-19 health precautions composite. Compare to Figure 1 in the main text.

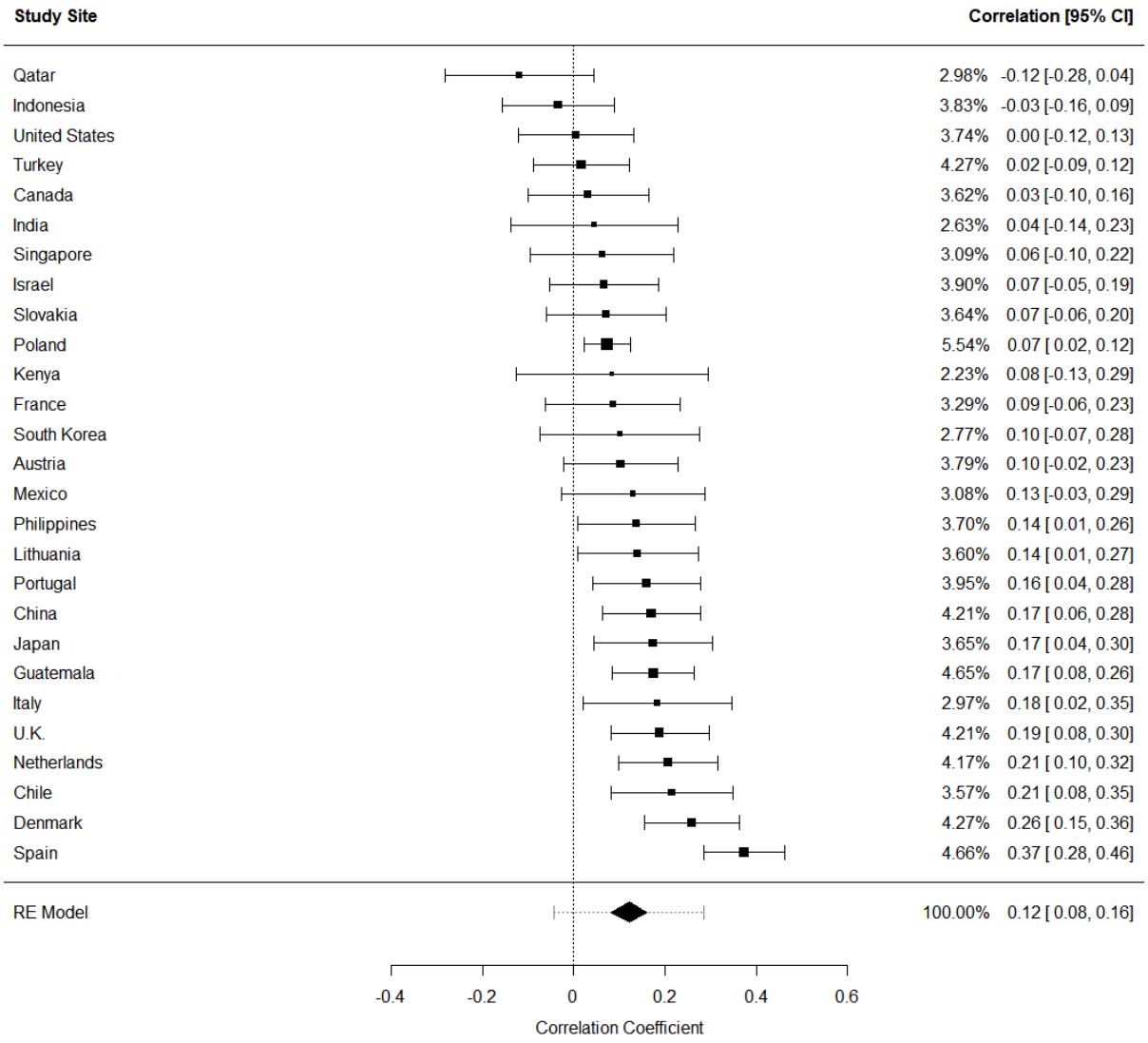

Figure S20. Results of random-effects meta-analysis examining the *zero-order correlation* between the traditionalism item *children should learn respect for authority* and the COVID-19 health precautions composite. Compare to Figure 1 in the main text.

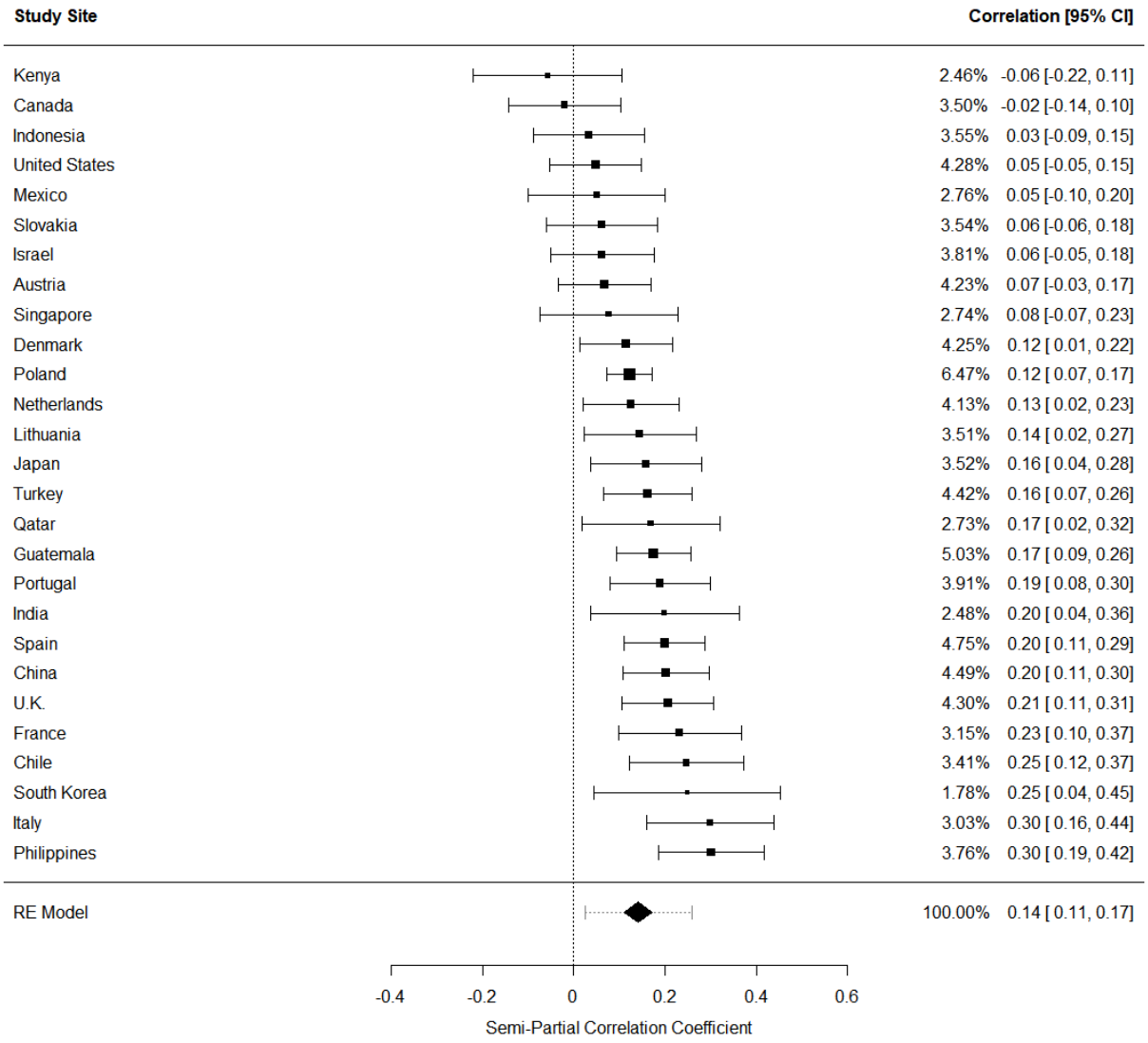

Figure S21. Results of random-effects meta-analysis examining the *semi-partial correlation* between the traditionalism item *traditions should be respected* and the COVID-19 health precautions composite after *adjusting for the effects of the five suppressor variables*. Compare to Figure 3 in the main text.

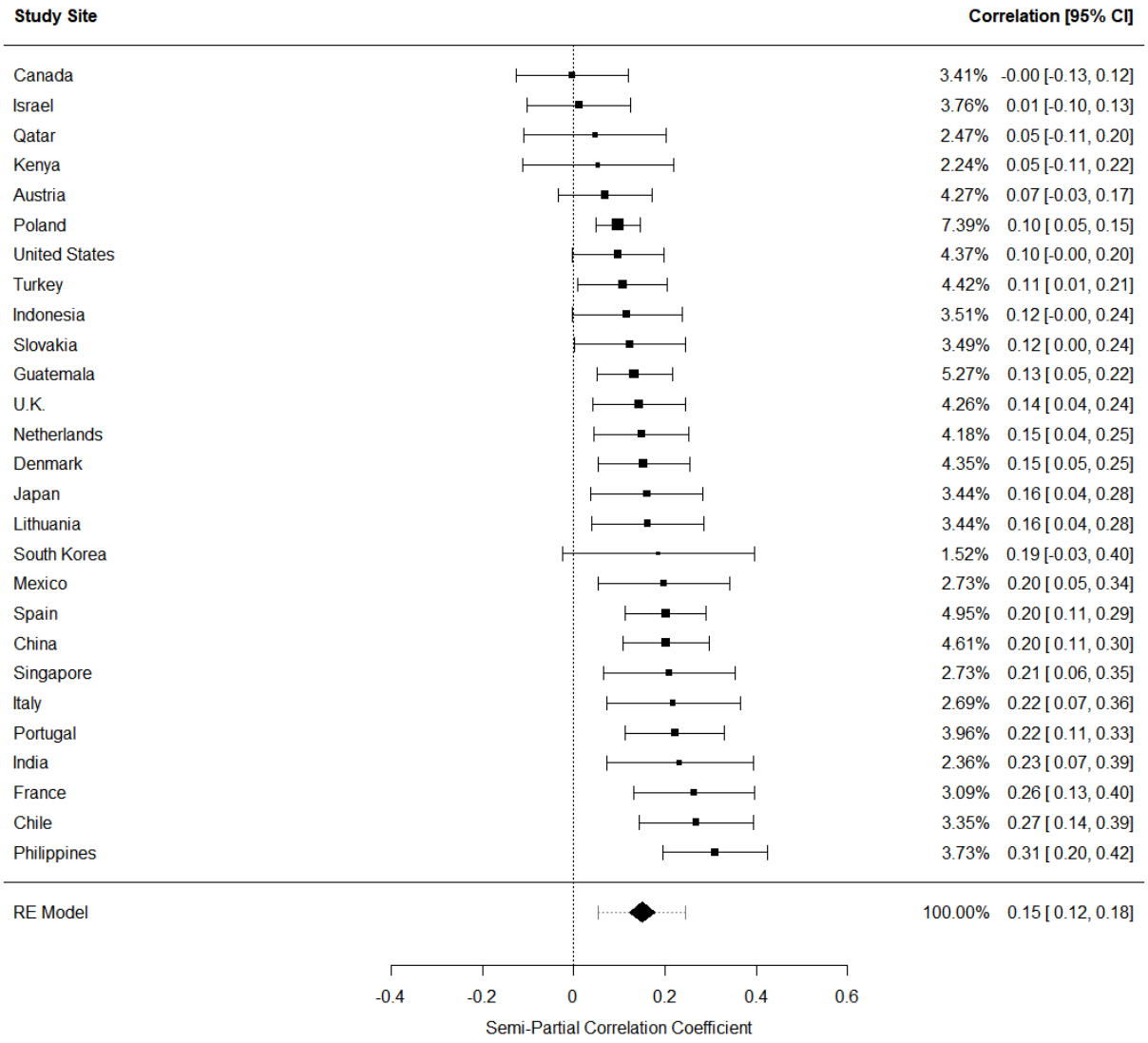

Figure S22. Results of random-effects meta-analysis examining the *semi-partial correlation* between the traditionalism item *people should follow social norms* and the COVID-19 health precautions composite after *adjusting for the effects of the five suppressor variables*. Compare to Figure 3 in the main text.

