Article

Cultural Tightness Predicts Regional Sociopolitical Ideologies, Beliefs, and Personality Traits

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Abstract

Cultural tightness refers to the strength of social norms and tolerance for norm violations within regions. In two studies, we investigated the link between cultural tightness and sociopolitical ideologies, beliefs, and personality traits within the United States and across 56 nations. We relied on two separate operationalizations of cultural tightness and aggregated self-reported sociopolitical ideologies, beliefs, and personality trait data from tens of thousands of geolocated internet respondents. Regression analyses suggest that more culturally tight U.S. states are less open, more conscientious, and higher in the need for certainty. Tighter states also more strongly endorse racial stereotyping, right-wing authoritarianism, and other system-justifying beliefs, but less weakly endorse egalitarianism. In addition, tighter nations are lower in extraversion and creativity. Taken together, we find that cultural tightness is a parsimonious predictor of regional psychological variation across many constructs within the United States and across nations.

Keywords

culture, norms, personality, beliefs, ideologies

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Introduction

Psychologists have long been intrigued by how people from different places differ from each other. This interest in regional variation in psychological constructs is evident in research traditions including personality (Rentfrow et al., 2008), intergroup bias (Payne et al., 2017), and political behavior (Heppen & Mesyanzhinov, 2003). Research in geographical psychology has sought to understand how psychological differences emerge, are spatially organized, are maintained over time, and predict important behaviors and outcomes (Calanchini et al., 2022; Hehman et al., 2021; Rentfrow et al., 2008, 2013).

By aggregating the responses of geographically-proximate individuals, such macro-psychological research – which operationalizes psychological constructs at regional rather than individual levels – is often rich in sample diversity and/or size (Jokela et al., 2015; Obschonka et al., 2015; Rentfrow et al., 2015). Additionally, aggregating individual responses to region levels reduces measurement error and other sources of unsystematic variance, thereby amplifying shared psychological characteristics within regions, such as culture (Calanchini et al., 2022). Consequently, regional aggregation can provide novel insight into the geographical landscape of psychological constructs, positioning researchers to predict outcomes of consequence that cannot be observed at the individual level or are difficult to study in the laboratory with any degree of ecological validity.

Past regional investigations reveal that psychological constructs are geographically clustered, such that neighboring regions share personality profiles (Peters et al., 2023; Rentfrow et al., 2008) and biases (Calanchini et al., 2022). Additionally, geographical variation in psychological constructs is related to societally relevant outcomes. For example, regional personality differences predicted early COVID-19 infection prevalence and mortality rates: regions higher in Big Five openness were characterized by earlier COVID-19 onset and faster growth rates, whereas regions higher in neuroticism were characterized by later COVID-19 onset and lower mortality rates (Peters et al., 2023). Similarly, regional differences in racial bias are related to disparities in

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law enforcement: police disproportionately stop Black drivers (Stelter et al., 2022) and use lethal force more often against Black residents (Hehman et al., 2018) in regions with higher racial bias. Similar effects of regional bias exist in other contexts, such as health disparities (Leitner et al., 2016; Orchard & Price, 2017) and education (Vuletich & Payne, 2019).

Thus far, macro-psychological research has primarily focused on two domains: personality and intergroup bias. The present research bridges and contributes to this growing body of work by examining regional variation in nearly two dozen psychological constructs related to sociopolitical ideologies, beliefs, and personality traits that have traditionally been studied at the individual level. We begin by documenting the spatial variation in these psychological constructs, then explore cultural forces that may organize this variation. To do so, we focus on cultural tightness–looseness in social norms, values, and behaviors as an especially strong candidate for parsimoniously explaining regional differences across a wide range of psychological constructs.

Cultural Tightness–Looseness

Cultural tightness–looseness (hereafter referred to as *tightness*) describes the extent to which people who share a culture enforce and adhere to social norms, values, and behaviors. Tightness has two key components: (1) the strength of social norms (i.e., how clear and pervasive norms are within societies) and (2) the tolerance of deviant behaviors, which is reflected in the strength of sanctioning for norm violations (Gelfand et al., 2006). Research has revealed substantial variation in tightness across nations (Gelfand et al., 2011; Uz, 2015), as well as other units of analysis, such as the 50 states of the United States (Harrington & Gelfand, 2014), the 31 provinces of China (Chua et al., 2019; Gelfand, 2019), 86 nonindustrial societies (Jackson et al., 2020), and across different social subgroups in Estonia (Mandel & Realo, 2015). Two main perspectives guide this body of work: one investigating contextual factors assumed to contribute to tightness, and another focusing on the downstream outcomes of tightness.

Antecedents of Cultural Tightness. Researchers have theorized that cultural tightness arises in more threatening environments, as strong norms and harsh punishments for norm violations confer survival benefits through increased group coordination (Gelfand et al., 2024). Accordingly, tighter regions experience higher prevalence of natural disasters and pathogens, resource scarcity, population pressure, and warfare (Gelfand et al., 2011). For example, Arkansas is one of the most culturally tight U.S. states and reports some of the highest rates of heat-related deaths and deaths due to cataclysmic storms and floods (Thacker et al., 2008). Similarly, India is one of the tightest nations, and epidemiological atlases suggest that it has experienced high historical prevalence of infectious disease (Schaller & Murray, 2011). This theorizing is consistent with other work suggesting that increased group cohesion and tighter knit social networks serve as an adaptive response to socioeconomic and environmental stressors (Oishi & Kesebir, 2012; Van de Vliert, 2013).

Outcomes of Cultural Tightness. Tightness is linked to a constellation of psychological outcomes that relate to how people think, behave, and interact with others. Beyond its origins, tightness is associated with perceived control (Ma et al., 2023), perceptions of effective leadership (Aktas et al., 2016), intergroup contact (Jackson et al., 2020), innovation, personality, and happiness (Chua et al., 2019; Harrington & Gelfand, 2014), stereotyping (Lopez et al., 2022), discrimination (Harrington & Gelfand, 2014), and implicit and explicit bias (Jackson et al., 2019). These outcomes both reflect and are attuned to each context's cultural norms, and as such, may capture bottom-up and recursive processes through which individuals can further shape and reinforce existing cultural norms. For example, radical innovation is curtailed in contexts where deviance is discouraged – fewer patents are awarded in tighter Chinese provinces – perhaps due to an aversion to highly novel ideas (Chua et al., 2019). Such contexts may also be characterized by structural constraints that further limit innovation, including smaller budgets for research and education and less foreign investment. Beyond innovation, tightness is associated with discriminatory outcomes that may reflect heightened norm enforcement. Compared to loose U.S. states, tight U.S. states have higher rates of employment discrimination charges per capita, lower percentages of minority-owned firms, and unequal gender representation in politics (Harrington & Gelfand, 2014). To the extent that members of nondominant groups are perceived to be disruptors of social order, tighter regions that tolerate less deviance should also discriminate more against members of non-dominant groups. Taken together, these associations point to tightness as a broad organizing dimension of regional psychological variation.

The Present Research

Taken together, tightness is linked to a host of important contextual antecedents and behavioral consequences. The present research aims to contribute to this existing body of work by exploring correlations between tightness and nearly two dozen psychological constructs related to sociopolitical ideologies, beliefs, and personality traits at the region level. Relying on past literature, we focus on psychological constructs that should theoretically be related to the social norms of a region. Importantly, these constructs have traditionally been studied at the individual level, and so we offer a regional perspective by aggregating self-reported individual-level responses to broader geographic regions. Moreover, and with an eye towards generalizability, we operationalize tightness in two distinct ways in the present research. Some previous research has operationalized tightness in terms of behavioral and legal proxies (e.g.,

use of corporal punishment in schools). To be sure, behavioral outcomes are high in external validity, but they can be low in theoretical precision because behavior is typically the product of multiple influences. In contrast, self-report measures are often designed to maximize discriminant validity, assessing the construct of interest but not other conceptually similar constructs. Recognizing the strengths of both approaches, we operationalize tightness both in terms of archival data and self-report data. Additionally, we focus one set of analyses on the United States and another set of analyses across nations using independent datasets. In doing so, the present research is positioned to provide converging evidence of tightness as a robust cultural predictor of regional psychology across diverse measures and groups of people.

In Study 1, we explore tightness as a predictor of sociopolitical ideologies, beliefs, and personality traits at the state level within the United States. In Study 2, we investigate a subset of these relationships related to Big Five personality traits, specifically, at the nation level across 56 nations. We make several predictions about the relationship between tightness and the self-report measures we examine here, based on existing research. For example, the sociopolitical ideology and belief measures included in the present research are relevant to the expression and maintenance of prejudice and stereotyping (Whitley, 1999). Dovetailing with prior research demonstrating that tighter regions have greater inequalities and higher levels of implicit and explicit bias, we expect tighter regions to also more strongly endorse hierarchy-enhancing ideologies and beliefs. Because tightness is associated with adhering to and reinforcing the strength of social norms (Harrington & Gelfand, 2014), we also predict that tightness will be positively related to measures of self-control, orderliness, conformity to structure or norms, and socially desirable responding. Last, prior work suggests that tightness relates to Big Five personality traits and found that tighter U.S. states were higher in conscientiousness and agreeableness but lower in openness (Harrington & Gelfand, 2014). We plan to explore if these previously identified relationships between tightness and Big Five personality traits replicate across a different sample and multiple operationalizations of tightness, and accordingly, we predict that higher tightness will be positively related to conscientiousness and agreeableness but negatively related to openness.

To our knowledge, no previous research has investigated the relationship between tightness and tendencies to enjoy and engage in complex thinking (i.e., need for cognition). Thus, we include this construct in the present research on an exploratory basis. Data, code, and a comprehensive list of pre-registered predictions[1] are available at https://osf.io/btn96/overview.

Study 1

Sample

The primary data in these analyses came from three independent sources, which we describe in detail below. Because this research relies on existing datasets, we did not conduct power analyses or determine sample sizes a priori. To operationalize tightness, we relied on the tightness index developed by Harrington and Gelfand (2014) as well as our own data collection effort. To operationalize regional sociopolitical ideologies, values, and personality traits, we relied on data collected by Project Implicit.

Cultural Tightness. We operationalized state-level cultural tightness in two ways: (1) the tightness index created by Harrington and Gelfand (2014) based on archival and administrative data sources and (2) self-reported cultural tightness scores. Tightness from Harrington and Gelfand (2014) reflected a composite index of the following social, political, and legal indicators: legality and use of corporal punishment in schools, execution rates, severity of punishment for violating laws related to marijuana (e.g., use, possession, cultivation, and sale), legality of same-sex civil unions, access to alcohol, religiosity rates, and international diversity within the population. This composite index captures both the strength of punishment and the permissiveness of local norms and has been validated as a strong indicator of tightness, with higher scores corresponding to greater tightness. Data for each indicator came from archival sources, such as the Department of Education, the U.S. Census Bureau, and Gallup. Hereafter, we refer to the Harrington and Gelfand (2014) operationalization of tightness as *archival tightness*. Figure 1 illustrates archival tightness across the 50 U.S. states.

To test if our results generalize across operationalizations of cultural tightness, we also relied on a self-report measure of cultural tightness. Specifically, we recruited U.S.-based participants through CloudResearch to complete the 6-item Cultural Tight-Looseness scale (Gelfand et al., 2011). This measure included items like, "In this state, there are very clear expectations for how people should act in most situations." Using participants' self-reported state of residence, we aggregated self-reported tightness scores to the state level. Our initial aim was to recruit at least 25 participants per U.S. state. However, we did not achieve our target sample size for the following five states due to the relatively small sampling pool: Alaska, Montana, North Dakota, Vermont, and Wyoming. We included only states with at least 25 participants, leaving us with the remaining 45 U.S. states reflected in our following analysis. After removing 21 participants who failed the attention check or did not reside in one of the 45 U.S. states included in our analysis, we had 1,290 participants (51% women, 47% men, 2% other; mean age = 39.99 years, standard deviation [*SD*] = 12.64 years; 72% White, 11% Black, 7% Asian, 3% Latino, 5% Multiracial, 2% other), with an average of 28.6 responses per state. Compared to the national average, our CloudResearch data slightly oversamples White people but is similar in age and gender. Figure 2 illustrates self-reported tightness across 45 U.S. states. Self-reported tightness correlates moderately strongly with archival tightness ($r = 0.69$).

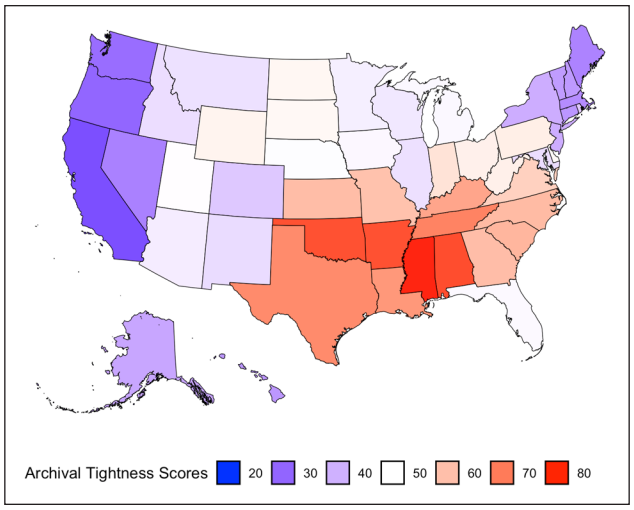


Figure 1. Patterns of archival cultural tightness–looseness at the state level in the United States.

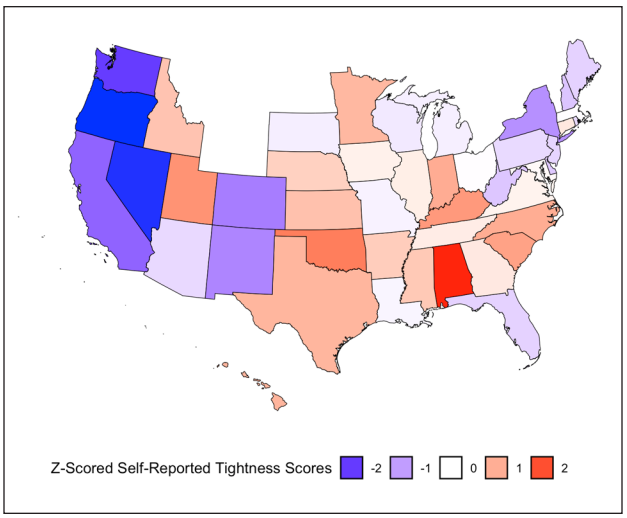


Figure 2. Patterns of self-reported cultural tightness–looseness at the state level in the United States.

The strengths of the archival tightness measure complement the strengths of the self-report tightness measure. Specifically, in relying on administrative, political, and demographic indicators, the archival measure eliminates the influence of self-report biases and individuals' idiosyncratic interpretations of cultural tightness survey items. That said, these archival indices lack theoretical precision because any of these outcomes may reflect the contributions of factors other than social norms. The self-report measure is strong on this point and is well positioned to maximize construct validity by assessing the construct of cultural tightness but not conceptually-related but distinct constructs.

Self-Reported Sociopolitical Ideologies, Beliefs, and Personality Traits. All self-reported sociopolitical ideologies, beliefs, and personality traits came from data freely available from Project Implicit (implicit.harvard.edu). Project Implicit has administered self-report measures of a wide variety of psychological constructs to millions of internet visitors from all over the world for over two decades. Because a number of Harrington and Gelfand's (2014) tightness indicators were drawn from years ranging from 2006 to 2010,[2] we relied on U.S.-based visitors' responses to self-report questions from the following measures between the years 2006 and 2010 unless otherwise indicated: Social Dominance Orientation,[3] Right-Wing Authoritarianism,[4] Belief in a Just World, Protestant Ethic, Humanitarianism/Egalitarianism,[5] Bayesian Racism, Big Five Inventory, Balanced Inventory of Desirable Responding, Personal Need for Structure, Need for Cognition, Self-Monitoring, and Need for Cognitive Closure.[6] Project Implicit administered these self-report measures according to a planned missing data design, such that each visitor completed approximately 2% of the total number of items across the questionnaires. In our analysis, we only include participants who report geolocation data (i.e., U.S. state of residence) and aggregate their responses to the state level. Participants responded to all measures on a Likert-type scale ranging from 1 ("strongly disagree") to 6 ("strongly agree"). To calculate state-level scores for each measure, we recoded the reverse-keyed items, averaged the responses to each item within each state, and further averaged across all items of the measure for each state. We describe each measure and the number of observations per measure in further detail below.[7]

Social Dominance Orientation. This modified Social Dominance Orientation scale (Pratto et al., 1994) is a 12-item measure that assesses the preference for inequality among social groups. This version omits 4 items from the original 16-item scale. Higher scores correspond to a stronger preference for group-based social hierarchies. Our analyses relied on 36,149 responses to the Social Dominance Orientation scale.