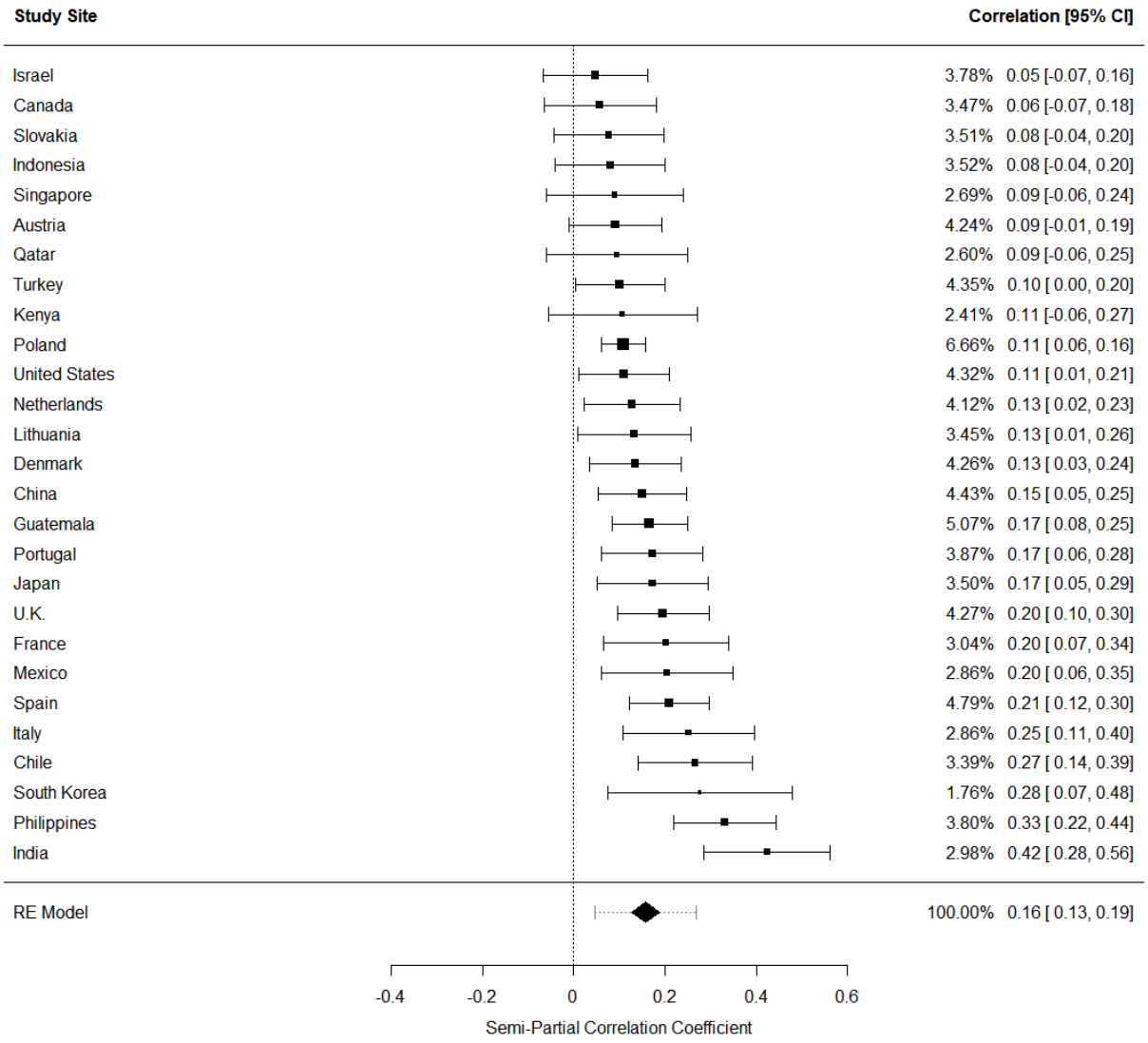

Figure S23. Results of random-effects meta-analysis examining the *semi-partial correlation* between the traditionalism item *people should respect social norms* and the COVID-19 health precautions composite after *adjusting for the effects of the five suppressor variables*. Compare to Figure 3 in the main text.

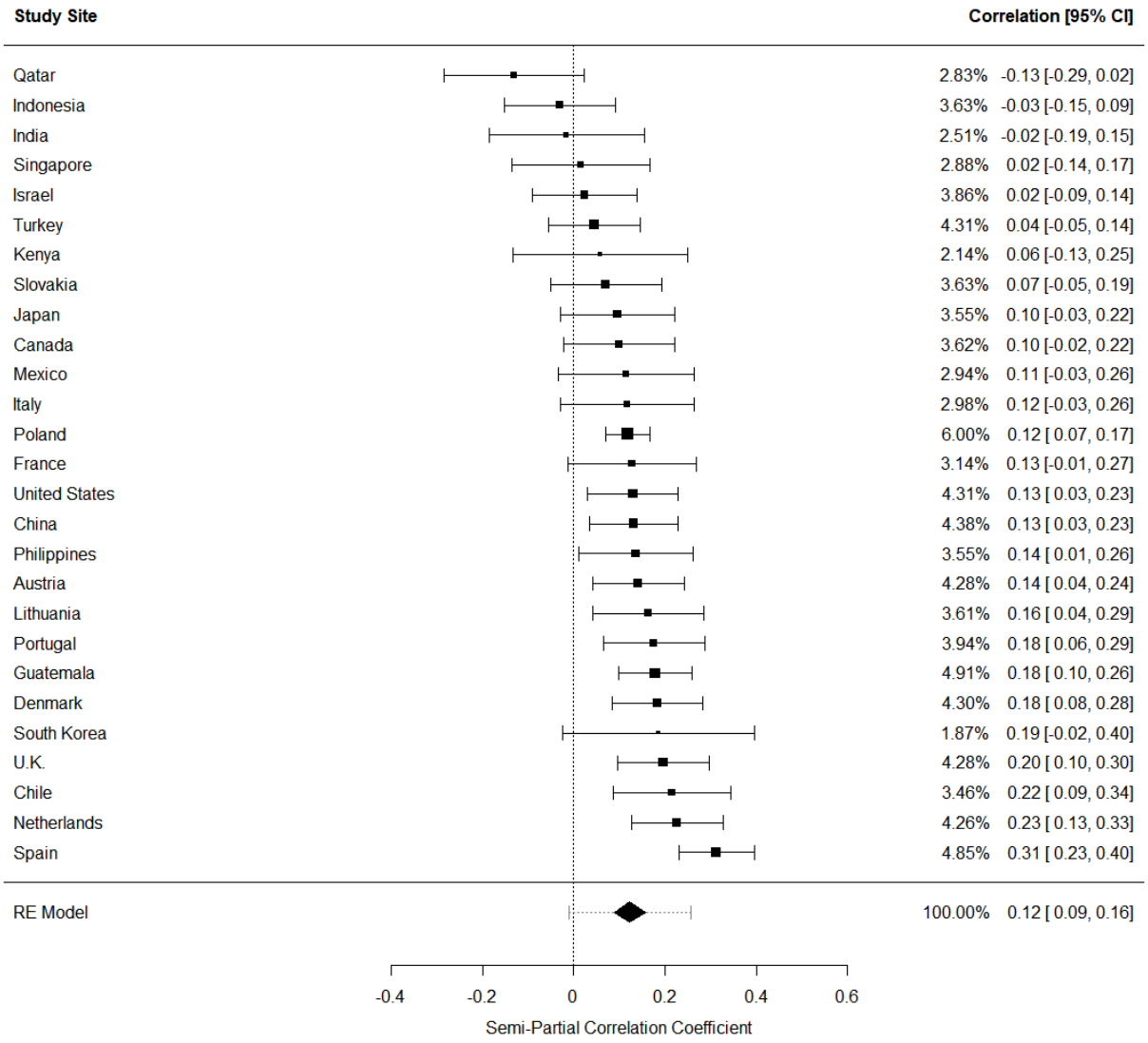

Figure S24. Results of random-effects meta-analysis examining the *semi-partial correlation* between the traditionalism item *importance of whether people show a lack of respect for authority* and the COVID-19 health precautions composite after *adjusting for the effects of the five suppressor variables*. Compare to Figure 3 in the main text.

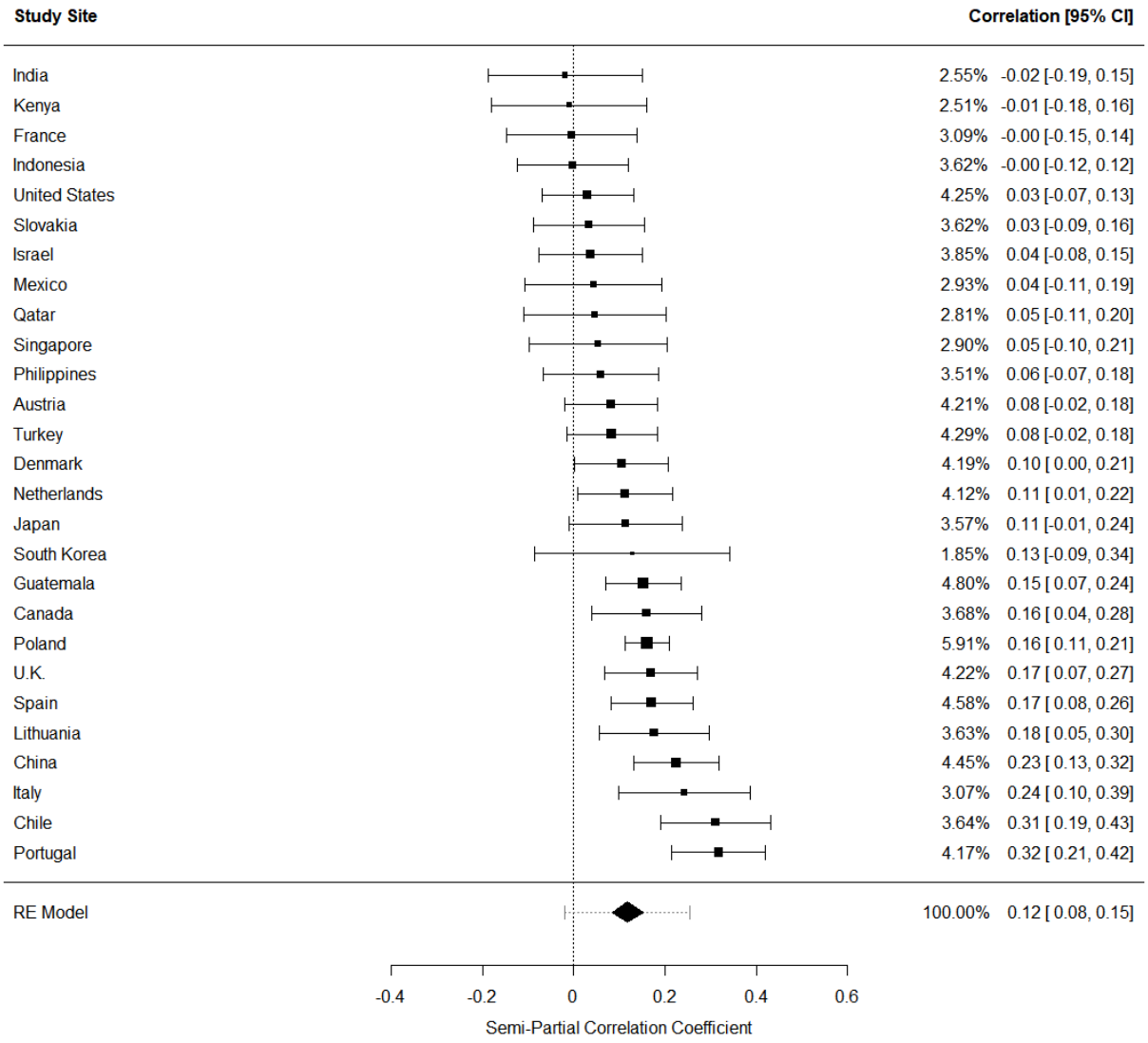

Figure S25. Results of random-effects meta-analysis examining the *semi-partial correlation* between the traditionalism item *importance of whether people conform to traditions* and the COVID-19 health precautions composite after *adjusting for the effects of the five suppressor variables*. Compare to Figure 3 in the main text.