Right-Wing Authoritarianism. The Right-Wing Authoritarianism scale (Altemeyer, 1998) is a 15-item measure that assesses the extent to which people are submissive to established authorities, show aggression toward others when authorities sanction that aggression, and conform to thoughts and values endorsed by authorities. Higher scores reflect greater submission to authority figures, adherence to conventional values, and aggression towards norm violators. Our analyses relied on 28,992 responses to the Right-Wing Authoritarianism scale.

Belief in a Just World. This modified Belief in a Just World scale (Rubin & Peplau, 1973) is a 6-item measure that assesses the belief that the world is fair, and consequently, good things happen to good people and bad things happen to bad people. This version retained several items from the original 20-item scale and changed the wording. Higher scores correspond with the perception that people generally get what

they deserve. Our analyses relied on 52,621 responses to the Belief in a Just World scale.

Protestant Ethic. The Protestant Ethic scale (Katz & Hass, 1988) is an 11-item measure that assesses the belief that hard work leads to success. Higher scores indicate a stronger belief that differences in the distribution of resources and social goods can be explained by differences in effort and merit. Our analyses relied on 51,988 responses to the Protestant Ethic scale.

Humanitarianism/Egalitarianism. The Humanitarianism/Egalitarianism scale (Katz & Hass, 1988) is a 10-item measure that assesses the endorsement of equal opportunities, recognition of the importance of social justice, and concern for the well-being of others, regardless of group membership. Higher scores reflect a stronger value in helping others and acting to promote equality. Our analyses relied on 39,359 responses to the Humanitarianism/Egalitarianism scale.

Bayesian Racism. This modified Bayesian Racism scale is a 15-item measure that assesses the belief that it is rational to discriminate against people based on existing racial stereotypes, which can occur when someone uses their prior beliefs about race when evaluating new information or making decisions. Higher scores correspond to stronger endorsement of discrimination based on stereotypes. This version is adapted from the original 6-item Bayesian Racism scale (Uhlmann et al., 2010) and contains 9 additional items. Our analyses relied on 41,400 responses to the Bayesian Racism scale.

Big Five Inventory. The Big Five Inventory (John & Srivastava, 1999) is a 44-item measure that assesses traits from the five-factor model of personality: conscientiousness, agreeableness, neuroticism, openness, and extraversion. Our analyses relied on 38,777 responses to the Big Five Inventory.

Balanced Inventory of Desirable Responding. This version of the Balanced Inventory of Desirable Responding (Paulhus, 1984) is a 36-item measure that assesses two components of socially desirable responding: (1) impression management and (2) self-deception. Higher scores indicate higher social desirability concerns. This version omits 4 items from the original 40-item scale. Our analyses relied on 41,580 responses to the Balanced Inventory of Desirable Responding, and we analyzed each subscale separately.

Personal Need for Structure. The Personal Need for Structure scale (Thompson et al., 2001) is a 12-item measure that assesses preferences for cognitive simplicity and clarity. Higher scores indicate a preference for structure and clarity in most situations, as well as a dislike for ambiguity. Our analyses relied on 41,533 responses to the Personal Need for Structure scale.

Need for Cognition. The Need for Cognition scale (Cacioppo & Petty, 1982) is an 18-item measure that assesses the tendency to engage in and enjoy effortful cognitive activities. Higher scores indicate a stronger tendency to engage in and enjoy complex cognitive tasks. Our analyses relied on 41,559 responses to the Need for Cognition scale.

Self-Monitoring. This version of the Self-Monitoring scale (Snyder, 1974) is an 18-item measure that assesses the desire and capacity to attend to others' perceptions. High self-monitors are sensitive to social cues given by relevant others and use them as guidelines for regulating and controlling their own self-presentation (Snyder & Cantor, 1980). This version omits 7 items from the original 25-item scale. Our analyses relied on 41,645 responses to the Self-Monitoring scale.

Need for Cognitive Closure. The Need for Cognitive Closure scale (Webster & Kruglanski, 1994) is a 42-item measure that assesses the desire for certainty. This measure consists of five subscales: avoidance of ambiguity, need for order, need for predictability, close mindedness, and decisiveness. Our analyses relied on 38,708 responses to the Need for Cognitive Closure scale.

Demographic Covariates

We included seven state-level demographic covariates in our analysis: socioeconomic status, urbanity, education, gender, political orientation, age, and race. We operationalized socioeconomic status in terms of median household income, urbanity as the percentage of the population living in urban areas, education as the percentage of the state population 25 years or older with at least a Bachelor's degree, gender as the percentage of the population who identified as women, political orientation as the percentage of voters who voted democratic in the 2008 election (i.e., voted for Barack Obama instead of another candidate), age as the median age of people living in the state, and race as the percentage of White people living in the state. The 2008 election data came from the Current Population Survey (U.S. Census Bureau, 2008). All other demographic covariates came from the 2010 American Community Survey (U.S. Census Bureau, 2010).

Analysis Plan

We conducted our analyses at the state level, standardized all variables, and used ordinary least squares (OLS) regression models to test whether tightness scores predict state-level variation in each Project Implicit self-report measure, adjusting for demographic covariates. For each OLS regression model, we calculated Moran's I to index spatial autocorrelation in the regression residuals. Spatial autocorrelation violates the assumption of residual independence in OLS

Table 1. Categorical Description of Regional Psychological Differences.

Sociopolitical ideologies and beliefs	Big Five personality traits	Other personality traits
• Social Dominance Orientation • Right-Wing Authoritarianism • Belief in a Just World • Protestant Ethic • Humanitarianism/ • Egalitarianism • Bayesian Racism	• Agreeableness • Conscientiousness • Extraversion • Neuroticism • Openness	• Self-Deception • Impression Management • Personal Need for Structure • Need for Cognition • Self-Monitoring • Avoidance of Ambiguity • Close Mindedness • Decisiveness • Need for Order • Need for Predictability

regression and inflates Type I error rates (Anselin & Griffith, 1988). Consequently, when Moran's *I* indicated significant spatial autocorrelation in an OLS regression model, we followed up with one of two spatial analyses that account for dependencies in our data: either a spatial error model or spatial lag model (Ebert et al., 2023).[8] Regression models that used archival tightness as a predictor reflected data from all 50 U.S. states, and regression models that used self-reported tightness as a predictor reflected data from 45 U.S. states.

Robustness Checks. We intentionally selected state-level covariates representing a range of sociopolitical and demographic factors that could be feasibly related to regional differences in tightness. That said, we acknowledge there is a degree of subjectivity in selecting model covariates, as good arguments may exist for both excluding and including the covariates we selected. To proactively address calls for alternative model specifications, as well reduce opportunity for selective reporting, we ran specification curve analyses to explore all theoretically defensible combinations of our covariates (Simonsohn et al., 2020). In doing so, we can distinguish between a robust conclusion versus a conclusion that is highly contingent on any one model specification. A specification curve visually depicts the direction and magnitude of the effect of interest – in this case, the relationship between tightness and each self-report measure – across all possible combinations of the seven demographic covariates. If an effect of interest is in the same direction and reliably different from zero in most of the models, we can conclude that the effect is robust against arbitrary model specifications. No conventionally agreed upon benchmark exists for identifying the proportion of reliable effects that constitutes a robust relationship. Nevertheless, in the present research, we interpret curves with proportions of reliable effects greater than 75% to reflect relatively robust relationships and calibrate our confidence in those effects as a function of their reliability.

Results

We evaluated a broad array of regional psychological constructs and organized the results section into three categories: sociopolitical ideologies and beliefs, Big Five personality traits, and other personality traits (Table 1).

We began by mapping the state-level means for each construct. Then, we reported the state-level bivariate correlations between each tightness operationalization and regional psychological measure, followed by regression models. Last, we evaluated the robustness of these relationships to alternative model specifications using a specification curve analysis. To provide additional insight into state-level differences in sociopolitical ideologies, beliefs, and personality traits across the United States, in the supplementary materials, we reported *z* scores for each measure in Supplemental Tables S1 to S3 and a correlation matrix in Supplemental Table S4.

Is Cultural Tightness Related to Sociopolitical Ideologies and Beliefs? Figure 3 illustrates the geographical distribution of regional aggregates of sociopolitical ideologies and beliefs across the United States.

Figure 4 illustrates bivariate correlations between archival tightness and sociopolitical ideologies and beliefs in the left column and correlations between self-reported tightness and sociopolitical ideologies and beliefs in the right column. Tightness was related to social dominance orientation (archival $r = .66$, $p < .001$; self-report $r = 0.48$, $p < .001$), right-wing authoritarianism (archival $r = 0.88$, $p < .001$; self-report $r = 0.68$, $p < .001$), belief in a just world (archival $r = 0.56$, $p < .001$; self-report $r = 0.59$, $p < .001$), Protestant ethic (archival $r = 0.64$, $p < .001$; self-report $r = 0.56$, $p < .001$), and Bayesian racism (archival $r = 0.69$, $p < .001$; self-report $r = 0.60$, $p < .001$). Tightness was negatively related to humanitarianism/egalitarianism, though only descriptively for self-reported tightness (archival $r = -0.34$, $p = .02$; self-report $r = -0.13$, $p = .38$).

We used spatial regression models to account for spatial non-independence when Moran's *I* suggested significant spatial autocorrelation and modeled all other effects using OLS regression. We reported details about our checks for spatial autocorrelation in the supplement and the results of the regression analyses in Table 2.

Adjusting for all demographic covariates, regression analyses revealed relationships between tightness and right-wing authoritarianism (archival $\beta = 0.45$, $p < .001$; self-report β

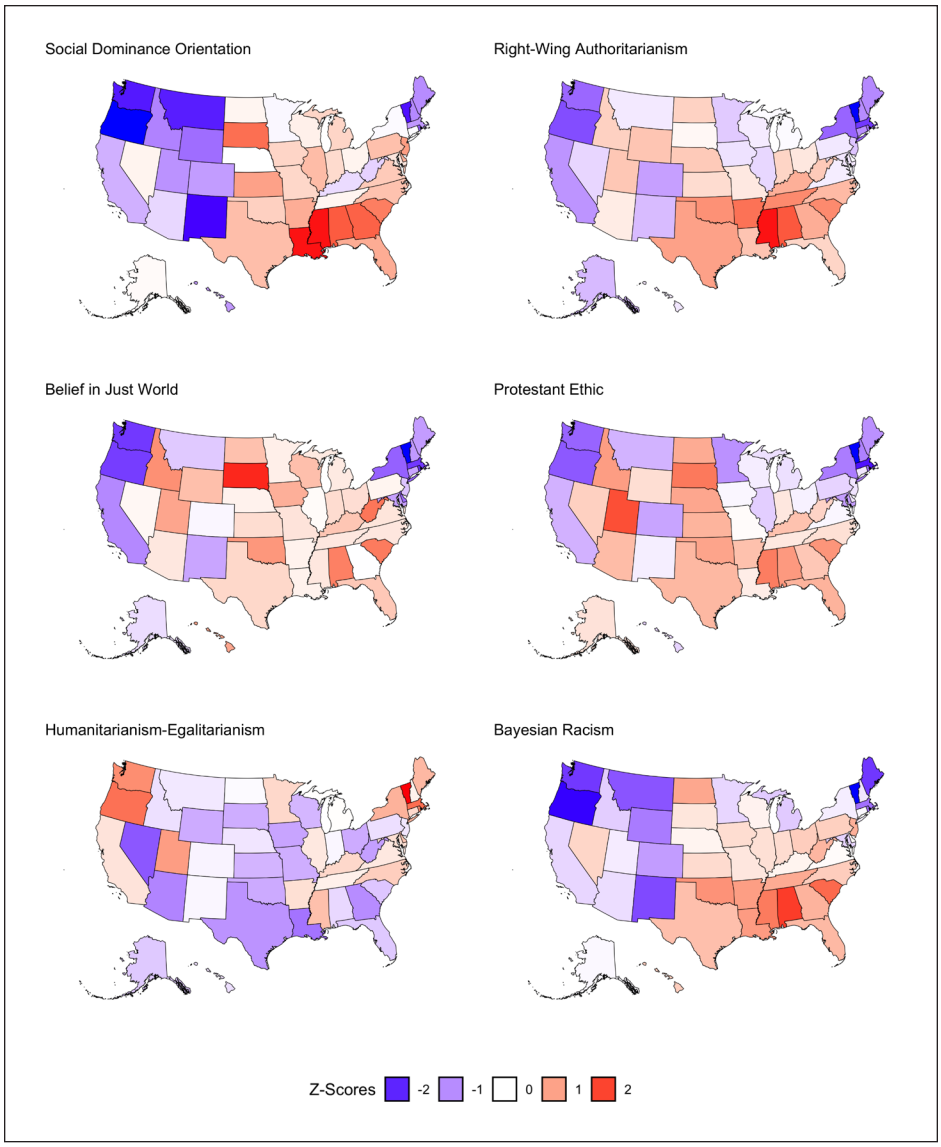


Figure 3. Maps of state-level sociopolitical ideologies and beliefs.

= 0.30, $p < .001$), belief in a just world (archival β = 0.56, p = .03; self-report β = 0.59, $p < .001$), and Bayesian racism (archival β = 0.66, p = .009; self-report β = 0.32, p = .006). Protestant ethic was related to self-reported tightness (β = 0.29, p = .02) but not archival tightness (β = 0.20, p = .34), though a follow-up z-test indicated that the two regression coefficients are not different from each other (z = 0.38, p = .70). Similarly, humanitarianism/egalitarianism was related to archival tightness (β = −0.56, p = .04) but not self-reported tightness (β = 0.11, p = .58), and a z-test indicated that the two regression coefficients are not different from each other (z = 1.38, p = .17). Tightness was unrelated to social dominance orientation (archival β = 0.39, p = .08; self-report β = 0.04, p = .76).

We reported specification curves in Figure 5, which illustrate the estimated regression coefficient between tightness and each sociopolitical ideology or belief across all possible covariate model specifications. Each point in the figure corresponds to a regression coefficient from one model specification, with the precision of each estimate reflected in the 95% confidence interval. Positive effects that are reliably different from zero are depicted in blue, negative effects that are reliably different from zero are depicted in red, and effects that are not reliably different from zero are depicted in gray. The left column indicates effects for regressions using archival tightness as the focal predictor, whereas the right column indicates effects for regressions using self-reported tightness as the focal

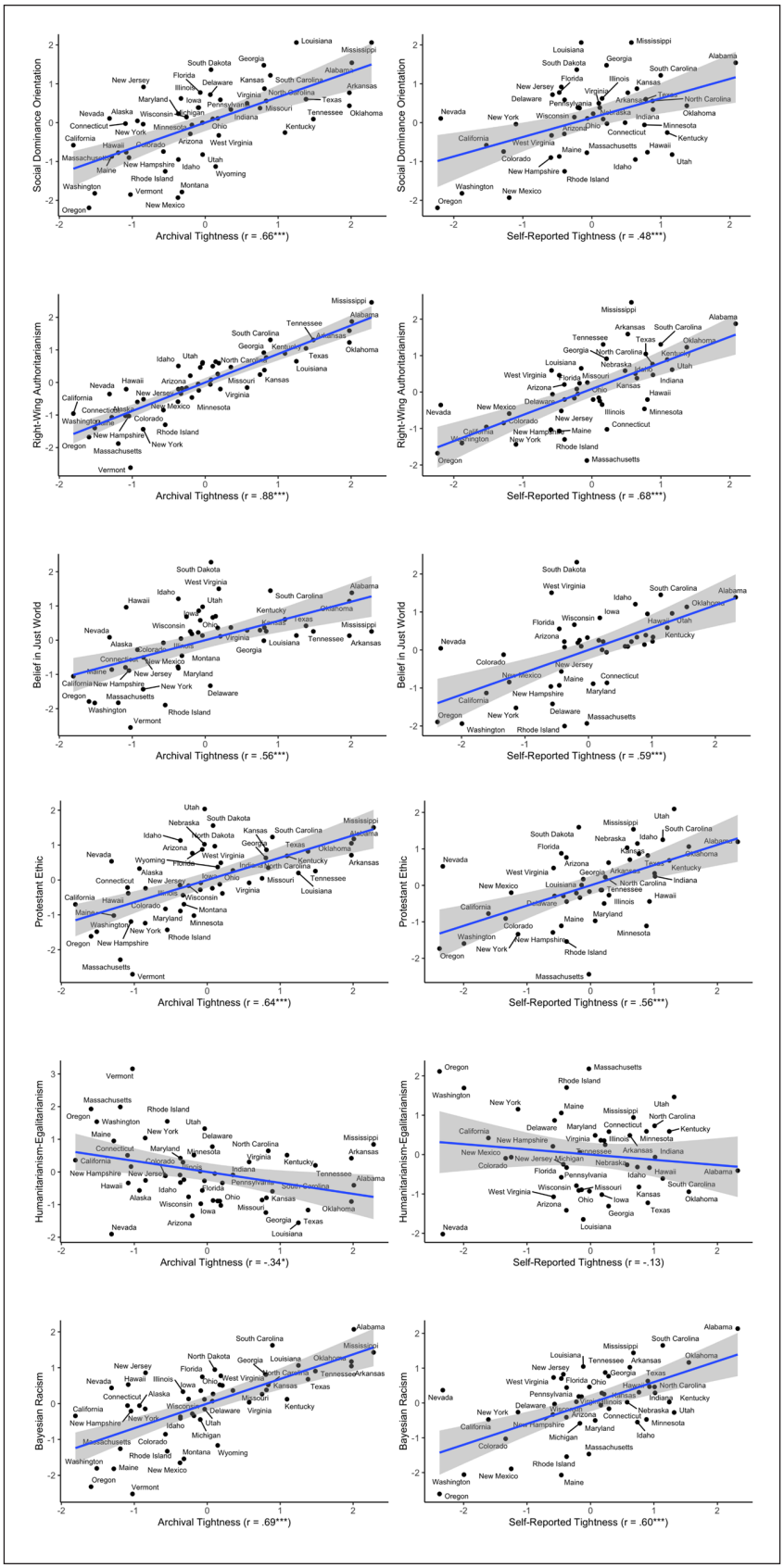


Figure 4. State-level relationships between tightness and sociopolitical ideologies and values.
Note. *$p < .05$. **$p < .01$. ***$p < .001$.

Table 2. Tightness Predicting Sociopolitical Ideologies and Beliefs.

	Social Dominance Orientation		Right-Wing Authoritarianism		Belief in Just World	
Tightness operationalization	Archival	Self-report	Archival	Self-report	Archival	Self-report
Predictor						
Constant	0.01 (0.09)	0.05 (0.09)	0.00 (0.05)	0.06 (0.06)	0.00 (0.11)	0.20** (0.07)
Tightness	0.39† (0.22)	0.04 (0.13)	**0.45*** (0.13)**	**0.30*** (0.08)**	**0.56* (0.26)**	**0.59*** (0.10)**
Median income	0.31 (0.17)	0.25 (0.19)	0.03 (0.10)	−0.06 (0.12)	−0.13 (0.20)	0.02 (0.16)
Urbanity	−0.05 (0.15)	−0.13 (0.15)	0.04 (0.08)	−0.07 (0.09)	0.19 (0.18)	0.04 (0.12)
Gender	0.11 (0.16)	0.11 (0.15)	−0.04 (0.09)	0.02 (0.09)	−0.47* (0.19)	−0.77*** (0.11)
Median age	−0.05 (0.16)	0.00 (0.15)	0.04 (0.09)	0.00 (0.10)	0.22 (0.19)	0.43*** (0.12)
Education	−0.08 (0.15)	−0.07 (0.16)	−0.14 (0.09)	−0.24* (0.10)	0.02 (0.19)	−0.11 (0.13)
Political orientation	−0.17 (0.19)	−0.38* (0.19)	−0.38*** (0.11)	−0.54*** (0.12)	−0.27 (0.24)	−0.37* (0.15)
Race	−0.21 (0.13)	−0.26* (0.12)	−0.19** (0.07)	−0.33*** (0.07)	−0.08 (0.15)	−0.14 (0.09)
Model type	*Spatial lag*	*Spatial lag*	*Spatial lag*	*OLS*	*Spatial error*	*Spatial lag*

	Protestant Ethic		Humanitarianism/Egalitarianism		Bayesian Racism	
Tightness operationalization	Archival	Self-report	Archival	Self-report	Archival	Self-report
Predictor						
Constant	0.00 (0.08)	0.11 (0.08)	0.00 (0.11)	−0.11 (0.13)	0.00 (0.10)	0.08 (0.08)
Tightness	0.20 (0.20)	**0.29* (0.12)**	**−0.56* (0.27)**	−0.11 (0.19)	**0.66** (0.24)**	**0.32** (0.12)**
Median income	−0.09 (0.16)	0.02 (0.17)	0.08 (0.21)	−0.01 (0.27)	0.19 (0.18)	0.37* (0.17)
Urbanity	0.15 (0.14)	0.13 (0.13)	−0.61** (0.18)	−0.31 (0.21)	0.15 (0.16)	0.12 (0.13)
Gender	−0.12 (0.15)	−0.36** (0.13)	0.68** (0.20)	0.61** (0.21)	−0.02 (0.18)	−0.14 (0.13)
Median age	−0.09 (0.15)	0.08 (0.14)	−0.53* (0.20)	−0.46* (0.22)	0.12 (0.18)	0.29* (0.13)
Education	−0.13 (0.15)	−0.23 (0.14)	0.12 (0.19)	0.23 (0.23)	−0.11 (0.17)	−0.29* (0.14)
Political orientation	−0.56** (0.19)	−0.67*** (0.17)	0.31 (0.25)	0.57* (0.27)	−0.24 (0.22)	−0.62*** (0.17)
Race	−0.17 (0.12)	−0.19 (0.10)	0.08 (0.16)	0.23 (0.15)	−0.27 (0.14)	−0.29** (0.10)
Model type	*OLS*	*OLS*	*OLS*	*OLS*	*OLS*	*Spatial lag*

Note. Standard errors in parentheses. OLS = ordinary least squares. Bolded values denote statistically significant effects ($p < .05$).
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

predictor. In the supplemental materials, we also include an expanded version of all specification curve figures, which provides additional information about the covariates comprising each model specification.

The relationships between tightness and right-wing authoritarianism and Bayesian racism identified in our regression models proved to be robust against model specifications, with nearly all effects reliably different from zero and in the same direction in each model across both operationalizations of cultural tightness. The robustness of the relationship between tightness and social dominance orientation, belief in a just world, and Protestant ethic were more varied, especially across different operationalizations of tightness. Last, fewer than half the relationships between tightness and humanitarianism/egalitarianism were reliably different from zero. A table summarizing the exact proportion of reliable effects across all Study 1 specification curves is available in the supplementary materials (Supplemental Table S5).

Is Cultural Tightness Related to Big Five Personality Traits? Figure 6 illustrates maps of the geographical distribution of state-level regional aggregates of Big Five personality traits.

Figure 7 illustrates correlations between archival tightness and Big Five personality traits in the left column and self-reported tightness and Big Five personality traits in the right column. Bivariate correlations revealed strong, positive relationships between tightness scores and agreeableness (archival $r = 0.74$, $p < .001$; self-report $r = 0.47$, $p = .001$) and conscientiousness (archival $r = 0.79$, $p < .001$; self-report $r = 0.43$, $p = .003$). More varied patterns were identified for neuroticism (archival $r = -0.34$, $p = .02$; self-report $r = -0.16$, $p = .28$) and openness (archival $r = -0.19$, $p = .18$; self-report $r = -0.40$, $p = .007$), though effects were directionally consistent across operationalizations. Tightness was not related to extraversion (archival $r = 0.08$, $p = .56$; self-report $r = 0.06$, $p = .70$).

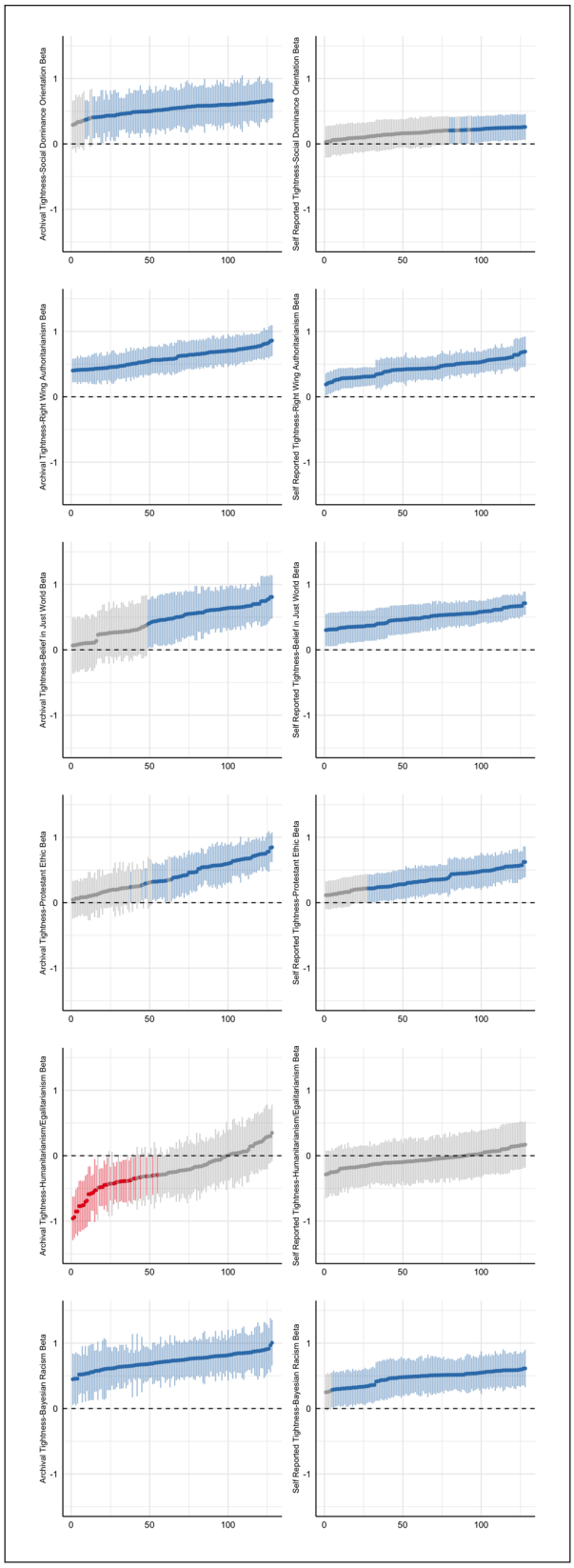


Figure 5. Specification curves of relationships between cultural tightness and sociopolitical ideologies and beliefs.

We reported the results of the regression analyses in Table 3. Adjusting for all demographic covariates, regression analyses revealed relationships between archival tightness and conscientiousness (archival $\beta = 0.62$, $p = .005$; self-report $\beta = -0.04$, $p = .77$), archival tightness and extraversion (archival $\beta = 0.75$, $p = .01$; self-report $\beta = 0.28$, $p = .19$), and self-reported tightness and openness (archival $\beta = -0.32$, $p = .30$; self-report $\beta = -0.57$, $p < 0.001$). Though these relationships did not persist across all operationalizations of tightness, z-tests revealed that the regression coefficients were not different from one another for extraversion ($z = 1.31$, $p = .19$) and openness ($z = 0.79$, $p = .42$), but not for conscientiousness ($z = 2.58$, $p = .01$).

We reported specification curve analyses in Figure 8. The relationship between archival tightness and conscientiousness identified in our regression model proved to be the most robust against model specifications, with 100% of effects reliably different from zero and in the same direction across models. In addition, the relationship between self-reported tightness and openness identified in our regression model was robust against model specifications, with nearly all effects reliably different from zero and in the same direction across models. The relationship between archival tightness and extraversion identified in our regression model was not robust against model specifications, with fewer than half the effects reliably different from zero. Cultural tightness was not related to agreeableness or neuroticism in our regression models, and the specification curves do not suggest robustness to covariate selection.

Is Cultural Tightness Related to Other Personality Traits? Figure 9 illustrates maps of the geographical distribution of state-level regional aggregates of other personality traits.

Figure 10 illustrates correlations between archival tightness and other personality traits in the left column and self-reported tightness and other personality traits in the right column. Correlational analysis revealed relationships between tightness scores and personal need for structure (archival $r = 0.78$, $p < .001$; self-report $r = 0.54$, $p < .001$), self-monitoring (archival $r = -0.52$, $p < .001$; self-report $r = -0.40$, $p = .007$), avoidance of ambiguity (archival $r = 0.60$, $p < .001$; self-report $r = 0.47$, $p = .001$), the need for order (archival $r = 0.82$, $p < .001$; self-report $r = 0.48$, $p < .001$), the need for predictability (archival $r = 0.77$, $p < .001$; self-report $r = 0.59$, $p < .001$), and need for cognition (archival $r = -0.29$, $p = .04$; self-report $r = -0.44$, $p = .002$). In addition, archival tightness, but not self-reported tightness, was related to self-deception (archival $r = -0.58$, $p < .001$; self-report $r = -0.25$, $p = .10$), impression management (archival $r = 0.48$, $p < .001$; self-report $r = 0.25$, $p = .10$), and decisiveness (archival $r = 0.44$, $p = .002$; self-report $r = 0.12$, $p = .43$). Overall, we find directionally consistent patterns of results across tightness operationalizations. We followed our correlational analysis with OLS models

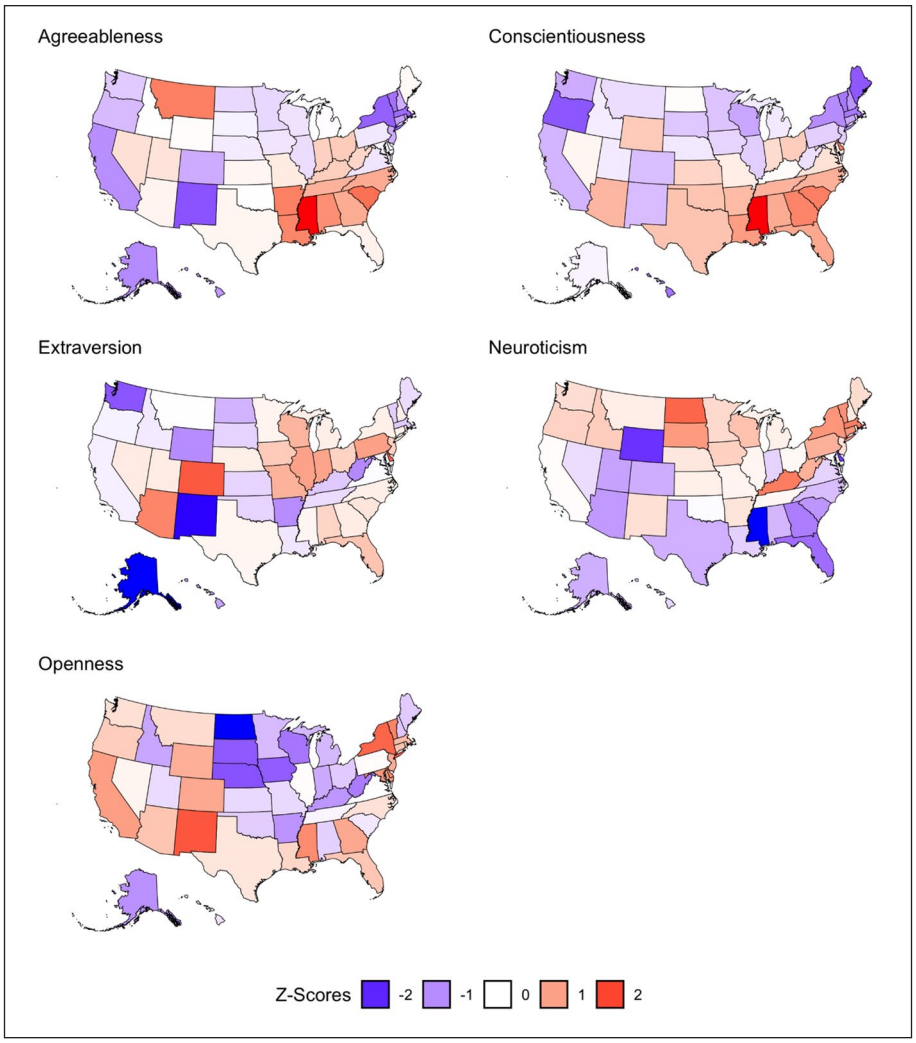


Figure 6. Maps of state-level Big Five personality traits.

regressing tightness and state-level demographic covariates on each construct.