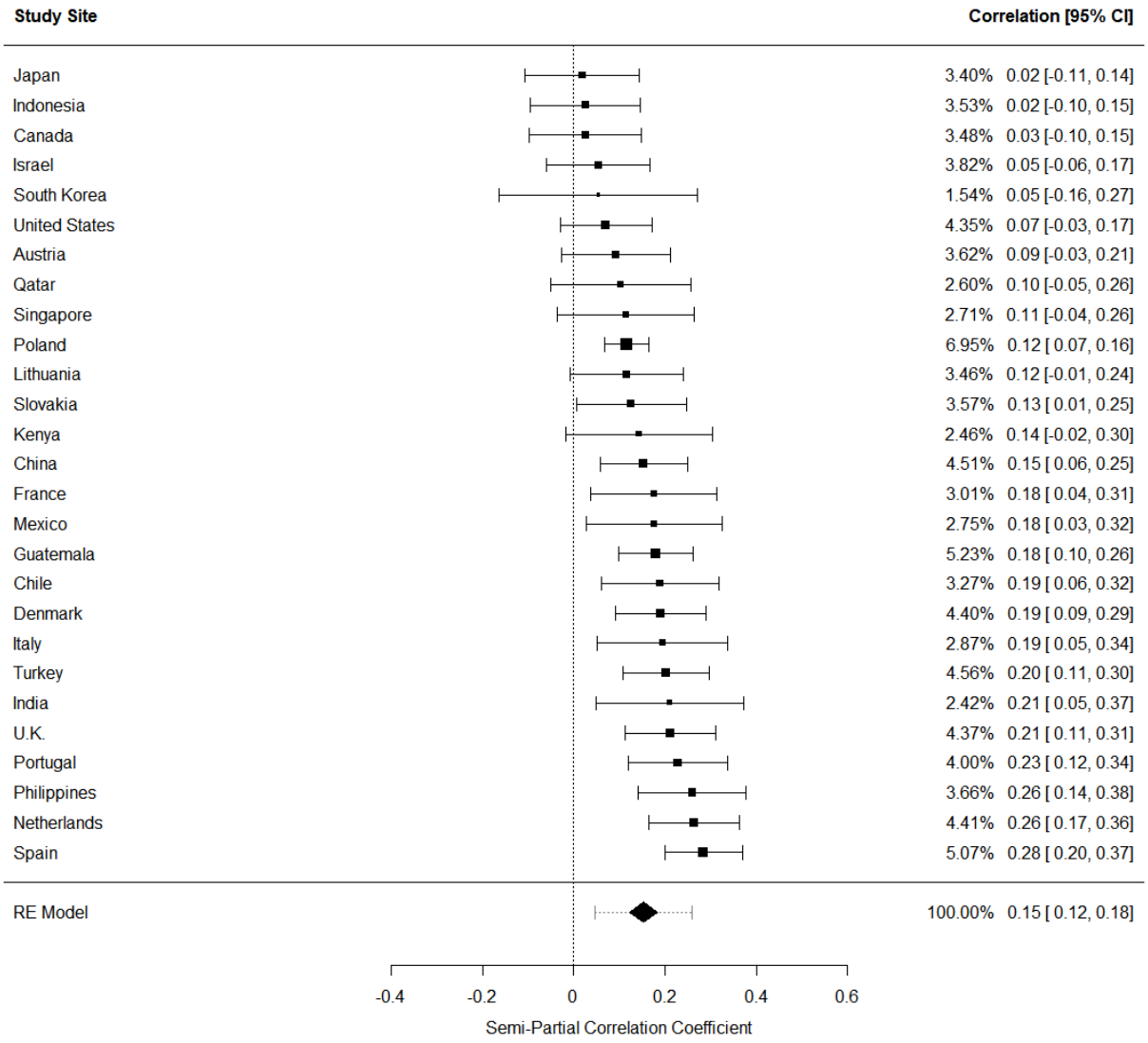

Figure S26. Results of random-effects meta-analysis examining the *semi-partial correlation* between the traditionalism item *children should learn respect for authority* and the COVID-19 health precautions composite after *adjusting for the effects of the five suppressor variables*. Compare to Figure 3 in the main text.

We also tested whether results reported with the traditionalism composite were sensitive to the fact that the reverse-coded conventionalism items had been removed. main text results did not substantially conceptually change when we used a more expansive traditionalism composite that included all items (including the reverse coded ones) from the conventionalism and moral foundations authority subscales (see Figures S27-S28). However, effect sizes were smaller, which we attribute to the noise introduced by the reverse-coded items. Likewise, meta-analysis results did not conceptually change when substituting composites based on either the original Conventionalism or Moral Foundations authority subscales for the main text traditionalism

composite (see Figures S29-S32), although effect sizes tended to be lower due to increased noise. See Table S8 for scale reliabilities for the Conventionalism and Authority composites. Taken in sum, traditionalism could be measured in several different ways based on the data that were collected. Although there were researcher degrees of freedom in making decisions about how to construct a reliable traditionalism composite, using alternative decision-points results in conceptually similar findings, suggesting that results are robust to these kinds of research decisions.

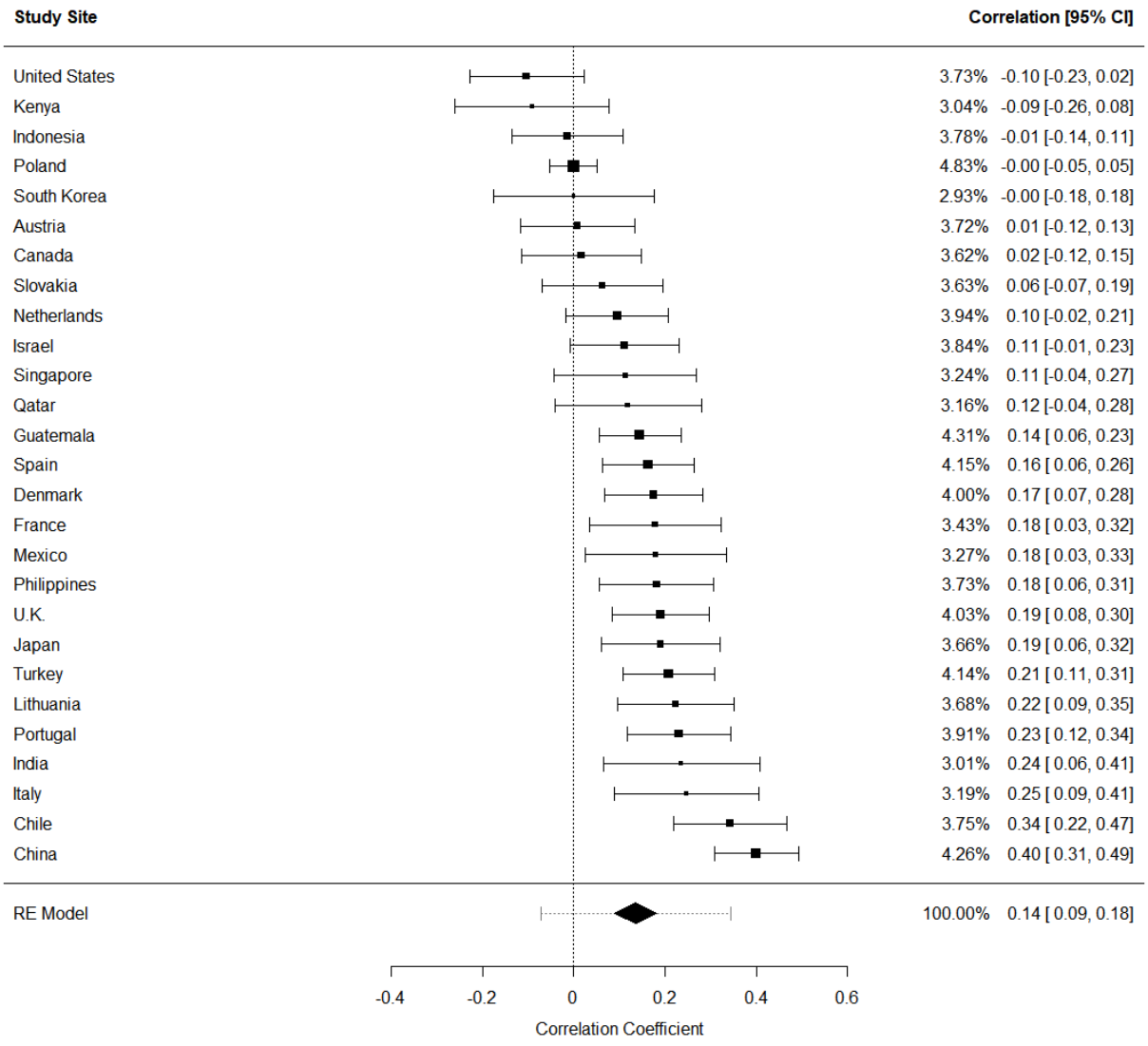

Figure S27. Results of random-effects meta-analysis examining the *zero-order correlation* between a traditionalism composite comprising all items from the Conventionalism and Moral Foundations Authority subscales (including reverse-coded ones) and the COVID-19 health precautions composite. Compare to Figure 1 in the main text.

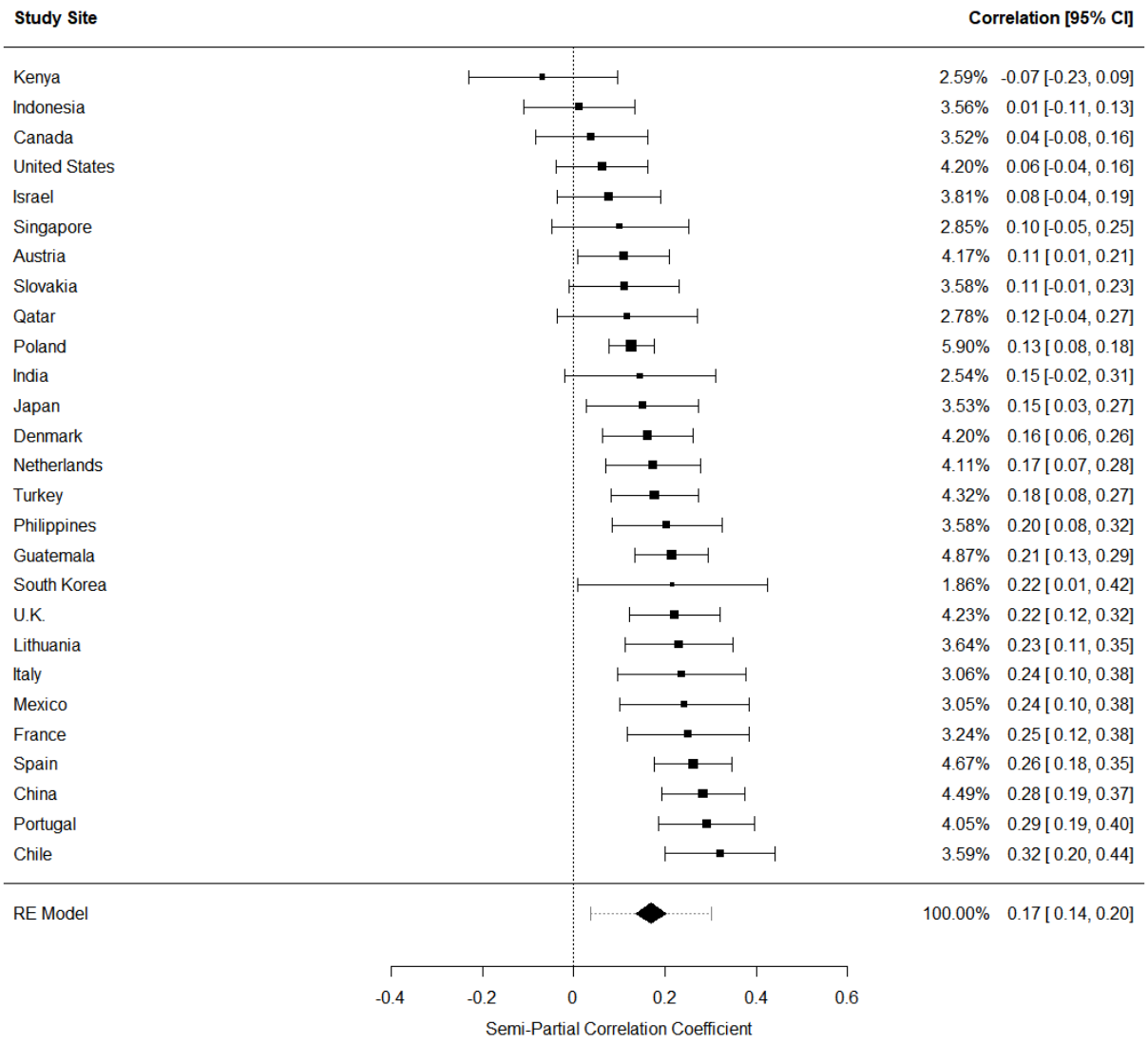

Figure S28. Results of random-effects meta-analysis examining the *semi-partial correlation* between a traditionalism composite comprising all items from the Conventionalism and Moral Foundations Authority subscales (including reverse-coded ones) and the COVID-19 health precautions composite after adjusting for the effects of the five suppressor variables. Compare to Figure 3 in the main text.