We reported the results of the regression analyses in Table 4. Regressions revealed relationships between archival tightness, but not self-reported tightness, and decisiveness (archival $\beta = 0.49$, $p = .01$; self-report $\beta = -0.10$, $p = .48$), the need for order (archival $\beta = 0.47$, $p = .007$; self-report $\beta = 0.04$, $p = .69$), and the need for predictability (archival $\beta = 0.45$, $p = .03$; self-report $\beta = 0.14$, $p = .14$). Self-reported tightness, but not archival tightness, was related to need for cognition (archival $\beta = -0.41$, $p = .15$; self-report $\beta = -0.62$, $p < .001$) and close mindedness (archival $\beta = 0.47$, $p = .14$; self-report $\beta = 0.35$, $p = .006$). Furthermore, z-tests revealed that the regression coefficients were not different from each other for the need for predictability ($z = 1.40$, $p = .16$), close mindedness ($z = 0.36$, $p = .72$), and the need for cognition ($z = 0.64$, $p = .52$), but not for decisiveness ($z = 2.52$, $p = .01$) and the need for order ($z = 2.14$, $p = .03$)

We reported specification curve analyses in Figure 11. The relationships between archival tightness and the need for order and the need for predictability identified in our regression models proved to be robust against model specifications with 100% of effects reliably different from zero and in the same direction in each model. However, the relationship between archival tightness and decisiveness identified in our regression model was not robust against model specifications, with only about 10% of effects reliably different from zero. Though archival tightness was not related to the personal need for structure or avoidance of ambiguity in the full regression models, specification curve analysis indicated a robust relationship between archival tightness and personal need for structure and avoidance of ambiguity in 91 and 87% of model specifications, respectively. Across model specifications, archival tightness was inconsistently related to impression management, the need for cognition, self-monitoring, and close mindedness across model

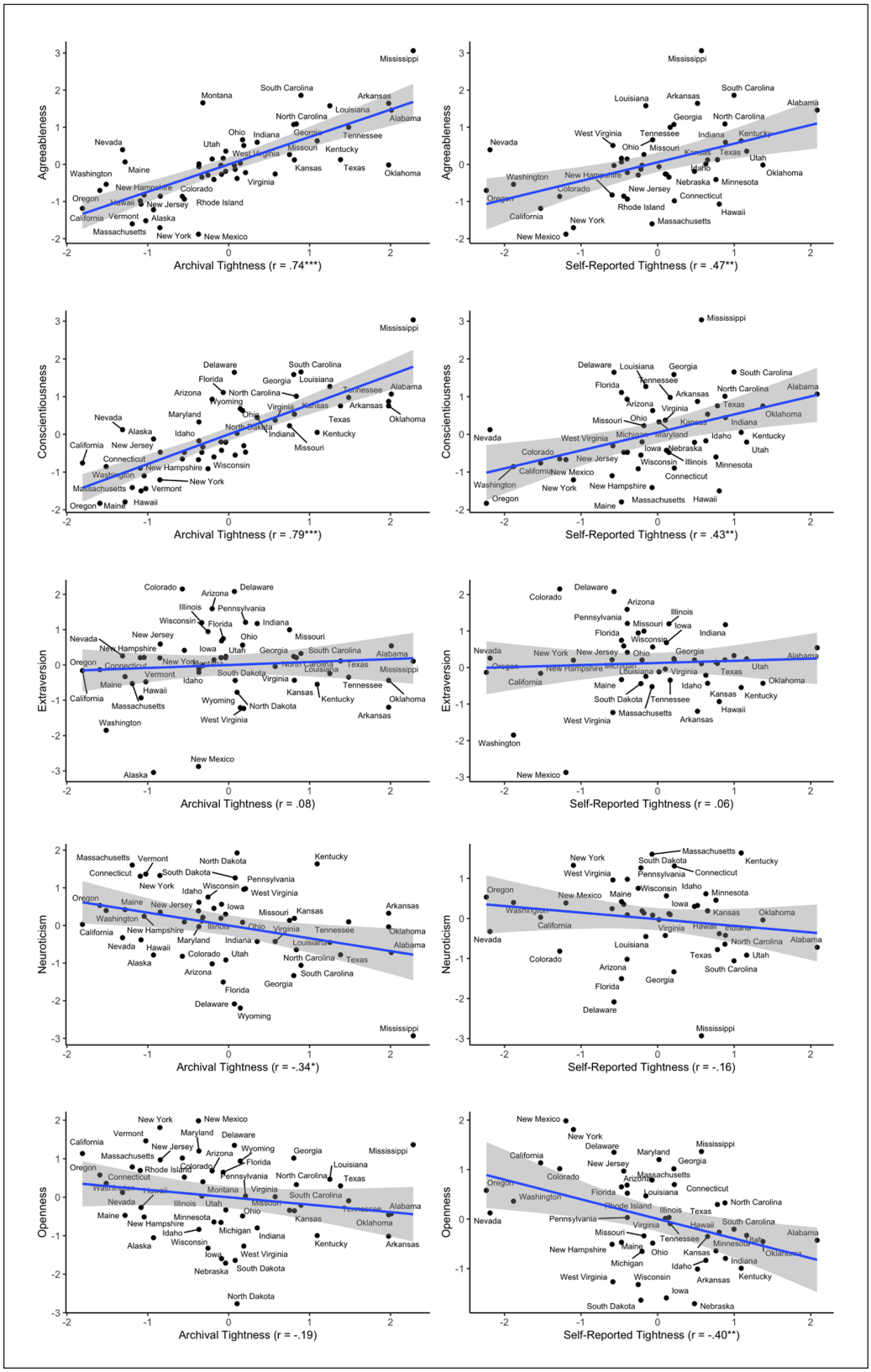


Figure 7. State-level relationship between tightness and Big Five personality traits.
Note. *$p < .05$. **$p < .01$. ***$p < .001$.

Table 3. Tightness Predicting Big Five Personality Traits.

	Agreeableness		Conscientiousness		Extraversion	
Tightness operationalization	Archival	Self-report	Archival	Self-report	Archival	Self-report
Predictor						
Constant	0.01 (0.08)	0.03 (0.07)	0.00 (0.08)	−0.09 (0.10)	0.00 (0.12)	0.07 (0.14)
Tightness	0.10 (0.20)	0.06 (0.11)	**0.62** (0.21)**	−0.04 (0.15)	**0.75* (0.29)**	0.28 (0.21)
Median income	−0.21 (0.15)	0.08 (0.16)	0.04 (0.16)	−0.07 (0.22)	−0.30 (0.22)	−0.29 (0.30)
Urbanity	−0.13 (0.13)	−0.23 (0.13)	0.19 (0.14)	0.10 (0.17)	0.69*** (0.19)	0.52* (0.24)
Gender	0.15 (0.14)	0.12 (0.13)	0.03 (0.15)	0.51** (0.17)	−0.02 (0.21)	0.12 (0.23)
Median age	0.08 (0.14)	−0.02 (0.13)	0.11 (0.15)	−0.09 (0.18)	0.31 (0.21)	0.22 (0.24)
Education	0.02 (0.14)	−0.21 (0.13)	−0.12 (0.15)	−0.19 (0.19)	0.41 (0.20)	0.25 (0.26)
Political orientation	−0.35* (0.17)	−0.34* (0.16)	−0.31 (0.19)	−0.68** (0.22)	0.32 (0.26)	−0.02 (0.30)
Race	−0.20 (0.11)	−0.17 (0.10)	−0.21 (0.12)	−0.41** (0.13)	0.40* (0.17)	0.22 (0.17)
Model type	*Spatial lag*	*Spatial lag*	*OLS*	*OLS*	*OLS*	*OLS*

	Neuroticism		Openness	
Tightness operationalization	Archival	Self-report	Archival	Self-report
Predictor				
Constant	0.00 (0.12)	0.05 (0.13)	0.00 (0.12)	−0.17* (0.07)
Tightness	−0.34 (0.30)	0.08 (0.20)	−0.32 (0.30)	**−0.57*** (0.11)**
Median income	0.01 (0.23)	0.29 (0.28)	−0.14 (0.23)	−0.16 (0.16)
Urbanity	−0.36 (0.21)	−0.15 (0.23)	0.25 (0.20)	0.12 (0.13)
Gender	0.24 (0.22)	−0.10 (0.22)	0.37 (0.22)	0.66*** (0.12)
Median age	−0.40 (0.22)	−0.07 (0.23)	0.15 (0.22)	−0.26* (0.13)
Education	−0.04 (0.22)	−0.17 (0.24)	0.11 (0.21)	0.18 (0.13)
Political orientation	0.44 (0.27)	0.40 (0.28)	−0.17 (0.27)	−0.03 (0.16)
Race	0.40* (0.18)	0.53** (0.16)	−0.34 (0.18)	−0.34*** (0.09)
Model type	*OLS*	*OLS*	*OLS*	*Spatial lag*

Note. Standard errors in parentheses. OLS = ordinary least squares. Bolded values denote statistically significant effects ($p < .05$).
$^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

specifications. The relationships between self-reported tightness and need for cognition identified in our regression model also proved to be robust against model specifications with 100% of effects reliably different from zero and in the same direction in each model. However, the relationship between self-reported tightness and close mindedness identified in our regression model was not robust against model specifications, with only 41% of effects reliably differing from zero.

Summary of Study 1 Results

Taken together, the results of Study 1 indicate that psychological constructs vary in meaningful ways within the United States. Moreover, our analyses suggest that cultural tightness is a common thread that connects many, but not all, of these constructs. In Figure 12, we summarize Study 1 results by plotting the regression coefficients and corresponding 95% confidence intervals for archival tightness and self-reported tightness as a predictor of each psychological characteristic. Psychological characteristics with a 95% confidence interval that does not contain zero can be interpreted as being reliably related to tightness. Furthermore, we also summarize the proportion of reliable effects for each specification curve.

In Study 2, we extend our level of analysis to nations and test the generalizability of our findings by exploring whether the relationships between tightness and the Big Five personality traits found within the United States can also be observed in a cross-nation analysis. Though we expect that the relationships with cultural tightness and Big Five personality traits that emerged in Study 1 will replicate in Study 2, we are tentative in our predictions because Selvin (1958) cautioned against assuming without evidence that findings observed at one level of analysis persist at other units of analysis.

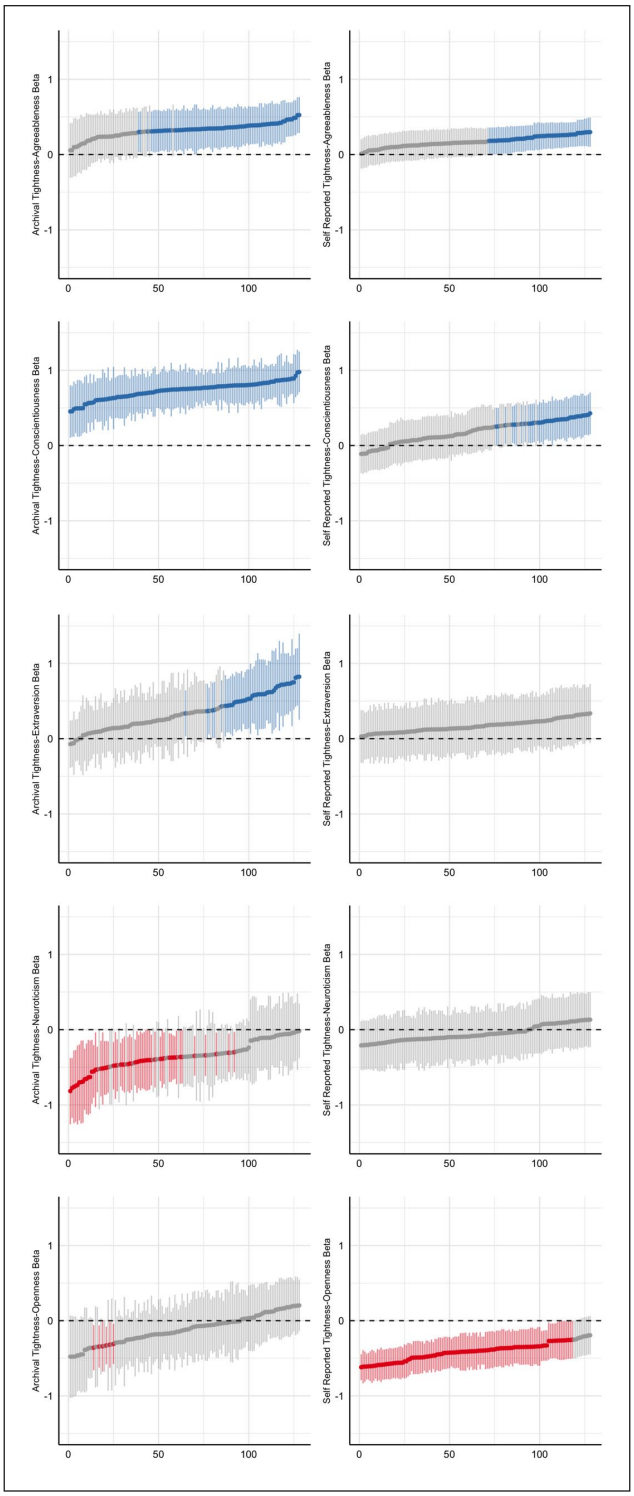


Figure 8. Specification curves of relationships between cultural tightness and Big Five personality traits.

Study 2

Study 2 conceptually replicates a subset of the analyses from Study 1: we examined relationships between self-reported tightness and the Big Five personality traits of agreeableness, conscientiousness, extraversion, neuroticism, and openness aggregated to nation levels. Study 2 also extended Study 1 by relying on two separate data sources for cultural tightness. In doing so, Study 2 investigated whether culturally-tight nations – like U.S. states – are also higher in conscientiousness and lower in openness, compared to culturally loose nations. In addition, Study 2 sought to provide further insight into the positive, though less consistent, relationship between tightness and extraversion observed in Study 1.

Sample

Our tightness data and personality data come from two independent sources: the International Study of Metanorms (ISMN; Eriksson et al., 2021) and the International Situations Project (ISP; Baranski et al., 2021). The ISMN is part of a study on the perceptions of norm violations spanning 57 countries. Collaborators collected data from April 2019 to January 2020. Participants (52.2% women, mean age = 24.9 years, SD = 8.9 years) were undergraduate students (n = 18,091) and non-students (n = 4,772) who were recruited by local researchers through a variety of methods, such as email invitations, social media, in class and on campus, public notices, and flyers.

The ISP is a multi-nation data collection effort aided by project collaborators in 56 different countries. Collaborators collected data from March 2017 to June 2018, focusing on the role of culture in situational assessment, daily behavior, and individual differences. Participants (n = 13,278; 71.82% female; mean age = 21.29 years, SD = 4.52 years) were undergraduate students recruited by faculty collaborators at their respective institutions. For both the ISMN and ISP data, items from all measures were independently translated and back-translated to the respective language of the host country. OSF project pages containing the ISP and ISMN datasets are available at osf.io/yv2nq and osf.io/pm5kc, respectively.

Measures

Cultural Tightness–Looseness. Both the ISMN and the ISP measured tightness using Gelfand et al.'s (2011) 6-item Cultural Tightness-Looseness self-report scale, which includes items like "There are many social norms that people are supposed to abide by in this country." ISMN participants self-reported tightness using a 6-point Likert-type scale ranging from 1 ("disagree strongly") to 6 ("strongly agree"). ISP participants self-reported tightness using a 5-point Likert-type scale ranging from 1 ("disagree strongly") to 5 ("agree strongly"). By relying on tightness scores from separate data collection efforts, we can evaluate the extent to which the relationship between tightness and personality generalizes across different participant samples. The two data sources share 36 nations in common.