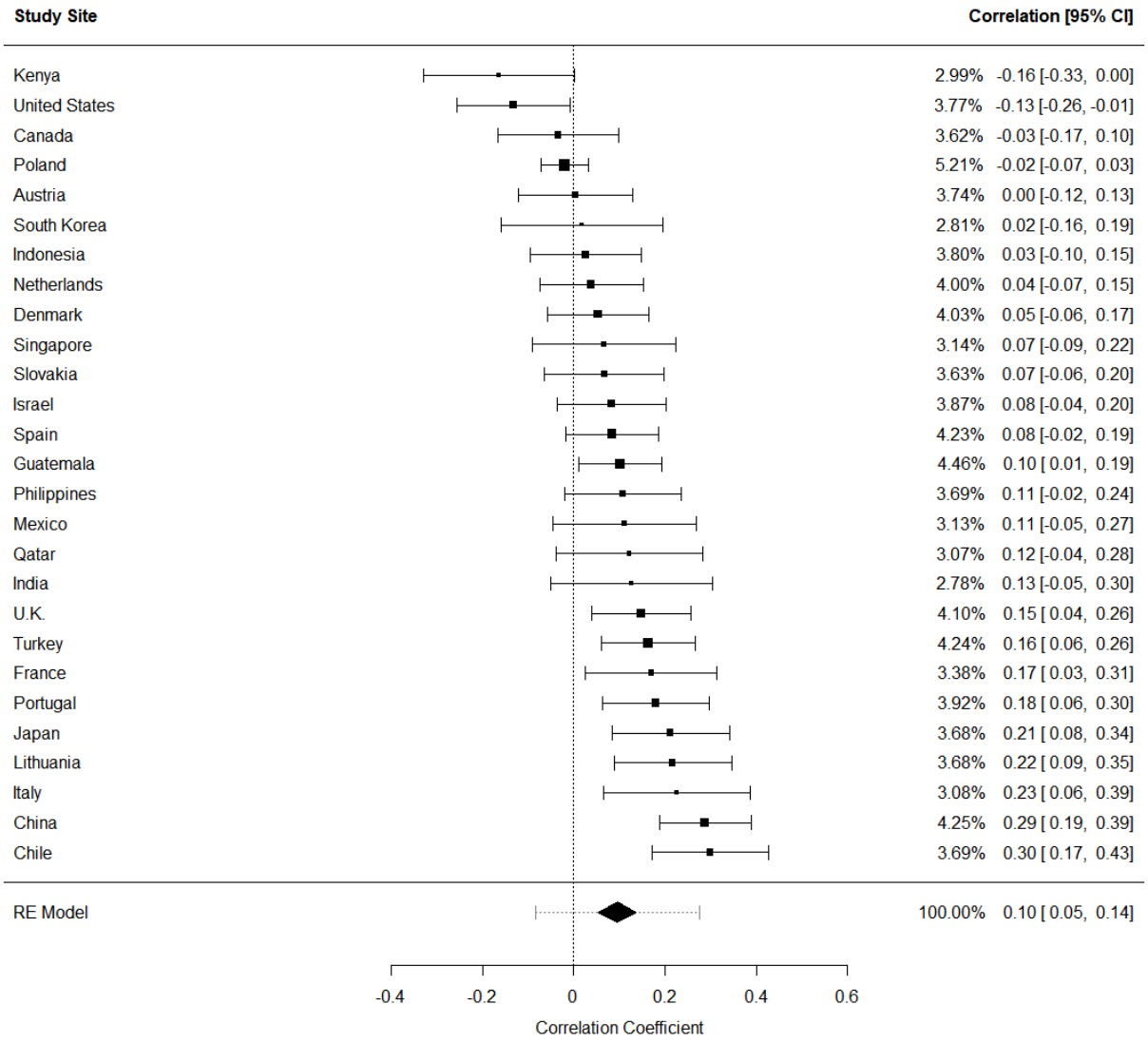

Figure S29. Results of random-effects meta-analysis examining the *zero-order correlation* between the Conventionalism subscale and the COVID-19 health precautions composite. Compare to Figure 1 in the main text.

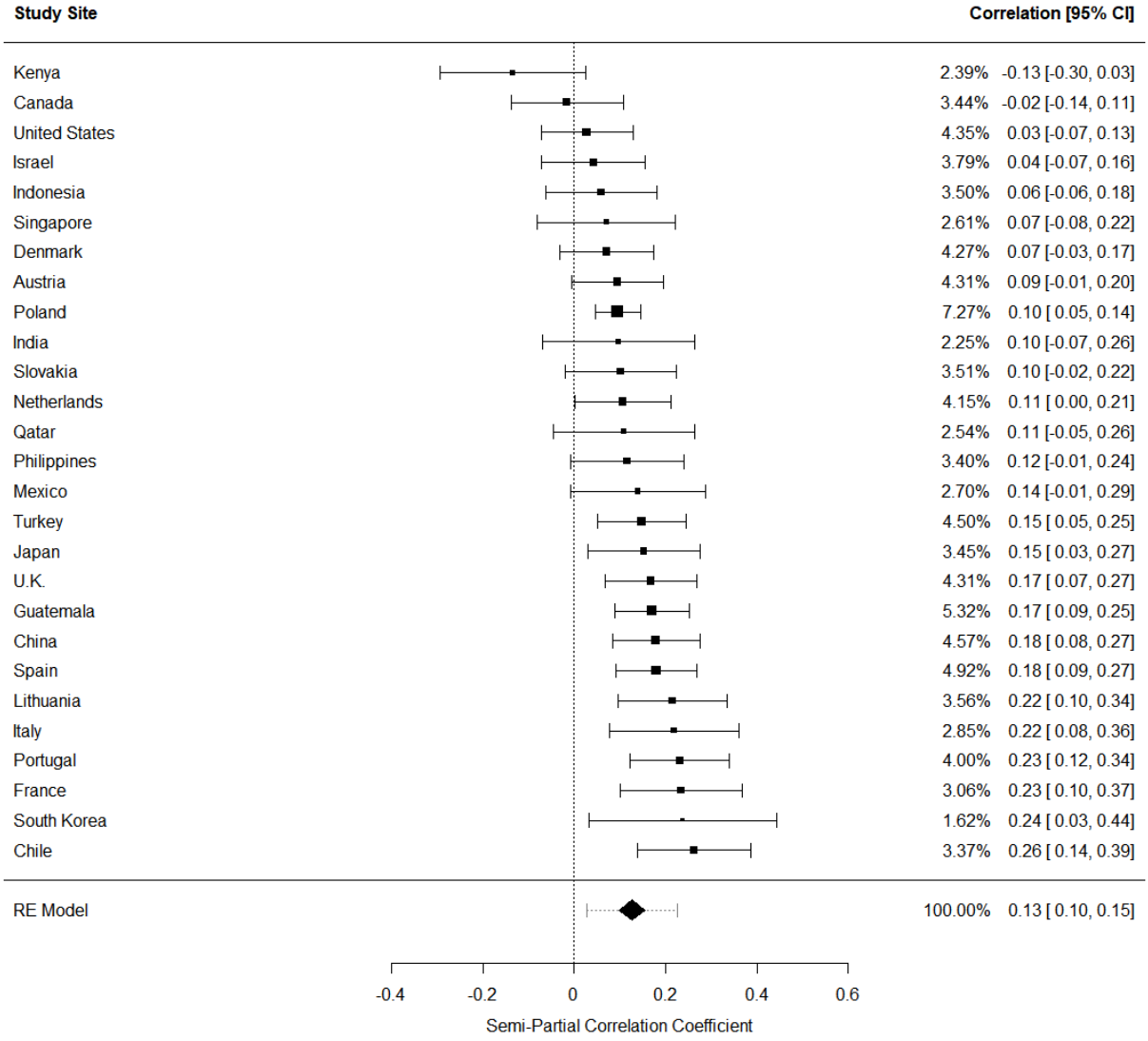

Figure S30. Results of random-effects meta-analysis examining the *semi-partial correlation* between the Conventionalism subscale and the COVID-19 health precautions composite after adjusting for the effects of the five suppressor variables. Compare to Figure 3 in the main text.

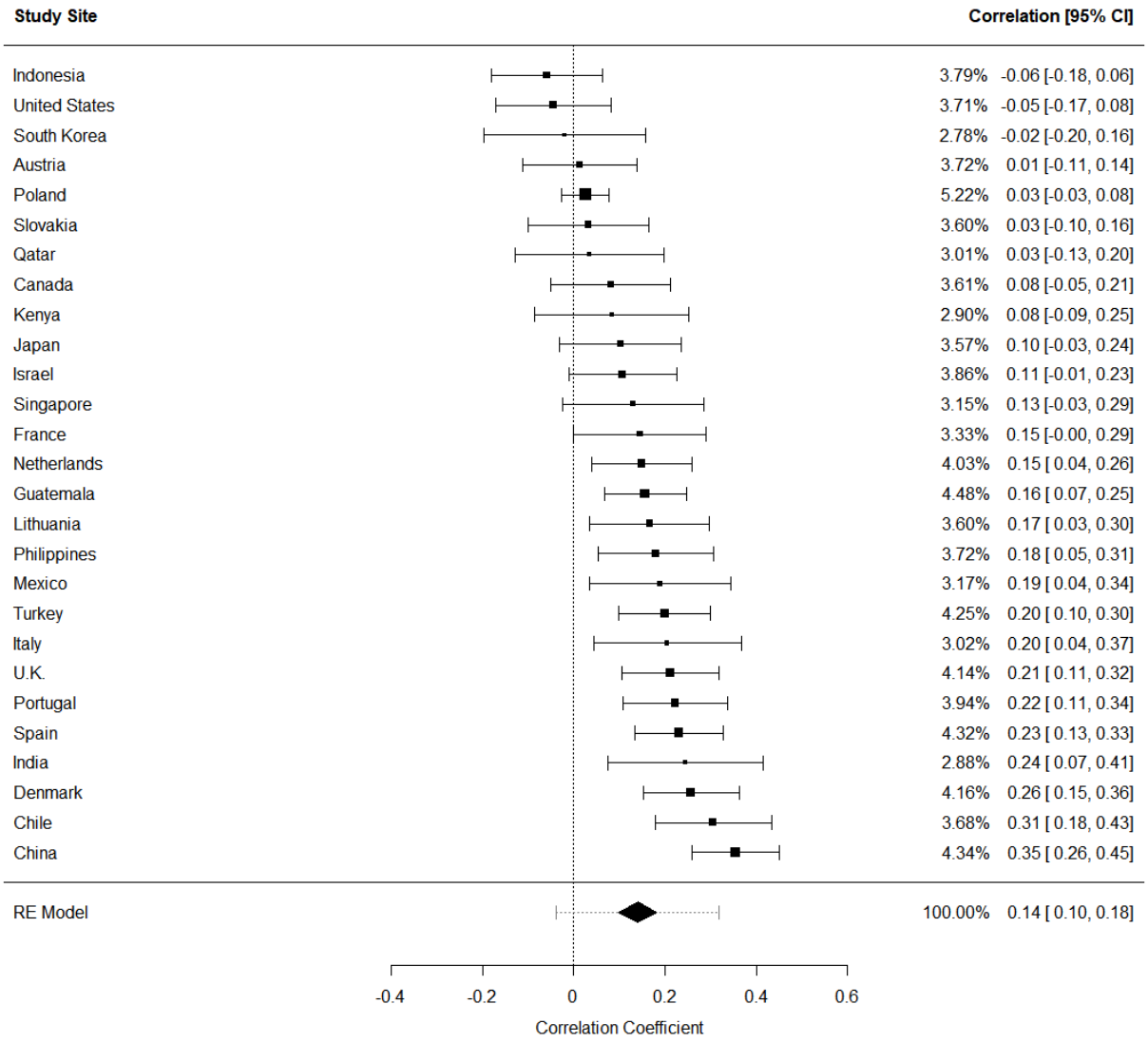

Figure S31. Results of random-effects meta-analysis examining the *zero-order correlation* between the Moral Foundations Authority subscale and the COVID-19 health precautions composite. Compare to Figure 1 in the main text.