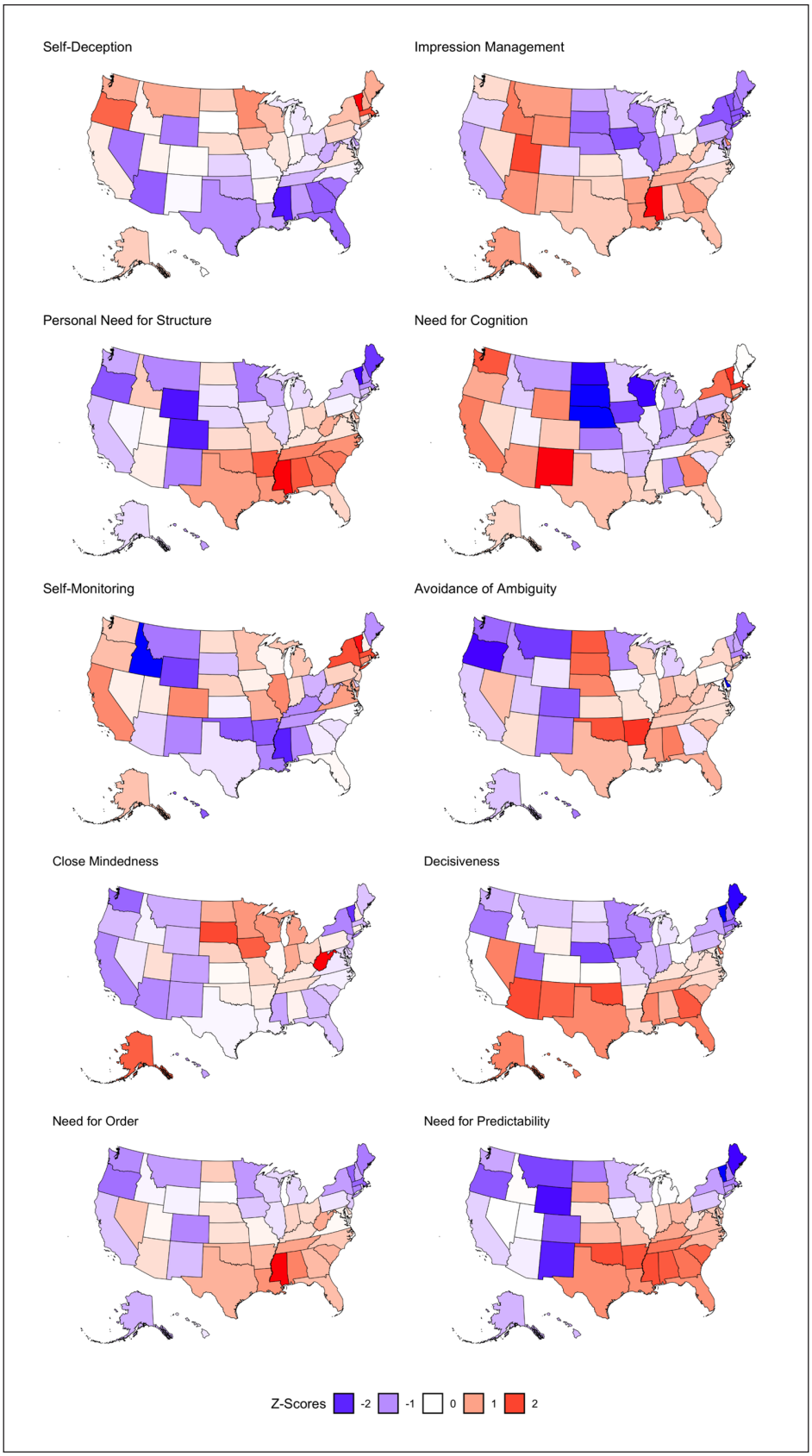


Figure 9. Maps of other state-level personality traits.

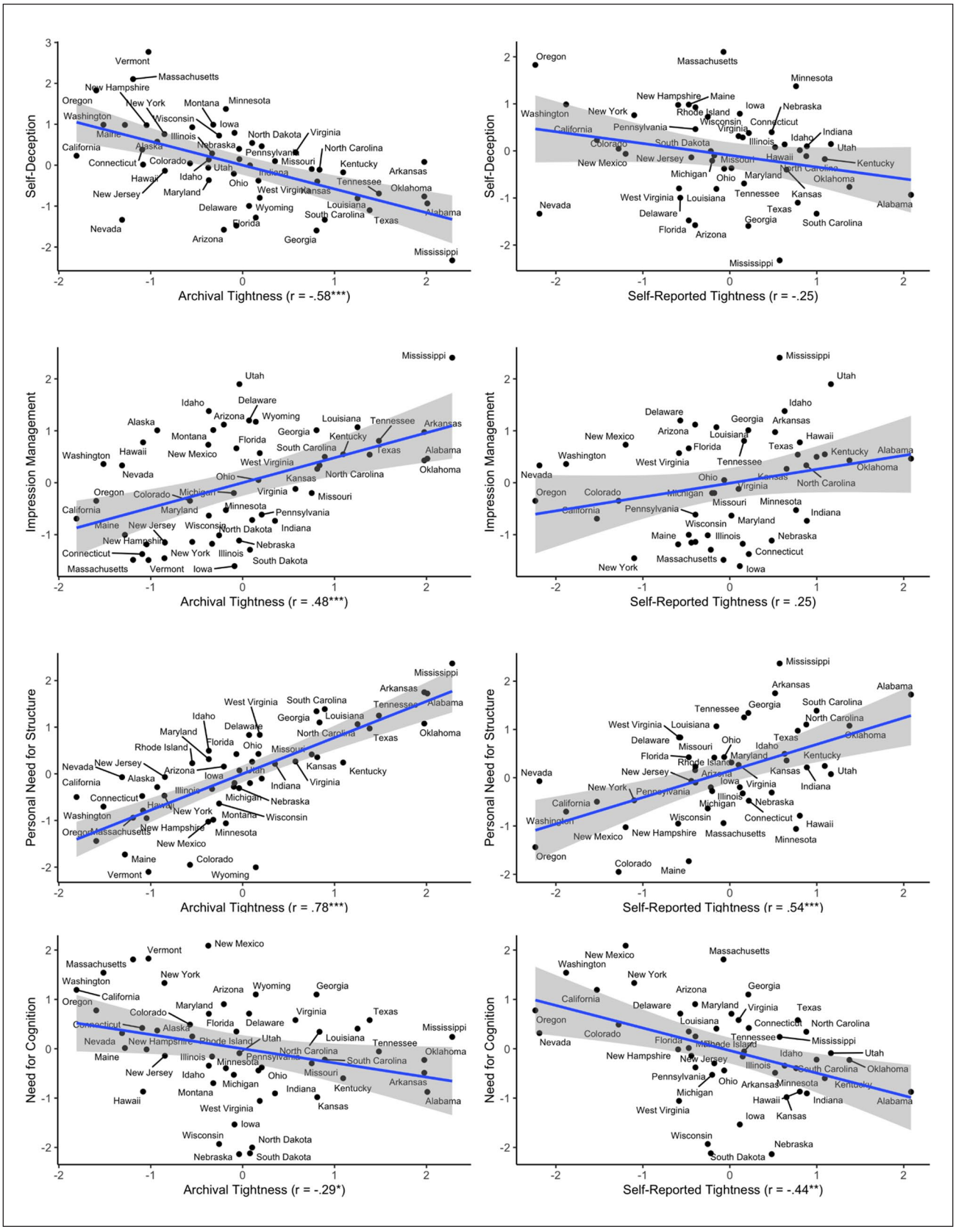
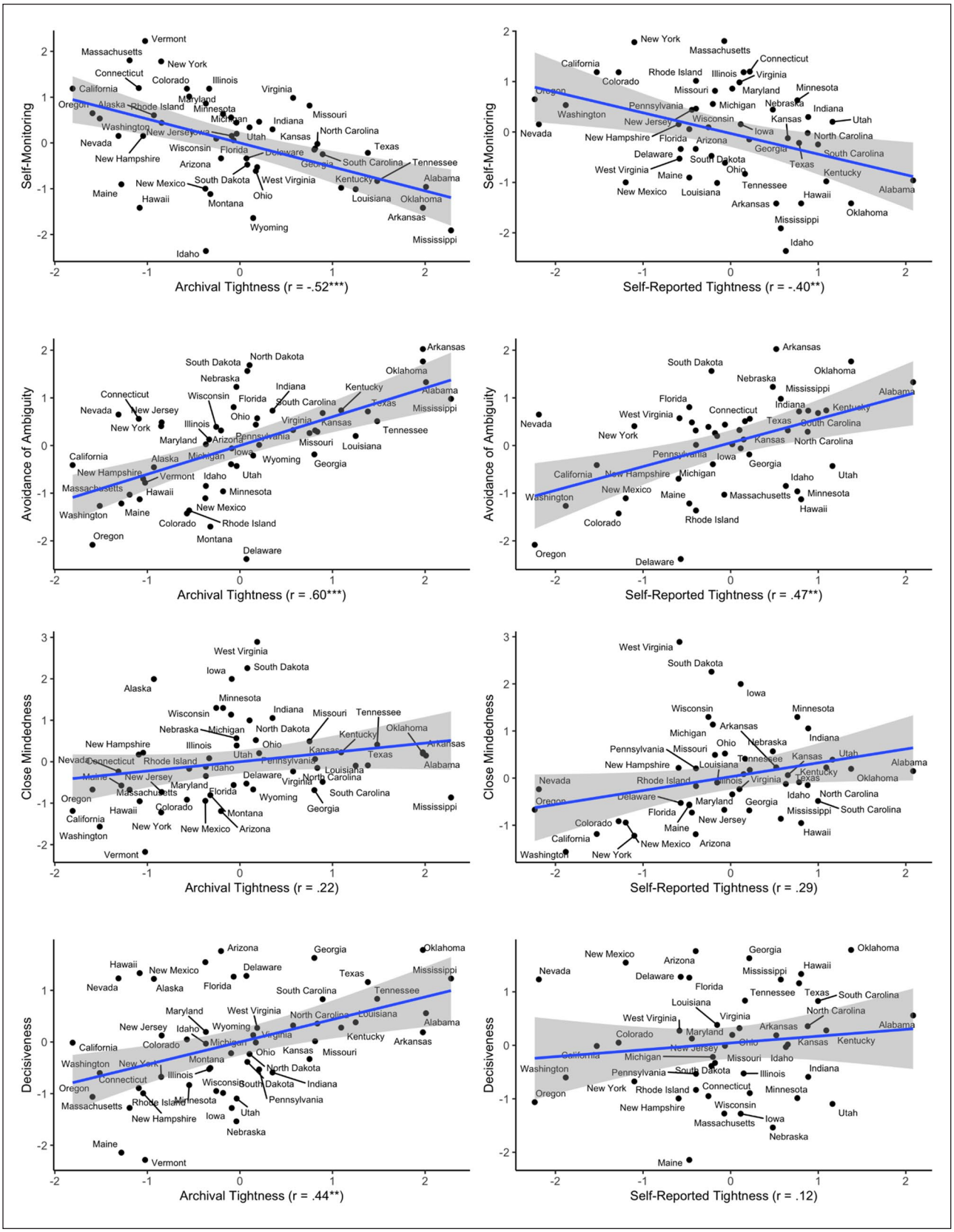


Figure 10. *(continued)*



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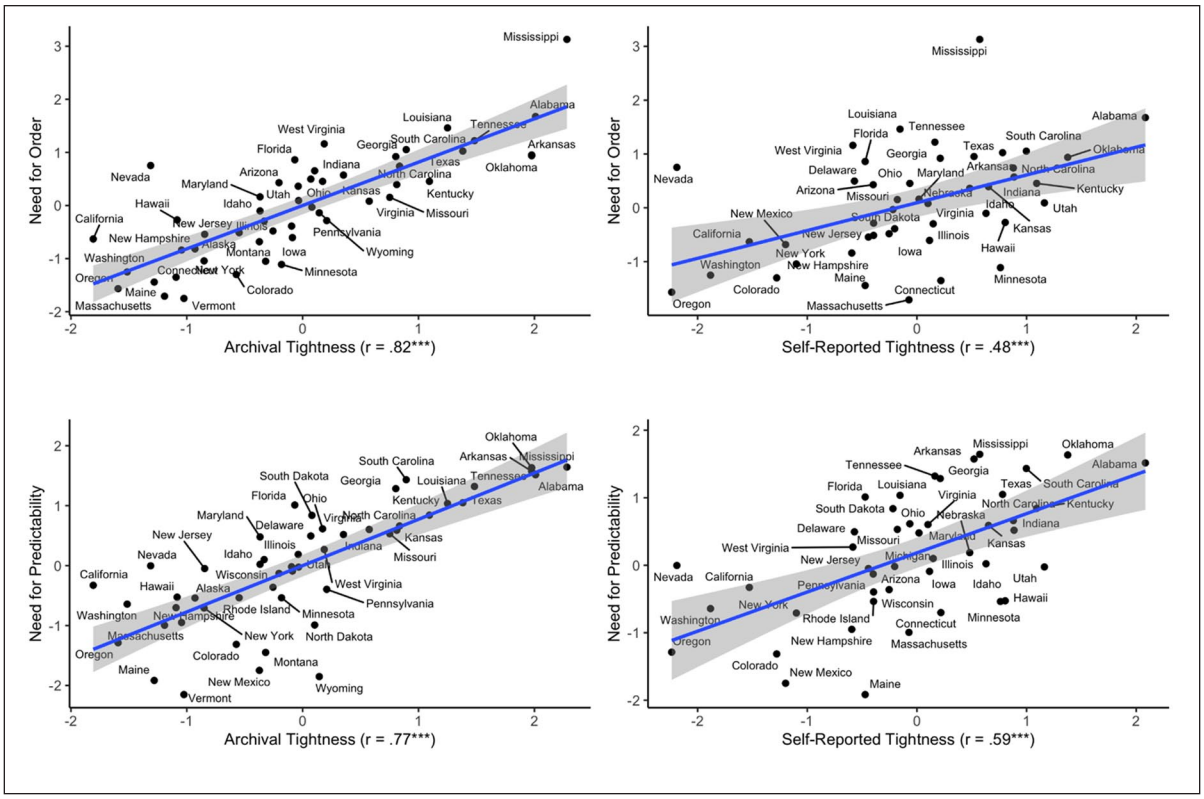


Figure 10. State-level relationship between tightness and other personality traits.
Note. *$p < .05$. **$p < .01$. ***$p < .001$.

Big Five Personality. ISP participants self-reported personality using the Big Five Inventory–2 (BFI-2; Soto & John, 2017) on a Likert-type scale ranging from 1 ("disagree strongly") to 5 ("agree strongly"). The BFI-2 is a 60-item scale that assesses the five-factor model of personality that consists of 15 underlying facet traits. The traits (facets) are agreeableness (trust, respect, compassion), conscientiousness (productiveness, responsibility, organization), openness (intellectual curiosity, creativity, aesthetic appreciation), extraversion (sociability, assertiveness, energy), and negative emotionality (anxiety, depression, emotional volatility). After rescoring reverse-keyed items, we averaged responses to obtain a mean personality trait score for each respondent. The ISMN study did not include a Big Five personality measure.

Covariates. We included four nation-level covariates in our analysis: socioeconomic development, median age, population density, and sex ratio. We operationalized socioeconomic development using the Human Development Index, which is a composite index reflecting life expectancy, average and expected years of schooling, and gross national income per capita. We operationalized population density as persons per square kilometer and sex ratio as the number of males per 100 females. Human Development Index scores came from the United Nations Development Programme (2019). All other demographic covariates came from the United Nations, Department of Economic and Social Affairs, Population Division (2019). Our covariates reflect basic characteristics of each nation, and we sought to include covariates in Study 2 that aligned with our Study 1 covariates. However, considerable differences exist in cross-cultural conceptions of political orientation and race (Hirschman, 2004). Due to the barriers of finding political orientation and race datasets that are conceptually equivalent across nations, we did not include covariates for these two constructs.

Analysis

We computed tightness and personality means for each nation by averaging across all respondents in each nation. Although our nation-level tightness and personality estimates were based on the responses of thousands of participants, these correlations reflect 36 and 56 nation-level observations for the ISMN and ISP data, respectively. In the supplementary materials, we reported a correlation matrix for all Study 2 measures (Supplemental Table S6).

In parallel with our Study 1 analyses, in the section below, we began by visualizing bivariate correlations between tightness and Big Five personality traits. Then, we examined relationships between tightness and national personality using

Table 4. Tightness Predicting Other Personality Traits.

	Self-Deception		Impression Management		Personal Need for Structure		Need for Cognition		Self-Monitoring	
Tightness operationalization	Archival	Self-report	Archival	Self-report	Archival	Self-report	Archival	Self-report	Archival	Self-report
Predictor										
Constant	0.00 (0.08)	−0.03 (0.10)	0.00 (0.10)	−0.03 (0.11)	0.00 (0.07)	0.01 (0.07)	−0.02 (0.11)	−0.19* (0.09)	0.00 (0.09)	−0.11 (0.09)
Tightness	−0.38† (0.21)	0.07 (0.14)	−0.02 (0.24)	−0.11 (0.16)	0.24 (0.18)	0.05 (0.10)	−0.41 (0.29)	**−0.62*** (0.13)**	−0.02 (0.23)	−0.18 (0.13)
Median income	0.03 (0.16)	−0.03 (0.20)	−0.24 (0.18)	−0.05 (0.22)	0.06 (0.14)	0.19 (0.14)	0.02 (0.22)	−0.12 (0.20)	0.25 (0.18)	0.01 (0.19)
Urbanity	−0.50*** (0.14)	−0.30 (0.16)	0.18 (0.16)	0.18 (0.18)	−0.05 (0.12)	0.01 (0.11)	0.07 (0.19)	0.06 (0.16)	0.00 (0.16)	0.21 (0.15)
Gender	0.18 (0.15)	0.06 (0.15)	−0.23 (0.17)	−0.18 (0.17)	0.44** (0.13)	0.50*** (0.11)	0.34 (0.21)	0.66 (0.15)	0.26 (0.17)	0.51*** (0.14)
Median age	−0.37* (0.15)	−0.29 (0.16)	0.16 (0.17)	0.07 (0.18)	−0.25 (0.13)	−0.12 (0.11)	−0.11 (0.21)	−0.38* (0.16)	−0.38* (0.17)	−0.34* (0.15)
Education	0.29 (0.15)	0.34 (0.17)	−0.15 (0.17)	−0.28 (0.19)	−0.28* (0.13)	−0.42** (0.12)	−0.10 (0.20)	0.12 (0.16)	0.14 (0.17)	0.28 (0.16)
Political orientation	0.50* (0.19)	0.78*** (0.20)	−0.61** (0.21)	−0.71** (0.22)	−0.29 (0.16)	−0.61*** (0.14)	−0.08 (0.26)	0.02 (0.20)	0.60** (0.21)	0.43* (0.18)
Race	0.34** (0.12)	0.52*** (0.12)	−0.47** (0.14)	−0.49*** (0.13)	−0.30** (0.11)	−0.34*** (0.08)	−0.13 (0.17)	−0.16 (0.11)	0.38** (0.14)	0.37** (0.11)
Model type	*OLS*	*OLS*	*OLS*	*OLS*	*OLS*	*OLS*	*Spatial lag*	*Spatial lag*	*OLS*	*OLS*

	Avoidance of Ambiguity		Close Mindedness		Decisiveness		Need for Order		Need for Predictability	
Model type	Archival	Self-report	Archival	Self-report	Archival	Self-report	Archival	Self-report	Archival	Self-report
Predictor										
Constant	0.00 (0.12)	0.04 (0.13)	0.00 (0.12)	0.11 (0.09)	0.00 (0.08)	−0.02 (0.10)	0.00 (0.07)	0.02 (0.07)	0.00 (0.08)	0.07 (0.07)
Archival tightness	0.48 (0.30)	0.19 (0.19)	0.47 (0.31)	**0.35** (0.13)**	**0.49* (0.19)**	−0.10 (0.14)	**0.47** (0.17)**	0.04 (0.11)	**0.45* (0.19)**	0.14 (0.10)
Median income	0.21 (0.23)	0.23 (0.27)	0.54* (0.24)	0.35* (0.18)	−0.09 (0.15)	−0.08 (0.20)	−0.01 (0.13)	0.10 (0.16)	0.04 (0.15)	0.28* (0.14)
Urbanity	−0.03 (0.20)	0.02 (0.22)	−0.13 (0.21)	−0.14 (0.15)	0.51*** (0.13)	0.42* (0.16)	0.09 (0.11)	0.03 (0.12)	0.11 (0.13)	0.03 (0.11)
Gender	0.04 (0.22)	0.06 (0.21)	−0.30 (0.23)	−0.37** (0.14)	−0.49** (0.14)	−0.20 (0.15)	0.03 (0.12)	0.15 (0.12)	0.31* (0.14)	0.15 (0.11)
Median age	−0.11 (0.22)	0.07 (0.22)	−0.17 (0.23)	0.07 (0.15)	0.41** (0.14)	0.35* (0.16)	0.00 (0.12)	0.04 (0.13)	−0.13 (0.14)	−0.03 (0.11)
Education	−0.20 (0.21)	−0.29 (0.23)	−0.53* (0.22)	−0.45** (0.15)	−0.20 (0.14)	−0.27 (0.17)	−0.32* (0.12)	−0.46** (0.13)	−0.14 (0.14)	−0.27* (0.12)
Political orientation	−0.13 (0.27)	−0.60* (0.27)	0.28 (0.28)	0.10 (0.19)	−0.25 (0.17)	−0.70** (0.20)	−0.23 (0.15)	−0.69*** (0.16)	−0.27 (0.18)	−0.54*** (0.15)
Race	0.04 (0.17)	−0.13 (0.16)	0.50** (0.18)	0.40*** (0.11)	−0.54*** (0.11)	−0.72*** (0.12)	−0.27** (0.10)	−0.45*** (0.09)	−0.25* (0.11)	−0.20* (0.09)
Model type	*OLS*	*OLS*	*OLS*	*Spatial lag*	*OLS*	*OLS*	*OLS*	*OLS*	*OLS*	*Spatial lag*

Note. Standard errors in parentheses. OLS = ordinary least squares. Bolded values denote statistically significant effects ($p < .05$).
$^{\dagger}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

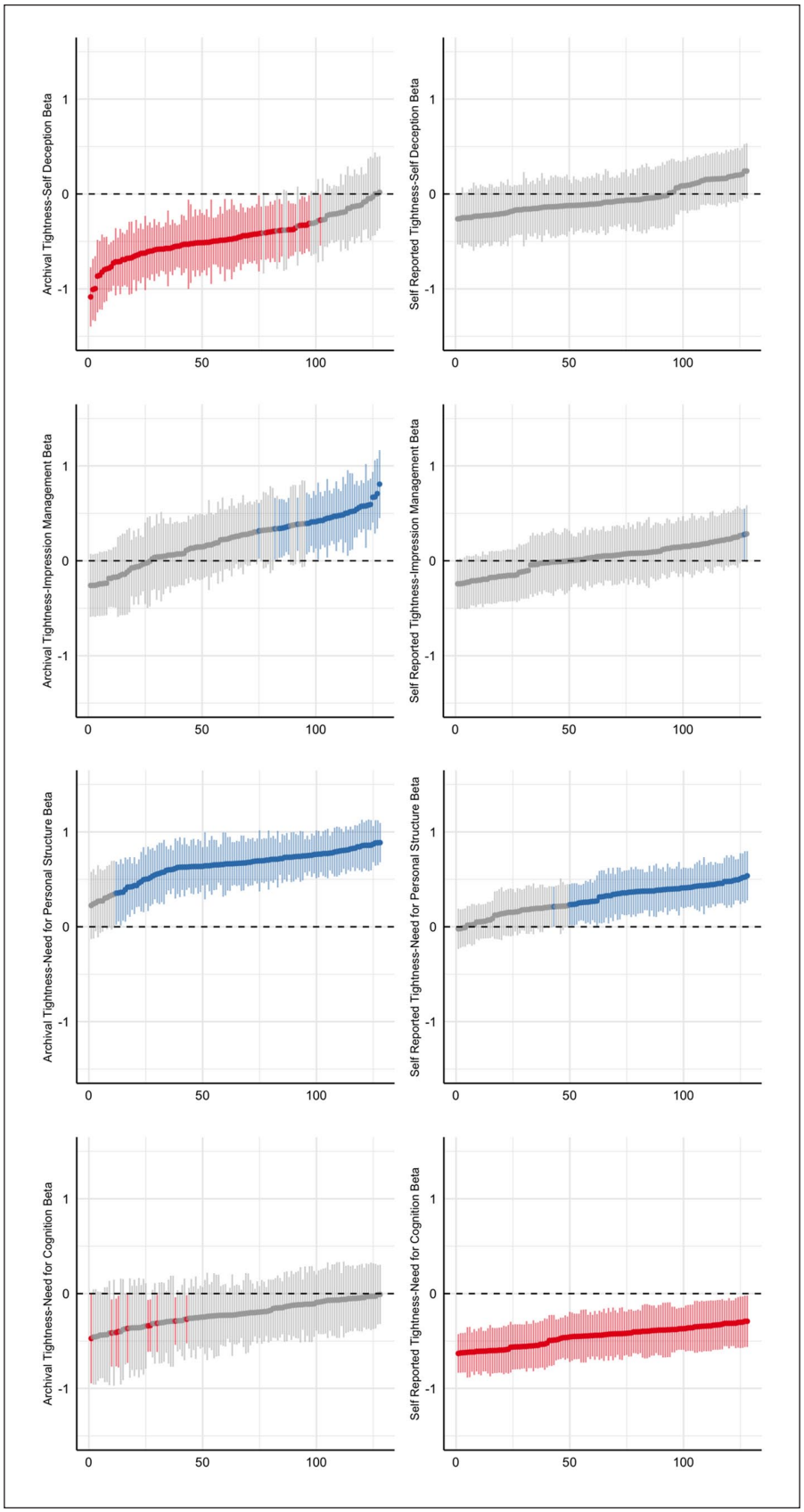
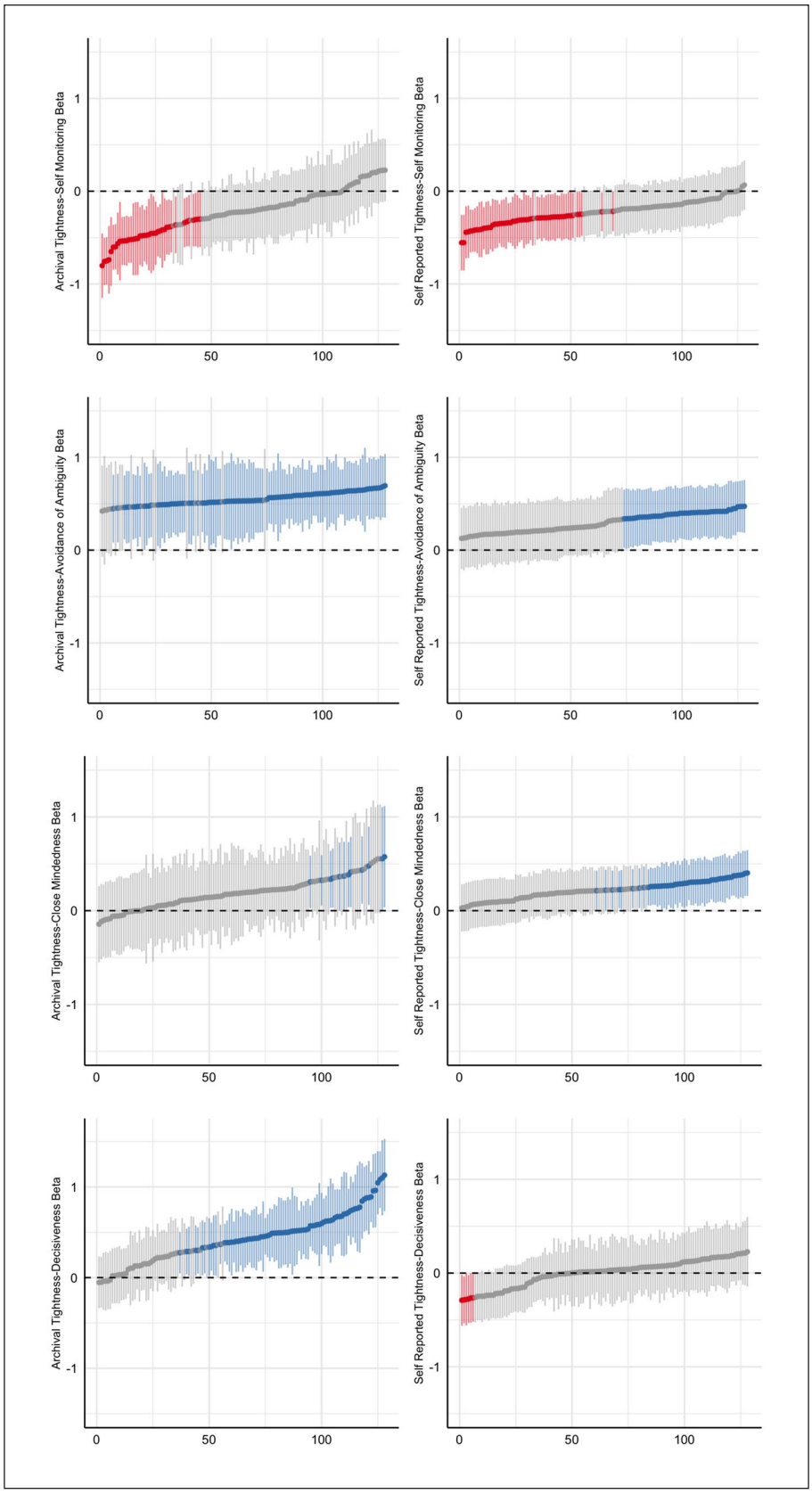


Figure 11. *(continued)*



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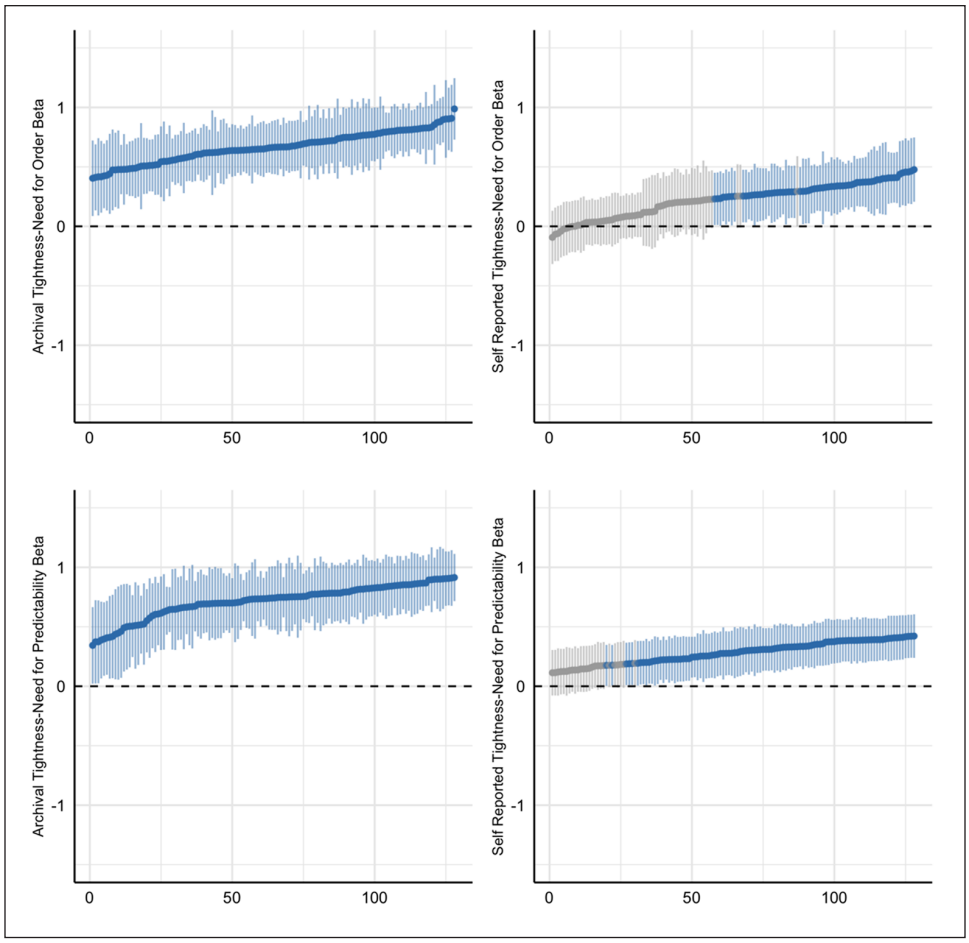

Figure 11. Specification curves of relationships between cultural tightness and other personality traits.

similar spatial regression techniques as we used in Study 1. Further details on our analytic approach can be found in the supplementary materials. Additionally, given that tightness scores as measured by the ISP and ISMN are highly but not perfectly correlated ($r = 0.75$, $p < .001$), we reported below two sets of parallel analyses. One set of analyses sought to predict ISP Big Five personality scores from ISP tightness measures in all 56 ISP countries, which maximizes the statistical power of these analyses. The other set of analyses sought to predict ISP Big Five personality scores from ISMN tightness measures in the 36 countries common to both ISP and ISMN data collection efforts, which provides insight into generalizability of our findings by assessing relationships across two independent datasets. We standardized all variables before analysis. Mirroring the analytic approach in Study 1, we explored the robustness of the relationships between tightness and Big Five personality traits with specification curve analyses (Simonsohn et al., 2020).