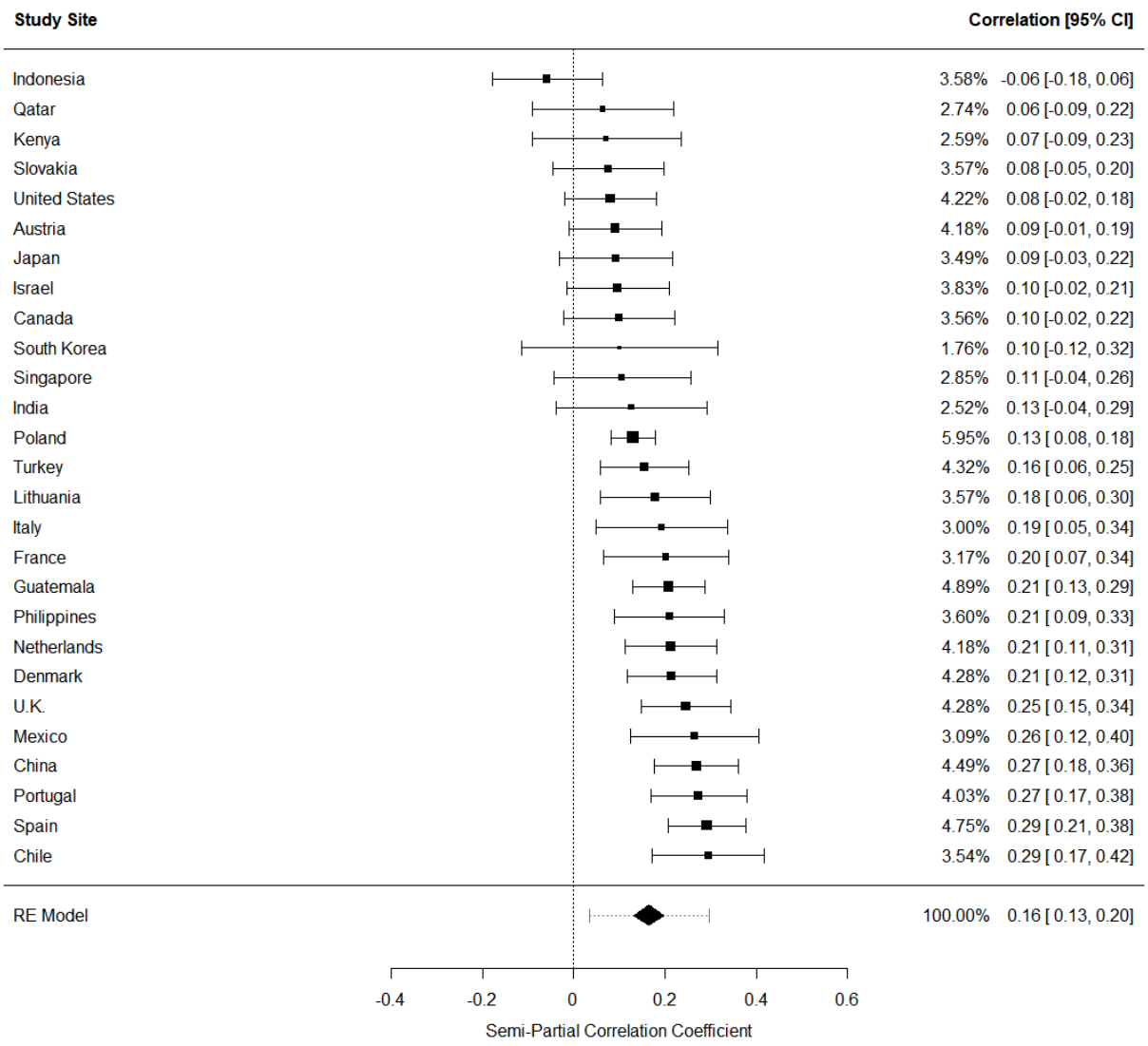

Figure S32. Results of random-effects meta-analysis examining the *semi-partial correlation* between the Moral Foundations Authority subscale and the COVID-19 health precautions composite after adjusting for the effects of the five suppressor variables. Compare to Figure 3 in the main text.

10. Traditionalism-precautions relationship using factor scores

In the main text analyses, we used composite variables for traditionalism and COVID-19 precautions that were comprised of raw averages of all the items that loaded onto each respective factor (e.g. traditionalism, internal-facing precautions, etc.). See pages S30 and S38 for details on factor analyses. 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, we extracted factor scores for the traditionalism factor, the internal-facing precautions factor, the external-facing precautions factor, and the combined overall public health precautions factor (where all public health precautions items—both external- and internal-facing—load onto a single factor). Then, we examined the correlations between the factor scores, and the composite variables based on raw averages. We fit a series of random-intercepts linear mixed models (estimated using REML) to examine the relationships between the factor scores and composited averages, including country as a random effect. For all four variables, the factor scores were highly correlated with the composited averages, as follows: traditionalism (marginal R2 = .97, β = .98, 95% CI [.97, .98), t(7,304) = 491.55, $p < .001$); internal-facing precautions (marginal R2 = .96, β = .98, 95% CI [.98, .99), t(7,462) = 396.65, $p < .001$); external-facing precautions (marginal R2 = .97, β = .98, 95% CI [.98, .98), t(7,462) = 500.29, $p < .001$); overall public health precautions (marginal R2 = .98, β = .99, 95% CI [.98, .99), t(7,523) = 607.76, $p < .001$).

We then re-analyzed the main text results using the factor scores instead of the composited averages. The relationship between traditionalism and COVID-19 health precautions did not conceptually change as a product of using the factor scores, see Figures S33 and S34. Likewise, the interaction between subscale and traditionalism was conceptually unaltered when using factor scores instead of composited averages (compare to Figure 4 in the main text). Using the factor scores, there was an interaction between health precautions subscale and traditionalism ($B = .09$, SE = .01, $t(6,993) = 10.37$, $p < .001$). A simple slopes analysis revealed that the correlation between traditionalism and internal-facing precautions ($B = .22$, SE = .01, $t(6,993) = 20.79$, $p < .001$) was about twice as strong as the correlation between traditionalism and external-facing precautions ($B = .13$, SE = .01, $t(6,993) = 12/02$, $p < .001$). Note that the factor scores were rescaled to the original 1-7 scale used by participants.

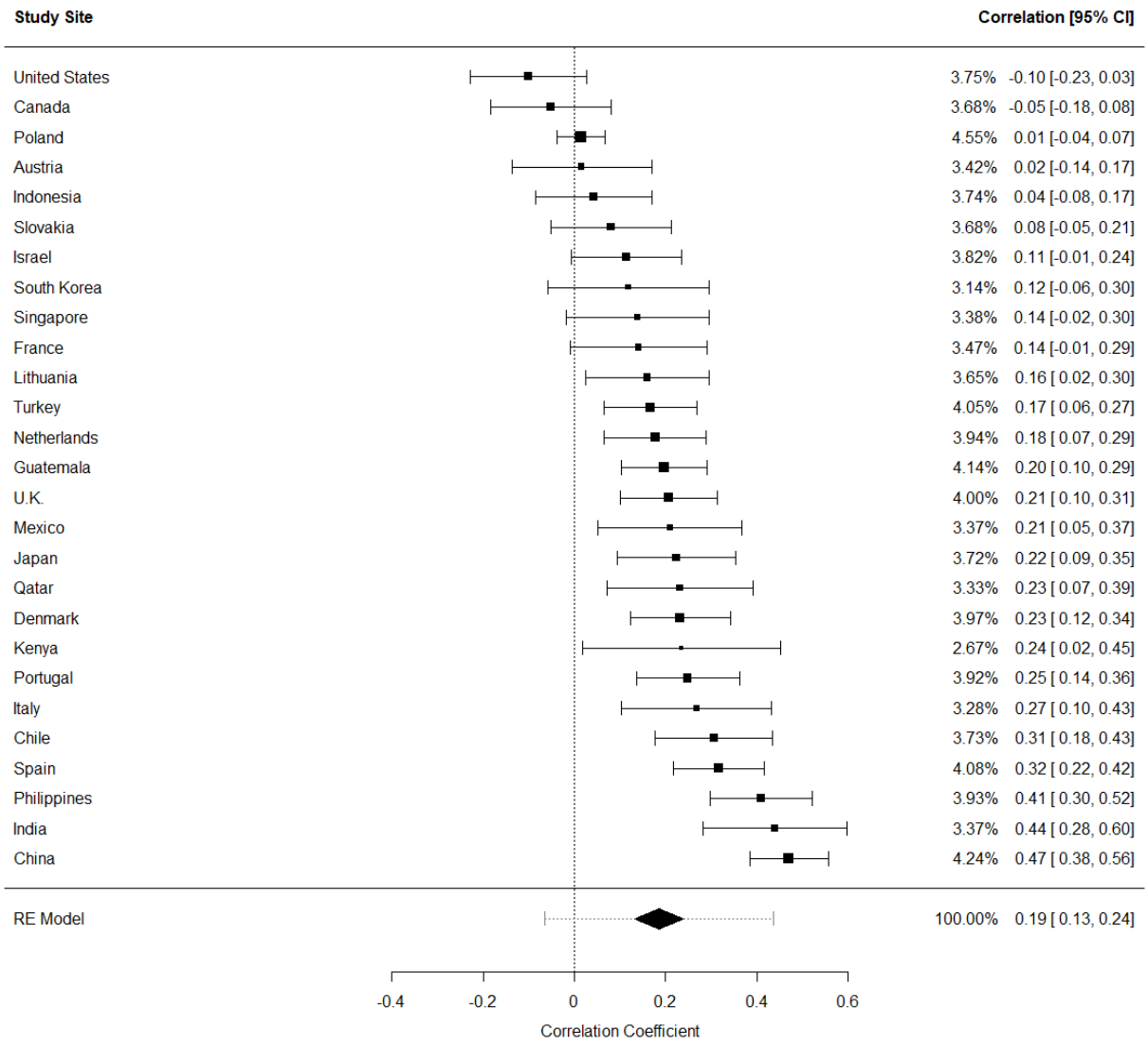

Figure S33. Results of random-effects meta-analysis examining the *zero-order correlation* between the traditionalism factor scores and the COVID-19 health precautions factor scores. Compare to Figure 1 in the main text.

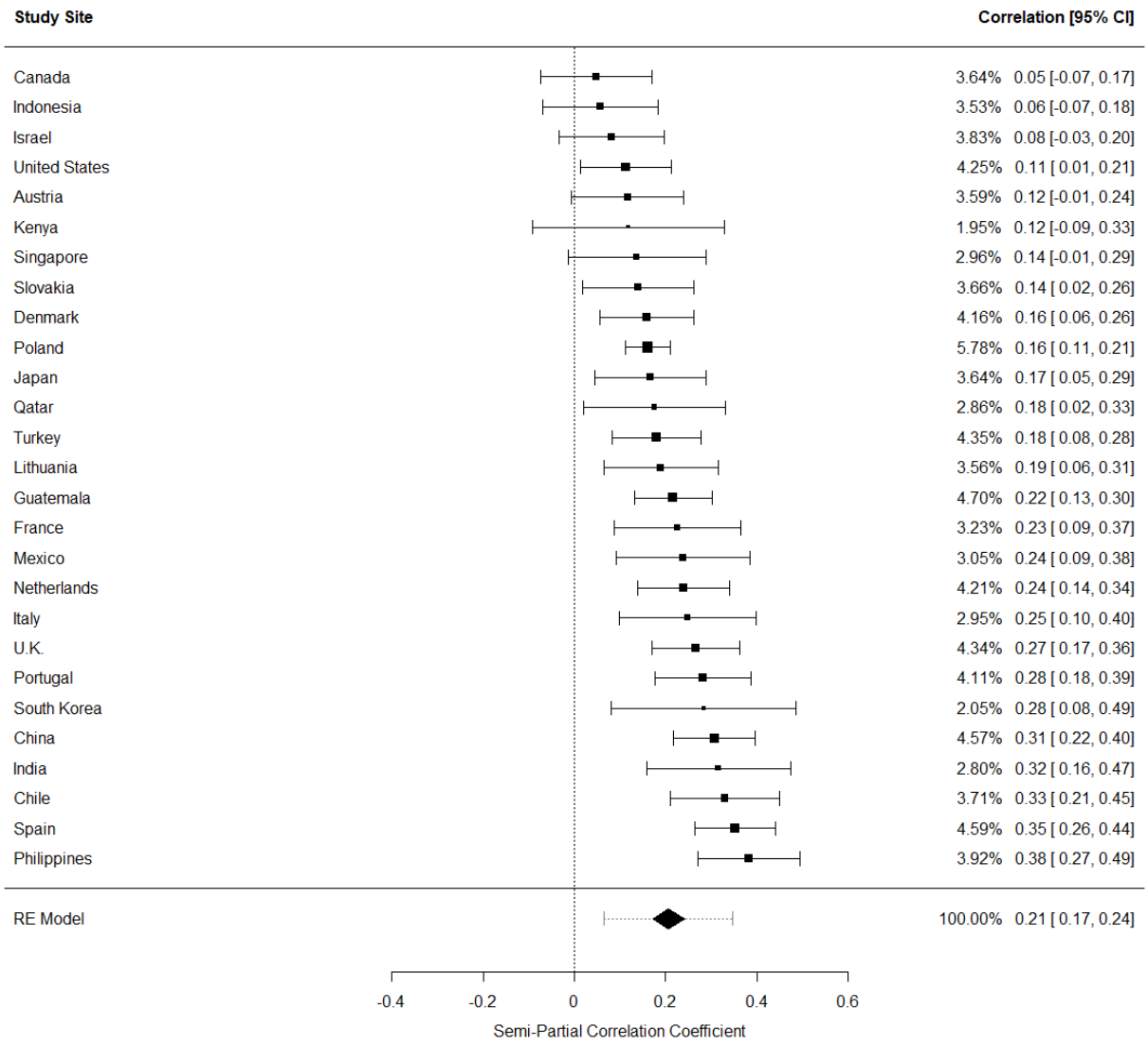

Figure S34. Results of random-effects meta-analysis examining the *semi-partial correlation* between the traditionalism factor scores and the COVID-19 health precautions factor scores after adjusting for the effects of the five suppressor variables. Compare to Figure 3 in the main text.

11. Suppressor variable descriptives by country

In order to understand the distribution of attitudes measured by the suppressor variables (trust in scientists, social dominance orientation, and the perception of tradeoffs between COVID-19 precautions on the one hand, and personal liberties, the economy, and one's traditions respectively on the other), we assessed mean response levels of those variables across the countries in the sample using random-effects meta-analyses of those means. Results indicate variability across nations in mean responses along the five suppressor variables (see figures S37-S41).

Trust in scientists:

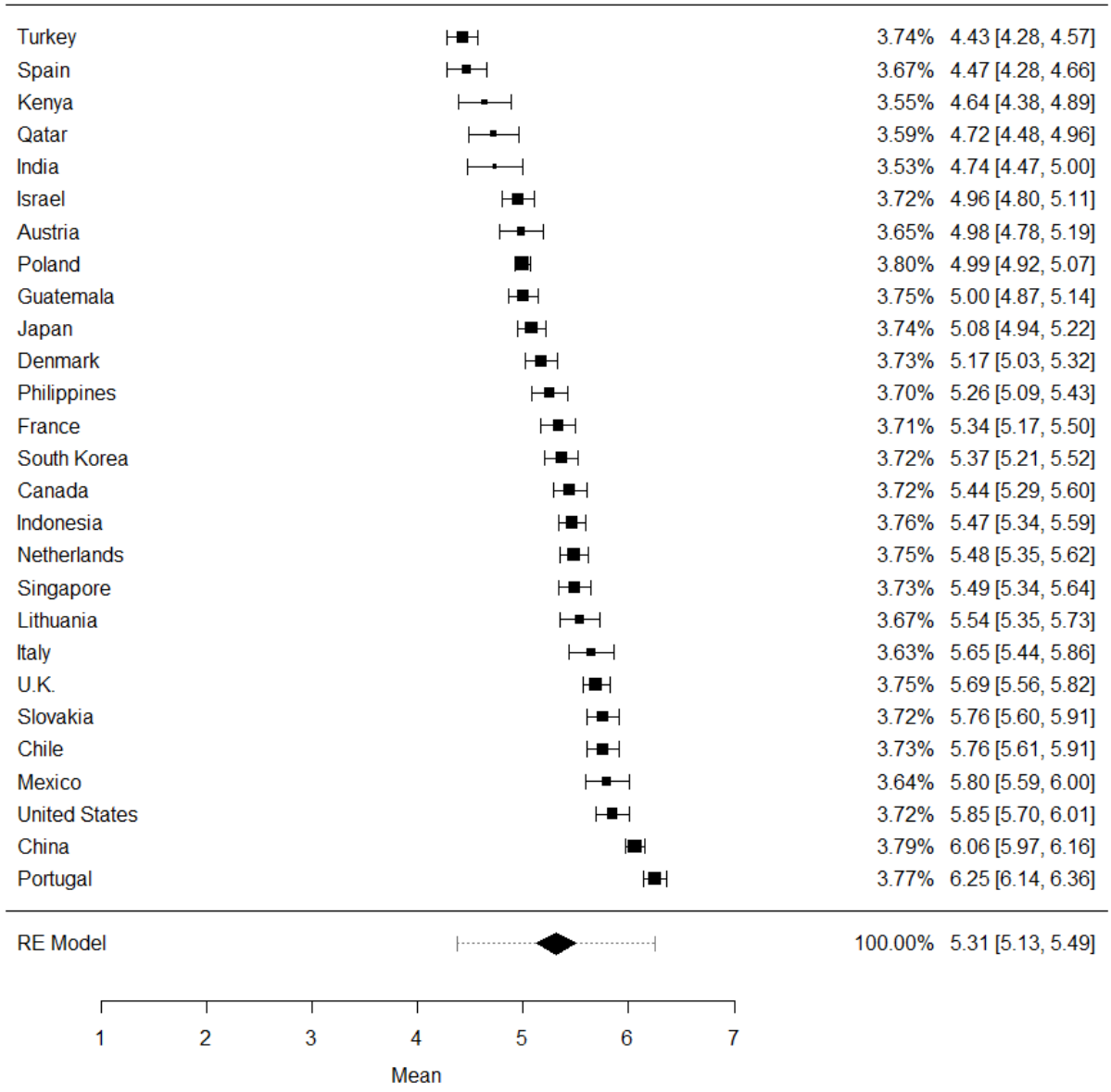

Figure S35. Random-effects meta-analysis of mean level of trust in scientists at each study site. Trust in scientists was measured along a 1-7 scale. Refer to Figure 1 for details on interpreting forest plots.

Note that samples were not nationally representative, and that sampling procedures differed across study sites, and thus that it would not be appropriate to draw strong inferences about differences between societies on the dimension measured here.

Social dominance orientation:

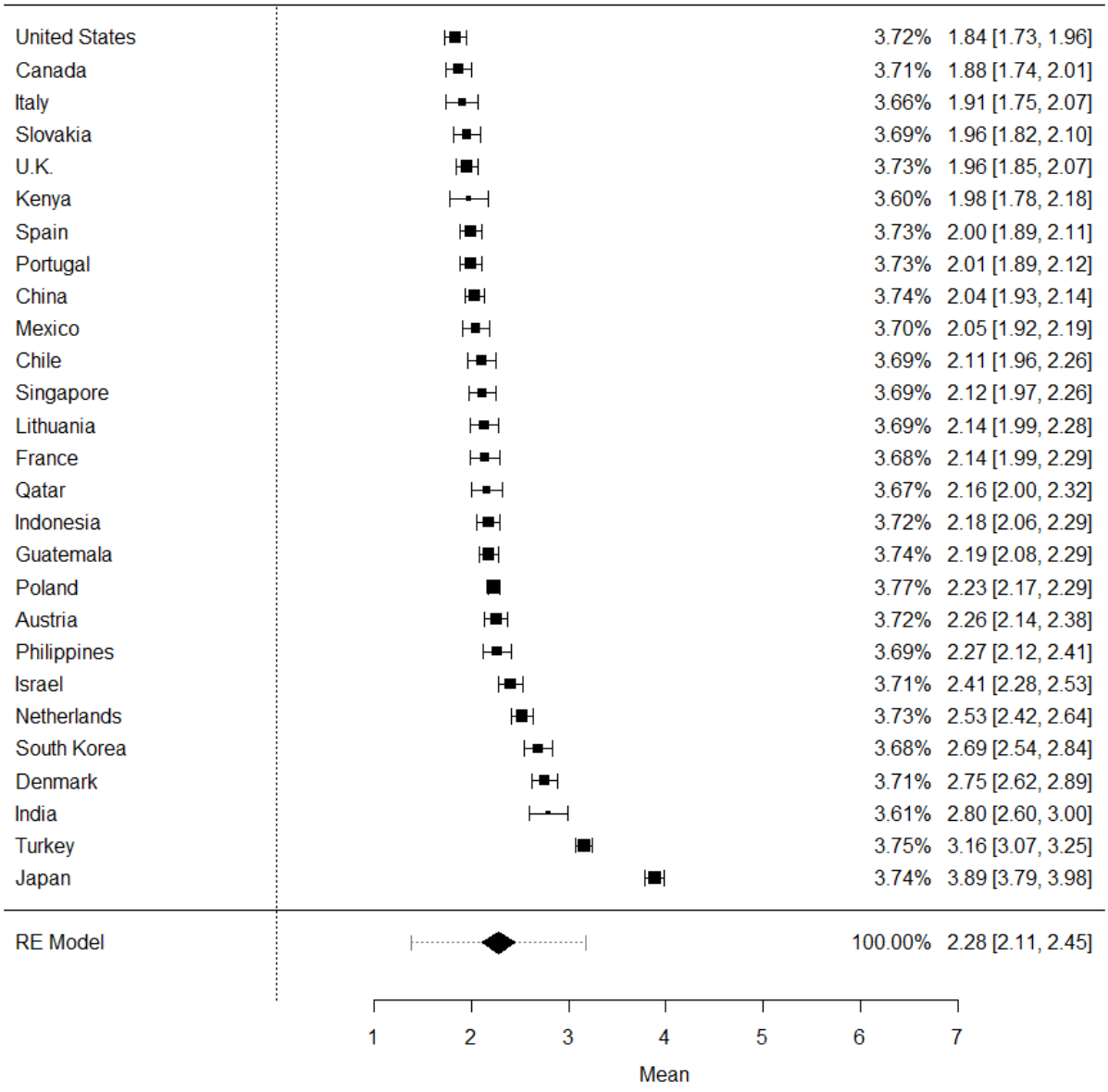

Figure S36. Random-effects meta-analysis of mean level of social dominance orientation at each study site. SDO was measured along a 1-7 scale. Refer to Figure 1 for details on interpreting forest plots.

Note that samples were not nationally representative, and that sampling procedures differed across study sites, and thus that it would not be appropriate to draw strong inferences about differences between societies on the dimension measured here.

Perceived tradeoff between COVID-19 precautions and personal liberties:

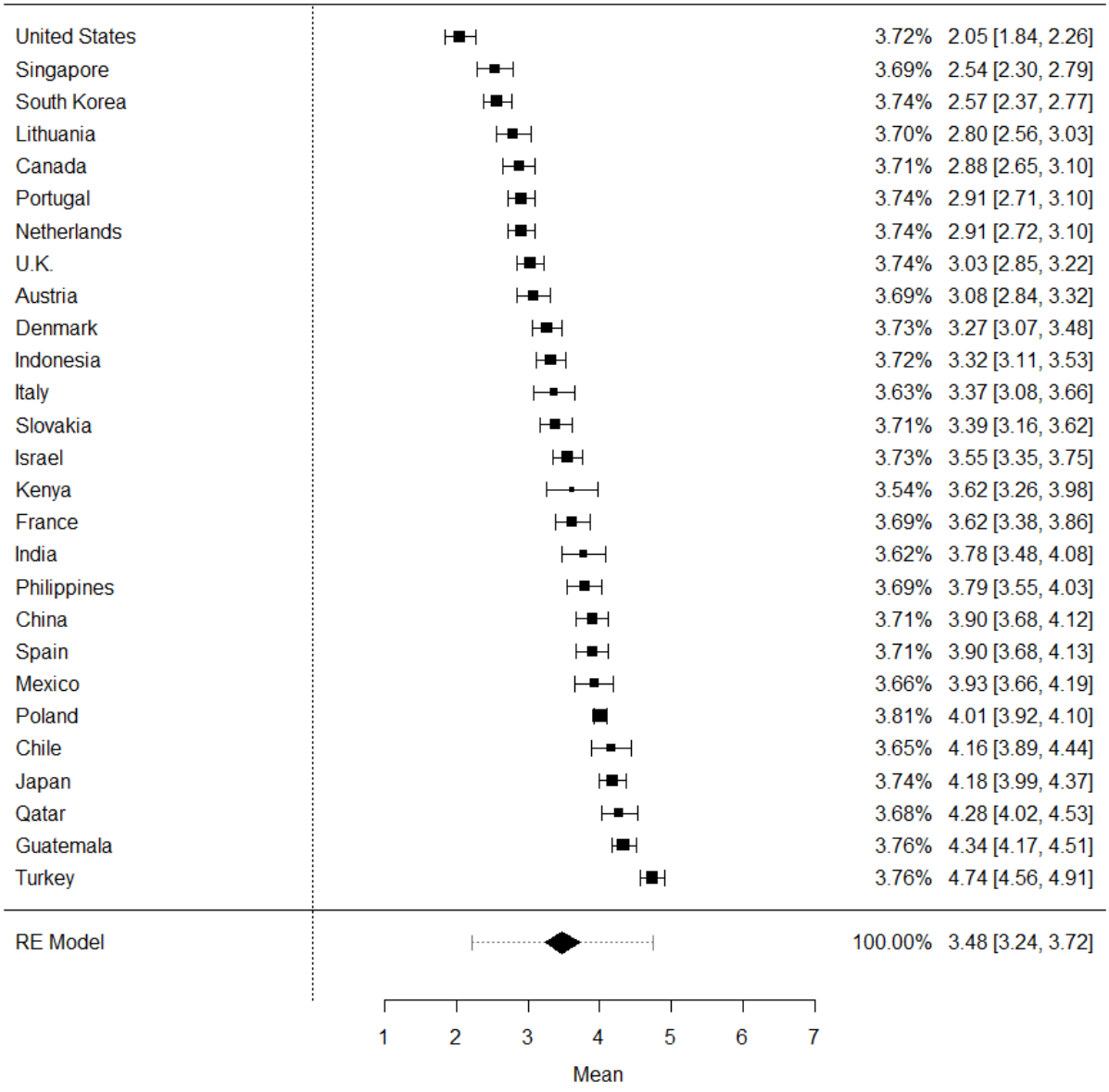

Figure S37. Random-effects meta-analysis of mean level of perceived tradeoffs between COVID-19 precautions and personal liberties at each study site. Tradeoffs were measured along a 1-7 scale. Refer to Figure 1 for details on interpreting forest plots.