Results

Is Tightness Related to Extraversion? Figure 13 illustrates correlations between tightness and trait extraversion and extraversion facets. The ISMN measure of tightness was negatively correlated with extraversion ($r = -0.48$, $p = .003$), as well as the sociability ($r = -0.48$, $p = .003$), assertiveness ($r = -0.37$, $p = .03$), and energy ($r = -0.40$, $p = .02$) facets of extraversion. The ISP measure of tightness was also negatively correlated with extraversion ($r = -0.44$, $p < .001$), as well as the sociability ($r = -0.42$, $p = .001$), assertiveness ($r = -0.38$, $p = .004$), and energy ($r = -0.29$, $p = .03$) facets of extraversion.

When Moran's I revealed significant spatial autocorrelation in OLS models, we used spatial regression models to account for spatial non-independence. We reported the results of all regression analyses in Table 5. Accounting for all covariates, regression analyses revealed a negative relationship between tightness and extraversion (ISMN $\beta = -0.45$, $p = .01$; ISP $\beta = -0.31$, $p = .01$), sociability (ISMN $\beta = -0.41$, $p = .03$; ISP $\beta = -0.37$, $p = .02$), assertiveness (ISMN $\beta = -0.34$, $p = .05$; ISP $\beta = -0.23$, $p = .05$), and energy (ISMN $\beta = -0.32$, $p = .03$; ISP $\beta = -0.23$, $p = .09$). Though the relationship between ISP tightness and the energy facet of extraversion did not meet the conventional benchmark of statistical significance, a z-test revealed that the regression coefficient was no different from the

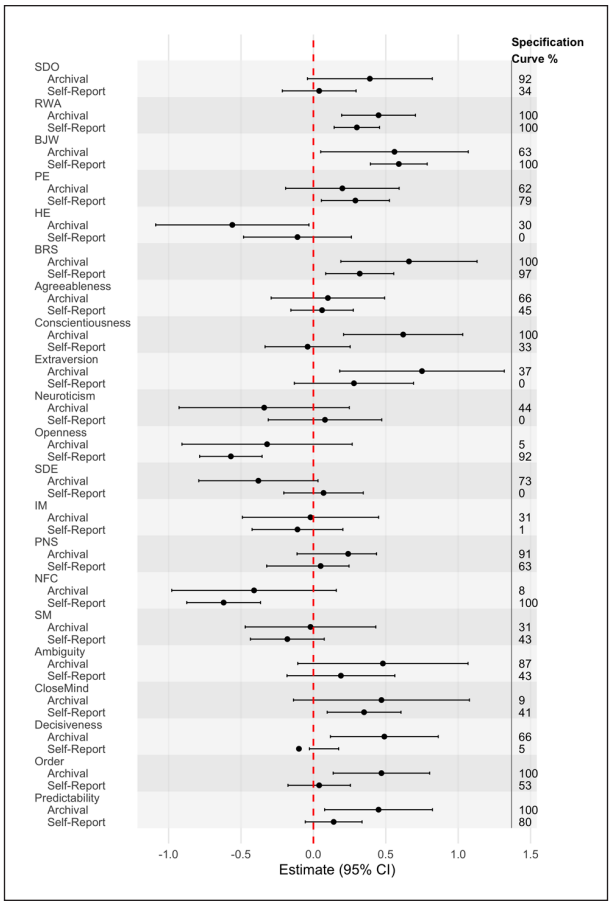

Figure 12. Forest plot summarizing Study 1 results.
Note. SDO = Social Dominance Orientation; RWA = Right-Wing Authoritarianism; BJW = Belief in a Just World; PE = Protestant Ethic; HE = Humanitarianism/Egalitarianism; BRS = Bayesian Racism Scale; SDE = Self-Deception; IM = Impression Management; PNS = Personal Need for Structure; NFC = Need for Cognition; SM = Self-Monitoring; Ambiguity = Avoidance of Ambiguity; CloseMind = Close Mindedness; Order = Need for Order; Predictability = Need for Predictability.

regression coefficient for the relationship between ISMN tightness and energy ($z = 0.08$, $p = .67$).

We reported specification curves for extraversion in Figure 14. The relationships between ISMN tightness and extraversion, sociability, and energy identified in our regression models proved to be the most robust against model specifications with 100% of effects reliably different from zero and in the same direction across models. In addition, the relationships between ISP tightness and extraversion and sociability identified in our regression models were also robust against model specification with 100% of effects reliably different from zero. The relationship between ISP tightness and energy was not robust, with only 25% of the models reflecting reliable effects.

Is Tightness Related to Openness? Figure 15 illustrates correlations between tightness and openness and openness facets. The ISMN measure of tightness was negatively correlated with openness ($r = -0.50$, $p = .002$), and the intellectual curiosity ($r = -0.38$, $p = .02$), and creativity ($r = -0.59$, $p < .001$) facets of openness. The ISP measure of tightness was negatively correlated with openness ($r = -0.55$, $p < .001$), and the intellectual curiosity ($r = -0.38$, $p = .004$), aesthetic appreciation ($r = -0.42$, $p = .001$), and creativity ($r = -0.63$, $p < .001$) facets of openness.

We reported the results of all regression analyses in Table 6. Accounting for all covariates, regression analyses revealed negative relationships between tightness and creativity (ISMN $\beta = -0.31$, $p = .03$; ISP $\beta = -0.34$, $p = .002$). We found no relationship between tightness and openness, intellectual curiosity, and aesthetic appreciation.

We reported specification curves for openness in Figure 16. The relationships between both ISMN tightness and creativity, and between ISP tightness and openness, aesthetic appreciation, and creativity identified in our regression models proved to be the most robust against model specifications with 100% of effects reliably different from zero for creativity and 88 and 75% of effects reliably different from zero for openness and aesthetic appreciation, respectively.

Is Tightness Related to Conscientiousness? Figure 17 illustrates correlations between tightness and trait conscientiousness and conscientiousness facets. Neither ISP nor ISMN measures of tightness were related to conscientiousness or its lower-order facets of organization, productiveness, and organization (Table 7).

We reported specification curves for conscientiousness in Figure 18. None of the relationships between tightness and trait conscientiousness or conscientiousness facets was reliable.

Is Tightness Related to Agreeableness? Figure 19 illustrates correlations between tightness and trait agreeableness and agreeableness facets. Neither ISP nor ISMN measures of tightness were related to agreeableness or its lower-order facets of compassion, respect, or trust (Table 8).

We reported specification curves for agreeableness in Figure 20. None of the relationships between tightness and trait agreeableness or agreeableness facets was reliable.

Is Tightness Related to Negative Emotionality? Figure 21 illustrates correlations between tightness and trait negative emotionality and negative emotionality facets. Neither ISP nor ISMN measures of tightness were related to negative emotionality or its lower-order facets of anxiety, depression, and emotional volatility (Table 9).

We reported specification curves for negative emotionality in Figure 22. None of the relationships between tightness and trait negative emotionality or negative emotionality facets was reliable.

Overview of Study 2 Results

Contrasting with the patterns observed in Study 1, the cross-national analyses in Study 2 revealed a robust negative relationship between tightness and trait extraversion. In addition,

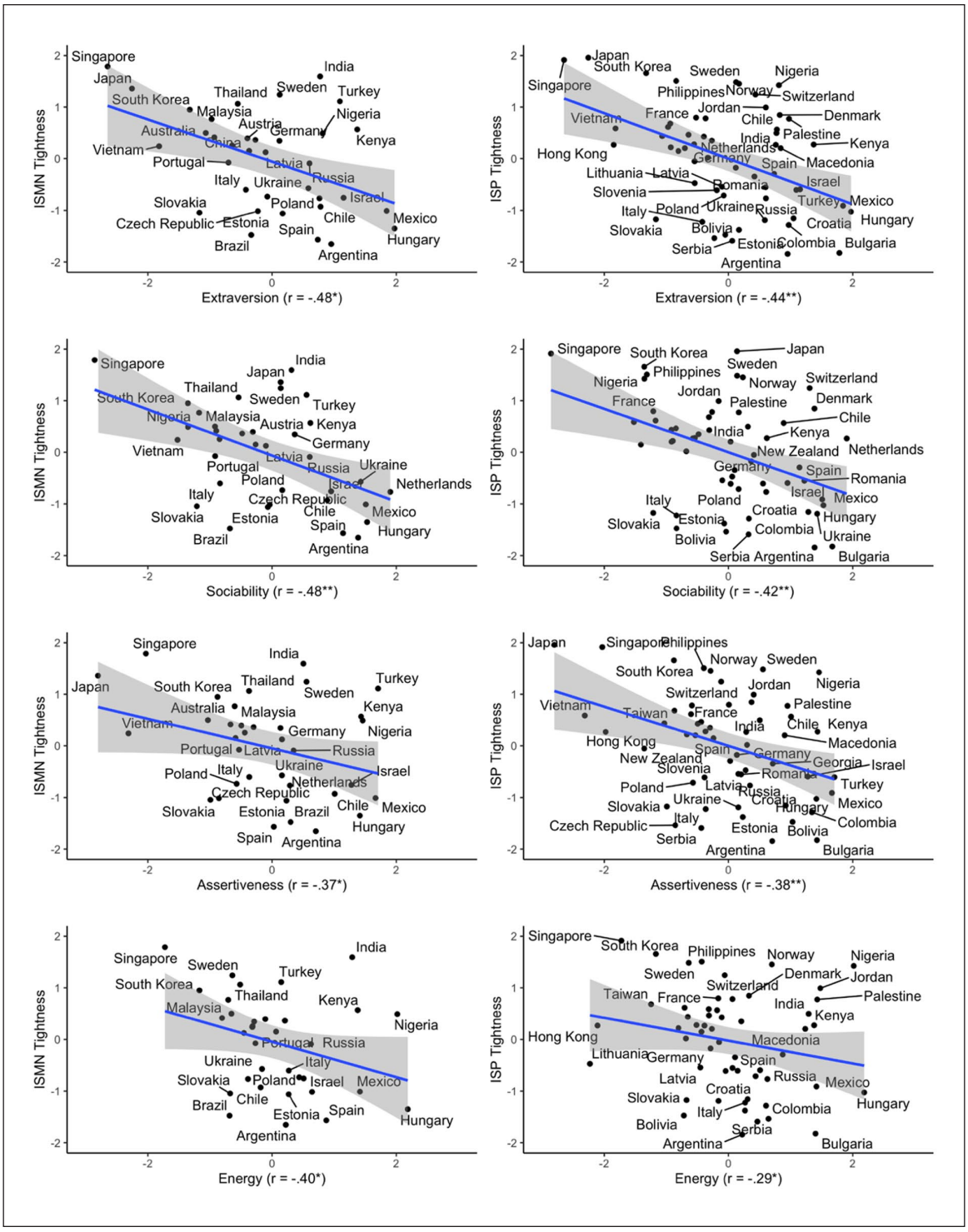

Figure 13. Nation-level relationship between tightness with extraversion and lower-order facets.
Note. *$p < .05$. **$p < .01$. ***$p < .001$.

we found a robust negative relationship between tightness and the creativity facet of openness. In contrast, tightness was not consistently related to nation-level conscientiousness, agreeableness, or negative emotionality. In Figure 23, we summarize Study 2 results by plotting the regression coefficients and corresponding 95% confidence intervals for ISMN tightness and ISP tightness as a predictor of each personality trait. Traits with a 95% confidence interval that does

Table 5. Tightness as a Predictor of Extraversion.

	Extraversion		Sociability		Assertiveness		Energy	
Tightness data source	ISMN	ISP	ISMN	ISP	ISMN	ISP	ISMN	ISP
Predictor								
Constant	−0.07 (0.15)	0.02 (0.10)	−0.09 (0.16)	−0.001 (0.12)	−0.06 (0.15)	0.02 (0.09)	−0.03 (0.23)	0.02 (0.21)
Tightness	**−0.45* (0.17)**	**−0.31* (0.13)**	**−0.41* (0.18)**	**−0.37*(0.15)**	−0.34† (0.17)	−0.23† (0.12)	**−0.32* (0.15)**	−0.23† (0.14)
Median age	−0.50* (0.31)	−0.25 (0.20)	−0.15 (0.34)	−0.03 (0.25)	−0.70* (0.31)	−0.29 (0.19)	−0.53* (0.24)	−0.58* (0.25)
Sex ratio	−0.23 (0.22)	−0.03 (0.13)	−0.24 (0.24)	−0.08 (0.17)	−0.18 (0.22)	−0.05 (0.12)	−0.15 (0.16)	−0.002 (0.14)
Population density	−0.10 (0.17)	−0.13 (0.11)	−0.04 (0.18)	−0.08 (0.14)	−0.17 (0.17)	−0.16 (0.10)	−0.12 (0.13)	−0.11 (0.12)
Human development index	−0.06 (0.26)	0.02 (0.18)	0.06 (0.29)	0.18 (0.22)	0.03 (0.26)	−0.07 (0.16)	−0.27 (0.19)	0.03 (0.20)
Model type	*OLS*	*Spatial lag*	*OLS*	*OLS*	*OLS*	*Spatial lag*	*Spatial error*	*Spatial error*

Note. Standard errors in parentheses. OLS = ordinary least squares. Bolded values denote statistically significant effects ($p < .05$); ISMN = International Study of Metanorms; ISP = International Situations Project.
†$p < .10$. *$p < .05$.

not contain zero can be interpreted as being reliably related to tightness. Furthermore, we also summarize the exact proportion of reliable effects for each specification curve.

Discussion

In the present investigation, we relied on large, geographically diverse datasets to provide insight into how cultural tightness relates to regional psychological characteristics. Both in the United States and across 56 nations, we found that tightness predicted a variety of outcomes ranging from sociopolitical values to personality traits. Within the United States, tightness was consistently related to five sociopolitical ideologies and beliefs: right-wing authoritarianism, belief in a just world, Protestant ethic, humanitarianism/egalitarianism, and Bayesian racism. Notably, the first three of these constructs largely share a common theme of system-justifying beliefs. Among regional personality traits in the United States, we observed consistent relationships between tightness and need for cognition, close mindedness, decisiveness, the need for order, and the need for predictability. In contrast, across nations we observed consistent negative relationships between tightness and trait extraversion and the creativity facet of openness. The relationships we highlight here were robust against spatial dependencies, model specifications, and operationalizations of tightness, which bolsters our confidence in the reliability of these findings.

Past work has established that regional and cultural contexts influence individuals' perceptions, cognitions, motivations, and behaviors across a variety of domains including creativity (Harrington & Gelfand, 2014; Morris & Leung, 2010), intergroup bias (Correll et al., 2011; Payne et al., 2017), emotions (Kitayama et al., 2006), and well-being (Obschonka et al., 2018). Our finding that tighter states are higher in Bayesian racism and right-wing authoritarianism dovetails with previous research linking tighter regions to discriminatory outcomes, such as more employment discrimination per capita and a lower percentage of women and minority-owned firms (Harrington & Gelfand, 2014). Similarly, the role of right-wing authoritarianism in intergroup dynamics is well established: it underlies expressions of prejudice and discrimination (Crandall & Eshleman, 2003; Pratto et al., 1994; Sidanius & Pratto, 1993) by legitimizing the status quo and justifying prejudice against normatively lower status social groups.

In addition, our finding that tighter nations were lower in creativity is consistent with other research showing that tighter regions have fewer fine artists and fewer utility patents per capita – two indicators of creativity and innovation (Harrington & Gelfand, 2014). Key dimensions of creativity, such as originality and inventiveness, may be particularly constrained in situations that restrict the repertoire of acceptable behaviors and, consequently, may be lower in tighter regions.