Note that samples were not nationally representative, and that sampling procedures differed across study sites, and thus that it would not be appropriate to draw strong inferences about differences between societies on the dimension measured here.

Perceived tradeoff between COVID-19 precautions and the economy:

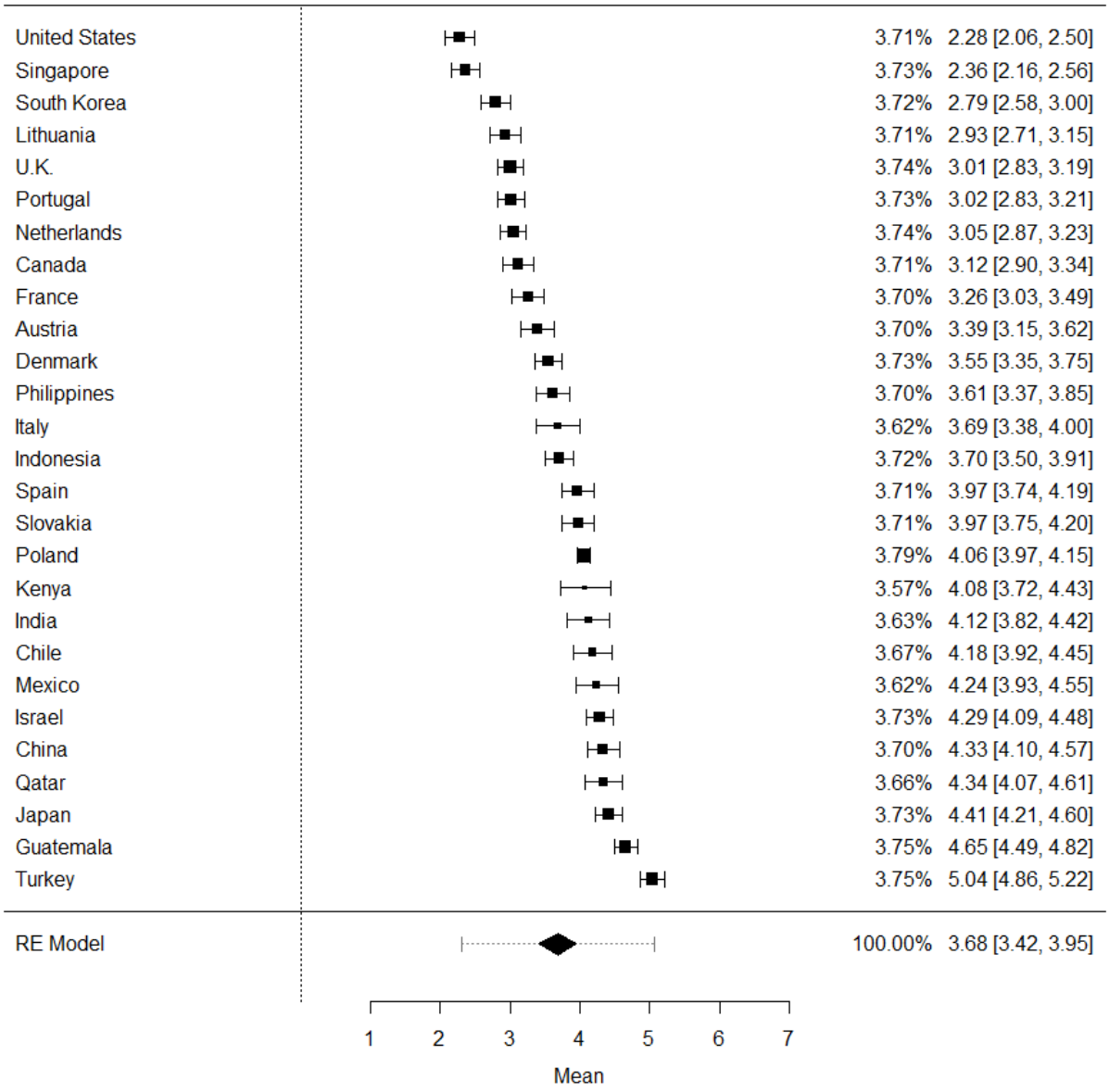

Figure S38. Random-effects meta-analysis of mean level of perceived tradeoffs between COVID-19 precautions and the economy at each study site. Tradeoffs were measured along a 1-7 scale. Refer to Figure 1 for details on interpreting forest plots.

Note that samples were not nationally representative, and that sampling procedures differed across study sites, and thus that it would not be appropriate to draw strong inferences about differences between societies on the dimension measured here.

Perceived tradeoff between COVID-19 precautions and one's traditions:

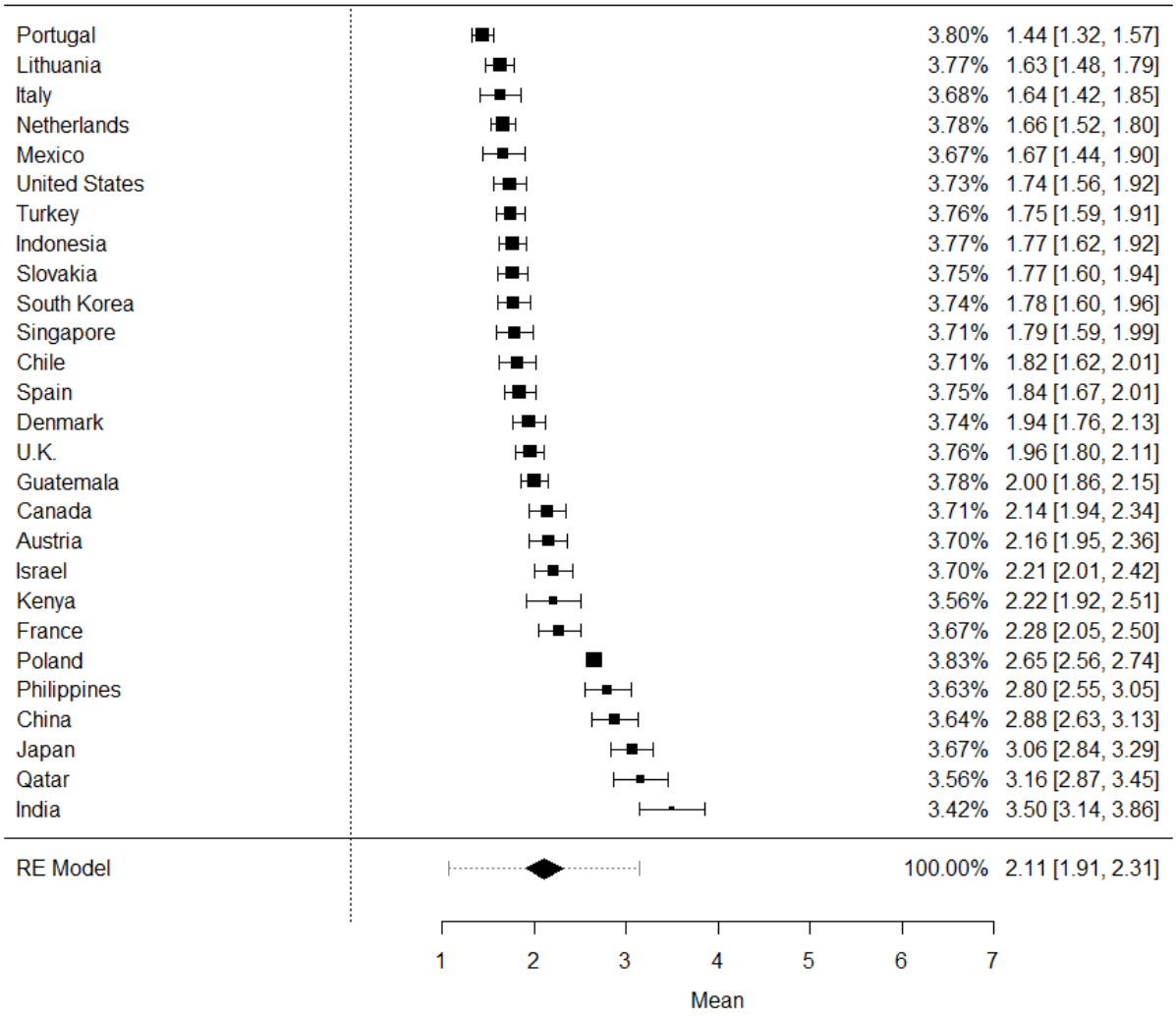

Figure S39. Random-effects meta-analysis of mean level of perceived tradeoffs between COVID-19 precautions and one's traditions at each study site. Tradeoffs were measured along a 1-7 scale. Refer to Figure 1 for details on interpreting forest plots.

Note that samples were not nationally representative, and that sampling procedures differed across study sites, and thus that it would not be appropriate to draw strong inferences about differences between societies on the dimension measured here.

Additional Analyses

1. COVID-19 precautions and gender

Given the literature on sex differences and disgust [see 39 for an overview], we assessed whether self-reported COVID-19 precautions differed as a function of gender (participants were asked about their gender, not their sex assigned at birth, however the two are likely to strongly correlated in our sample). First, we visualized differences in mean COVID-19 precautions between women and men across all 27 countries in the sample (Figure S35). Then, we meta-analyzed the mean precautions difference between women and men (see Figure S36). Overall, pooling across all countries, women report taking more precautions than men on average (see overall meta-analyzed estimate in Figure S36). However, the magnitude of the difference varies across countries (range = -.02-.88; I^2 = .39; 95% prediction intervals = .10-.55), and the difference is statistically significant in 14 of 27 countries. This suggests that while women may have tended to take more COVID-19 precautions than men overall, the precise pattern varies across nations.

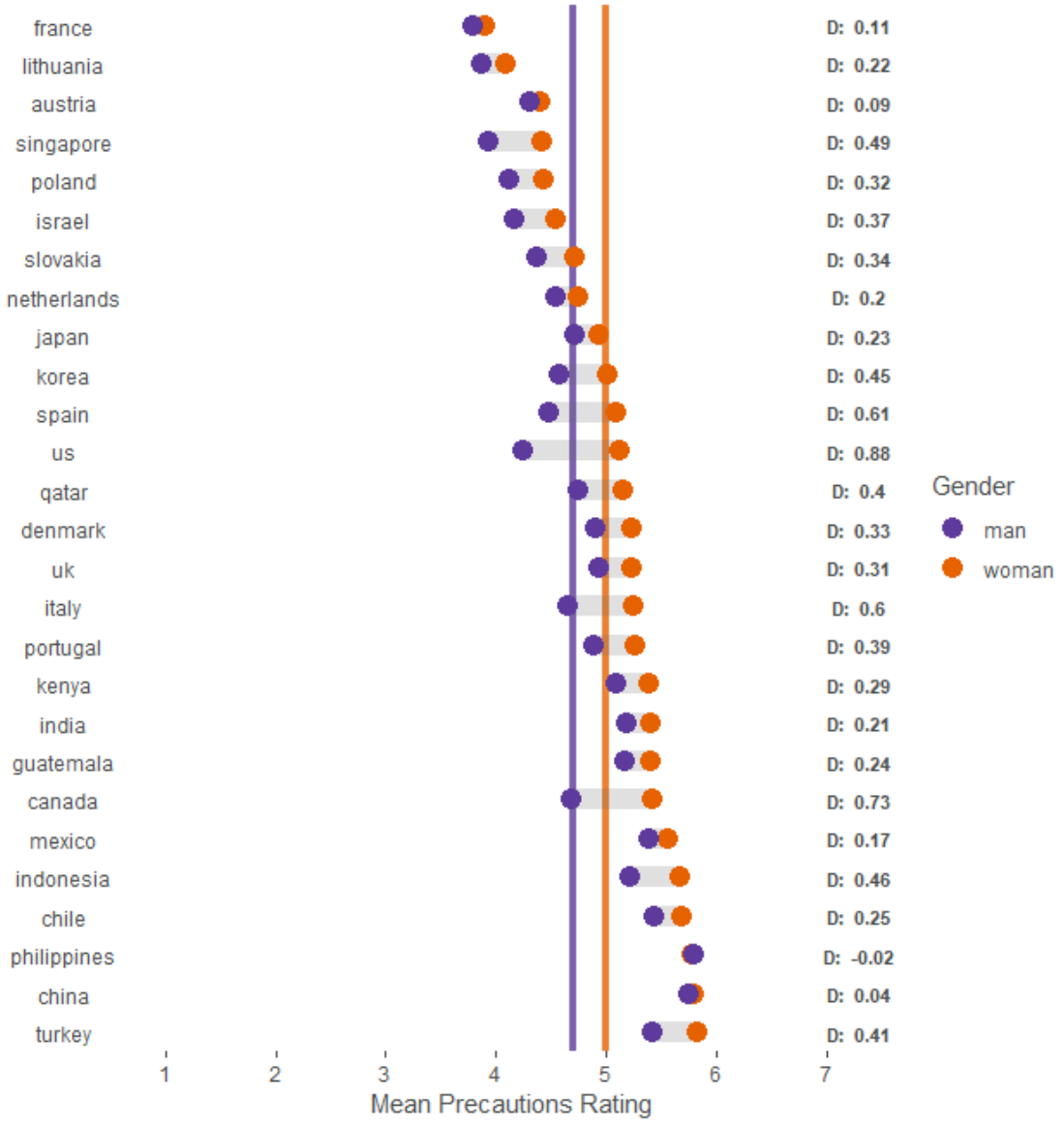

Figure S40. Plot of gender differences in COVID-19 precautions by country. Countries are along the y-axis, the mean precautions rating on a scale from 1-7 on the x-axis. The vertical lines represent the unweighted average precautions rating pooling across all countries. The dots represent the average precautions rating for women and men respectively for each study site, while the grey bars illustrate the distance between those two means. Along the right-hand column, the difference along the 1-7 scale between the women and men means are displayed numerically.

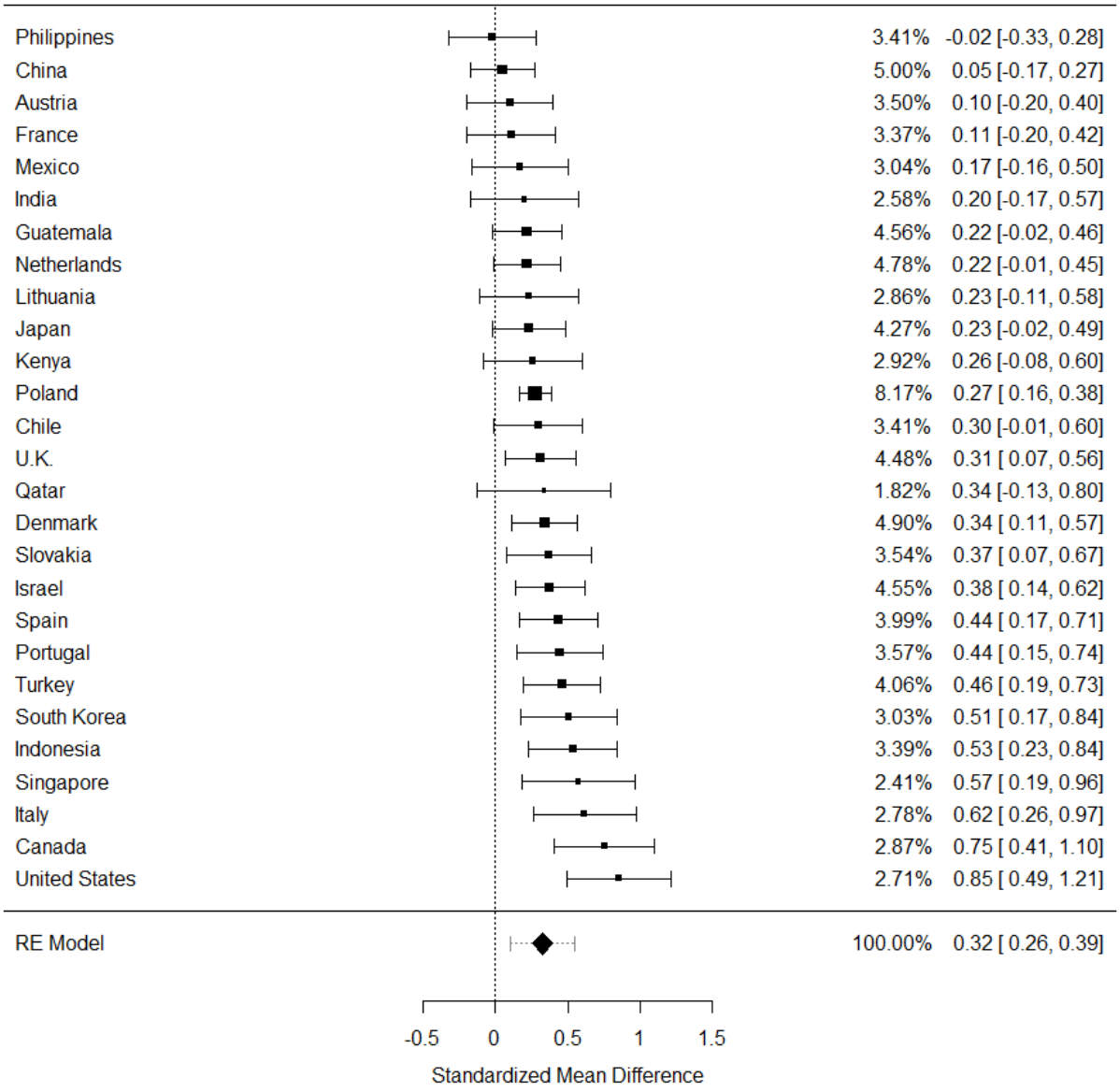

Figure S41. Meta-analysis of the standardized mean difference (accounting for heteroscedastic population variances[40]) in COVID-19 precautions between women and men by country. Refer to Figure 1 for details on interpreting forest plots.

References

1. Dunwoody, P. & Funke, F. The aggression-submission-conventionalism scale: Testing a new three factor measure of authoritarianism. *J. Soc. Polit. Psychol.* **4**, 571–600 (2016).
2. Graham, J., Haidt, J. & Nosek, B. A. Questionnaires | Moral Foundations Theory. https://moralfoundations.org/questionnaires/ (2008).
3. Pratto, F. *et al.* Social dominance in context and in individuals: Contextual moderation of robust effects of social dominance orientation in 15 languages and 20 countries. *Soc. Psychol. Personal. Sci.* **4**, 587–599 (2013).
4. Tybur, J., Lieberman, D. & Griskevicius, V. Microbes, mating, and morality: Individual differences in three functional domains of disgust. *J. Pers. Soc. Psychol.* **97**, 103–22 (2009).
5. Navarrete, C. D. Death Concerns and Other Adaptive Challenges: The Effects of Coalition-Relevant Challenges on Worldview Defense in the US and Costa Rica. *Group Process. Intergroup Relat.* **8**, 411–427 (2005).
6. R Core Team. *R: A Language and Environment for Statistical Computing*. (R Foundation for Statistical Computing, 2020).
7. RStudio Team. *RStudio: Integrated Development Environment for R*. (RStudio, Inc., 2019).
8. Wickham, H., Hester, J., Chang, W. & Bryan, J. *devtools: Tools to Make Developing R Packages Easier*. (2021).
9. Wickham, H. *ggplot2: Elegant Graphics for Data Analysis*. (Springer-Verlag New York, 2016).
10. Auguie, B. gridExtra: Miscellaneous Functions for ‘Grid’ Graphics. (2017).
11. Long, J. A. *interactions: Comprehensive, User-Friendly Toolkit for Probing Interactions*. (2019).

12. Zhu, H. *kableExtra: Construct Complex Table with 'kable' and Pipe Syntax*. (2021).
13. Rosseel, Y. lavaan: An R Package for Structural Equation Modeling. *J. Stat. Softw.* **48**, 1–36 (2012).
14. Bates, D., Mächler, M., Bolker, B. & Walker, S. Fitting linear mixed-effects models using lme4. *J. Stat. Softw.* **67**, 1–48 (2015).
15. Kuznetsova, A., Brockhoff, P. B. & Christensen, R. H. B. lmerTest Package: Tests in Linear Mixed Effects Models. *J. Stat. Softw.* **82**, 1–26 (2017).
16. Venables, W. N. & Ripley, B. D. *Modern Applied Statistics with S*. (Springer, 2002).
17. Bates, D. & Maechler, M. *Matrix: Sparse and Dense Matrix Classes and Methods*. (2021).
18. Tingley, D., Yamamoto, T., Hirose, K., Keele, L. & Imai, K. mediation: R package for causal mediation analysis. *J. Stat. Softw.* **59**, 1–38 (2014).
19. Viechtbauer, W. Conducting meta-analyses in R with the metafor package. *J. Stat. Softw.* **36**, 1–48 (2010).
20. Genz, A. & Bretz, F. *Computation of Multivariate Normal and t Probabilities*. (Springer-Verlag, 2009).
21. Genz, A. *et al. mvtnorm: Multivariate Normal and t Distributions*. (2021).
22. Lüdecke, D., Ben-Shachar, M. S., Patil, I. & Makowski, D. Extracting, Computing and Exploring the Parameters of Statistical Models using R. *J. Open Source Softw.* **5**, 2445 (2020).
23. Revelle, W. psych: Procedures for Psychological, Psychometric, and Personality Research. (2019).

24. Makowski, D., Ben-Shachar, M. S., Patil, I. & Lüdecke, D. Automated Results Reporting as a Practical Tool to Improve Reproducibility and Methodological Best Practices Adoption. *CRAN* (2021).
25. Zeileis, A. Object-Oriented Computation of Sandwich Estimators. *J. Stat. Softw.* **16**, 1–16 (2006).
26. Zeileis, A., Köll, S. & Graham, N. Various Versatile Variances: An Object-Oriented Implementation of Clustered Covariances in R. *J. Stat. Softw.* **95**, 1–36 (2020).
27. Wickham, H. & Seidel, D. *scales: Scale functions for visualization*. (2020).
28. Lüdecke, D. *sjPlot: Data Visualization for Statistics in Social Science*. (2020).
29. Wickham, H. *et al.* Welcome to the tidyverse. *J. Open Source Softw.* **4**, 1686 (2019).
30. Ritchie, H. *et al.* Coronavirus pandemic (COVID-19). *Our World Data* (2020).
31. Samore, T., Fessler, D. M. T., Sparks, A. M. & Holbrook, C. Of Pathogens and Party Lines: Social Conservatism Positively Associates with COVID-19 Precautions among U.S. Democrats but not Republicans. Preprint at https://doi.org/10.31234/osf.io/9zsvb (2020).
32. Graham, J. *et al.* Mapping the moral domain. *J. Pers. Soc. Psychol.* **101**, 366–385 (2011).
33. Doğruyol, B., Alper, S. & Yilmaz, O. The five-factor model of the moral foundations theory is stable across WEIRD and non-WEIRD cultures. *Personal. Individ. Differ.* **151**, 109547 (2019).
34. Iurino, K. & Saucier, G. Testing Measurement Invariance of the Moral Foundations Questionnaire Across 27 Countries. *Assessment* **27**, 365–372 (2020).
35. Tybur, J. M. *et al.* Parasite stress and pathogen avoidance relate to distinct dimensions of political ideology across 30 nations. *Proc. Natl. Acad. Sci.* **113**, 12408–12413 (2016).

36. Suárez-Álvarez, J., Pedrosa, I. & Lozano, L. M. Using reversed items in Likert scales: A questionable practice. *Psicothema* 149–158 (2018) doi:10.7334/psicothema2018.33.
37. Swain, S. D., Weathers, D. & Niedrich, R. W. Assessing Three Sources of Misresponse to Reversed Likert Items. *J. Mark. Res.* **45**, 116–131 (2008).
38. Wong, N., Rindfleisch, A. & Burroughs, J. Do Reverse-Worded Items Confound Measures in Cross-Cultural Consumer Research? The Case of Material Value Scale. *J. Consum. Res.* **30**, 72–91 (2003).
39. Sparks, A. M., Fessler, D. M. T., Chan, K. Q., Ashokkumar, A. & Holbrook, C. Disgust as a mechanism for decision making under risk: Illuminating sex differences and individual risk-taking correlates of disgust propensity. *Emot. Wash. DC* **18**, 942–958 (2018).
40. Bonett, D. G. Meta-analytic interval estimation for standardized and unstandardized mean differences. *Psychol. Methods* **14**, 225–238 (2009).