Replication and Generalizability

Replication is regarded as a gold standard of reliability in science. In the current research, our replication efforts serve as a test of generalizability across different operationalizations of constructs, samples, and units of geography. In Study 1, we operationalized tightness using a self-report measure and a composite index formed from archival indicators of norm strength and sanctioning. Both of these operationalizations have been used separately in previous studies (Gelfand et al., 2011; Harrington and Gelfand, 2014), but not simultaneously. Relationships between tightness and sociopolitical ideologies and beliefs largely replicated across operationalizations. However, relationships between tightness and personality traits did not replicate across operationalizations. Though

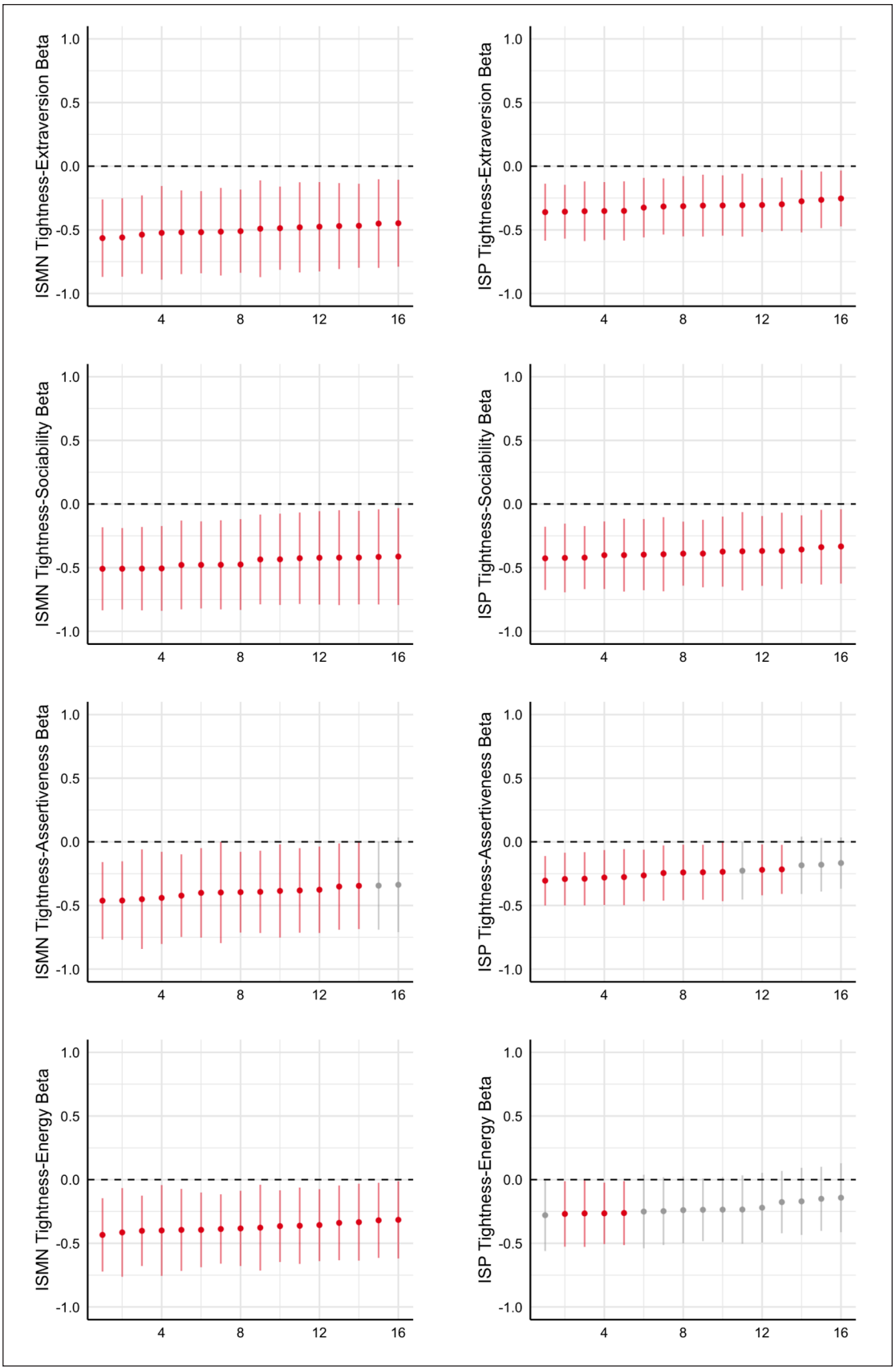

Figure 14. Specification curves of relationships between cultural tightness with extraversion and extraversion facets.

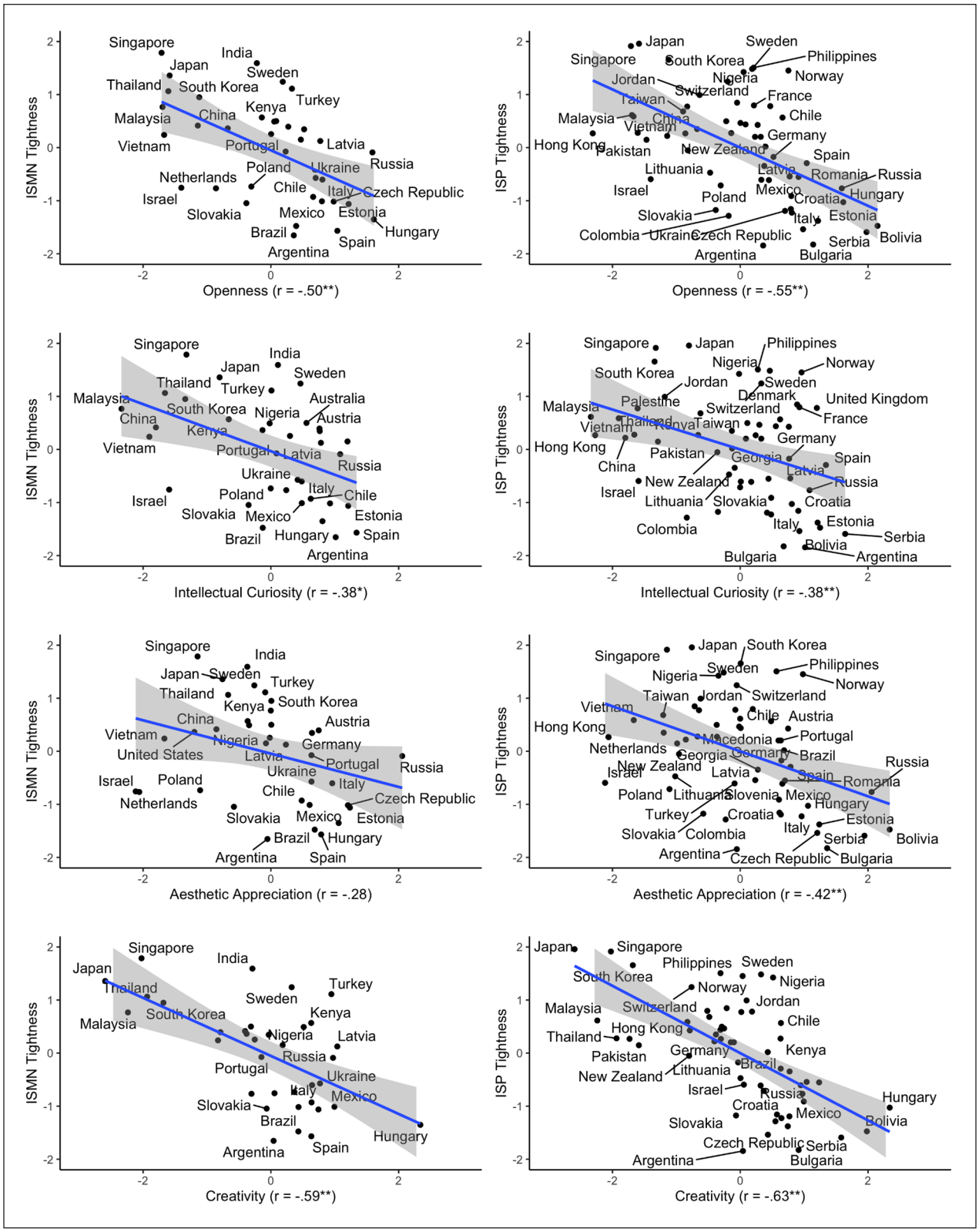

Figure 15. Nation-level relationship between tightness with openness and lower-order facets.
Note. *$p < .05$. **$p < .01$. ***$p < .001$.

Table 6. Tightness as a Predictor of Openness.

	Openness		Intellectual curiosity		Aesthetic appreciation		Creativity	
Tightness data source	ISMN	ISP	ISMN	ISP	ISMN	ISP	ISMN	ISP
Predictor								
Constant	−0.06 (0.13)	0.03 (0.09)	0.03 (0.12)	0.06 (0.09)	−0.08 (0.13)	0.02 (0.11)	−0.03 (0.11)	−−0.01 (0.09)
Tightness	−0.25† (0.14)	−0.20† (0.12)	0.03 (0.14)	−0.05 (0.11)	−0.09 (0.15)	−0.18 (0.13)	**−0.31* (0.14)**	**−0.34**(0.11)**
Median age	0.21 (0.26)	0.20 (0.18)	0.17 (0.25)	0.23 (0.18)	0.64* (0.30)	0.48* (0.22)	−0.10 (0.24)	−0.12 (0.17)
Sex ratio	−0.28 (0.18)	−0.05 (0.12)	−0.18 (0.17)	−0.02 (0.12)	−0.06 (0.21)	0.07 (0.15)	−0.32† (0.17)	−0.15 (0.11)
Population density	−0.30* (0.14)	−0.37*** (0.10)	−0.29* (0.13)	−0.33** (0.10)	−0.42* (0.17)	−0.43*** (0.12)	−0.17 (0.13)	−0.24* (0.09)
Human development index	−0.19 (0.22)	−0.23 (0.16)	−0.01 (0.21)	−0.10 (0.16)	−0.48 (0.26)	−0.42* (0.20)	−0.21 (0.20)	−0.07 (0.15)
Model type	*OLS*	*Spatial lag*	*Spatial lag*	*Spatial lag*	*OLS*	*OLS*	*Spatial lag*	*Spatial lag*

Note. Standard errors in parentheses. OLS = ordinary least squares. Bolded values denote statistically significant effects ($p < .05$); ISMN = International Study of Metanorms; ISP = International Situations Project.
†p < .10. *p < .05. **p < .01. ***p < .001.

self-report can be a valid means to assess a wide variety of psychological constructs (Kaiser & Oswald, 2022), the self-reported tightness measure may have been especially vulnerable to the reference group effect: the tendency for individuals to base their self-reports on relative comparisons to proximal others rather than to report in an absolute sense (Heine et al., 2002). Given this possibility, as well as the strong but not perfect correlation between tightness operationalizations (r = 0.69), important differences between operationalizations may explain the different patterns of relationships with tightness. Indeed, when we exploratorily assessed correlations between archival tightness and each individual item from the self-reported cultural tightness measure, we found that survey items related to perceptions of behavioral freedom and social disapproval correlate more strongly with archival tightness (rs = 0.76, 0.65, respectively) than do the survey items related to the perceived strength and clarity of social norms (r = [0.36–0.58]). Many of the indicators comprising the archival tightness scores reflect policies that limit freedom (i.e., banning same-sex marriage, purchasing alcohol) or reflect social disapproval and punishment (i.e., corporal punishment in schools, execution rates, punishment severity for marijuana use, possession, and sale) rather than the strength and clarity of norms. Taken together, our findings suggest the archival measure provides comparatively more insight into permissiveness and sanctioning of deviant behavior, whereas the self-report measure provides comparatively more insight into whether the regional social norms are strongly and clearly communicated. Nevertheless, the extent to which each type of measure assesses distinct constructs – or distinct facets of tightness – remains a question that should be further explored.

In Study 2, we explored the relationship between self-reported tightness and Big 5 personality traits across two separate data collection efforts. Importantly, each set of data used the same 6-item self-report measure of tightness. We found that the relationships between tightness and extraversion and creativity largely persist across the different samples surveyed in the ISMN and ISP.

Last, in the current research, we explored the generalizability of effects across different units of geography (i.e., state versus nation). One notable finding was the diverging pattern of relationships across studies between tightness and trait extraversion. Study 1 revealed a positive relationship between archival tightness and extraversion among U.S. states, whereas Study 2 identified a negative relationship between self-reported tightness and extraversion across nations. However, self-reported tightness did not predict extraversion among U.S. states. Moreover, the positive relationship between tightness and extraversion identified in Study 1 was not robust to model specifications, so we hesitate to strongly interpret it. Additionally, tightness was related to conscientiousness among U.S. states but not across nations, and tightness was related to openness (i.e., the creativity facet) across nations but not among U.S. states.

One possibility is that some of our relationships identified within the United States and cross-nationally are simply not robust to other geographies. Another explanation for these inconsistencies is that the meaning of psychological constructs depends on the geographic unit to which they are aggregated, which is an issue that has been extensively discussed by geographers as the modifiable areal unit problem (Manley, 2013). Dovetailing with our findings, previous research has identified different relationships between cultural tightness and theorized antecedents and psychological outcomes in the United States versus China. For example, urbanity is negatively related to cultural tightness in the United States, such that urban environments tend to be more culturally loose (Harrington & Gelfand, 2014). In contrast, urbanity is positively related to cultural tightness in China, such that more highly developed, economically important

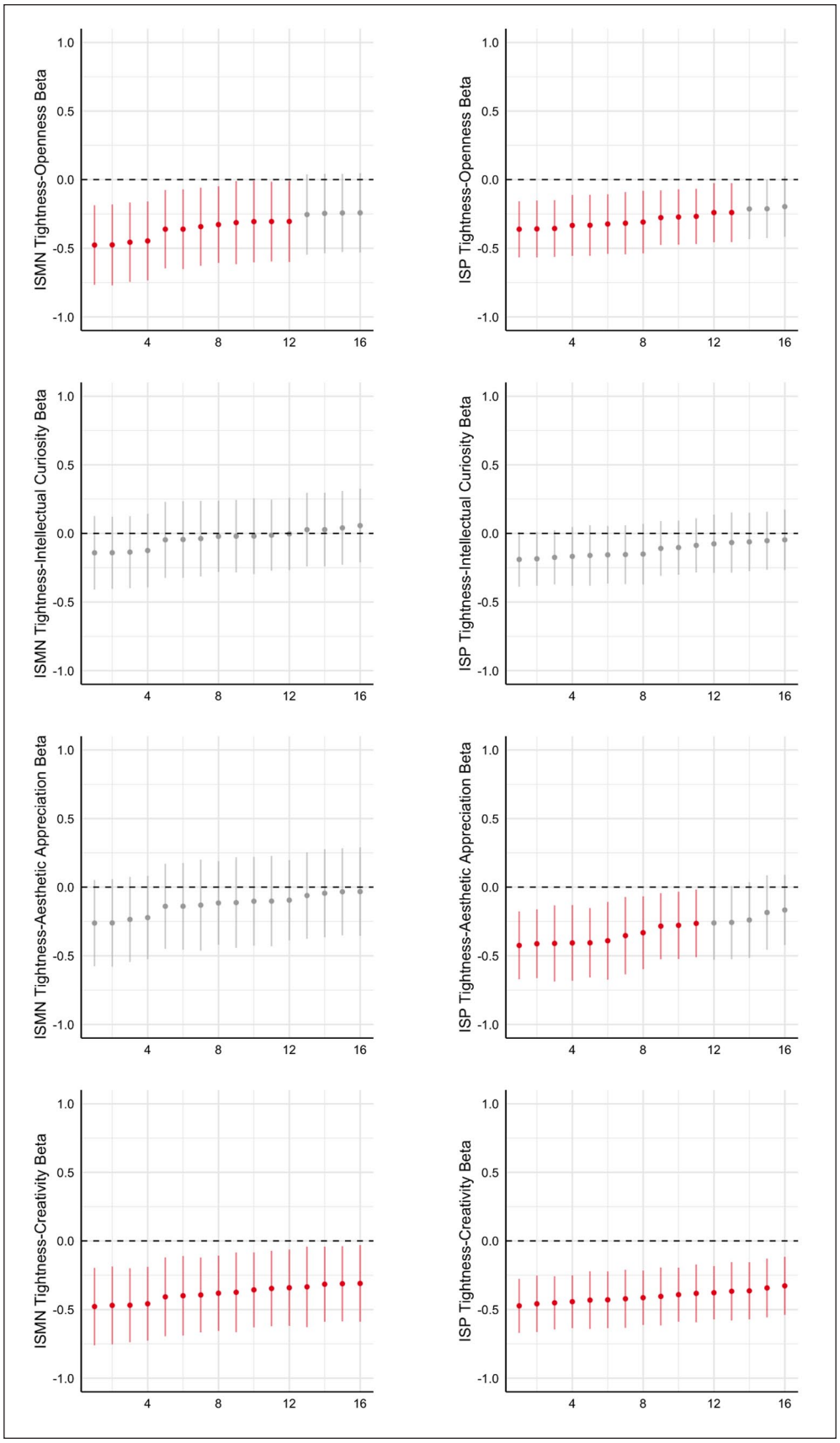

Figure 16. Specification curves of relationships between cultural tightness with openness and openness facets.

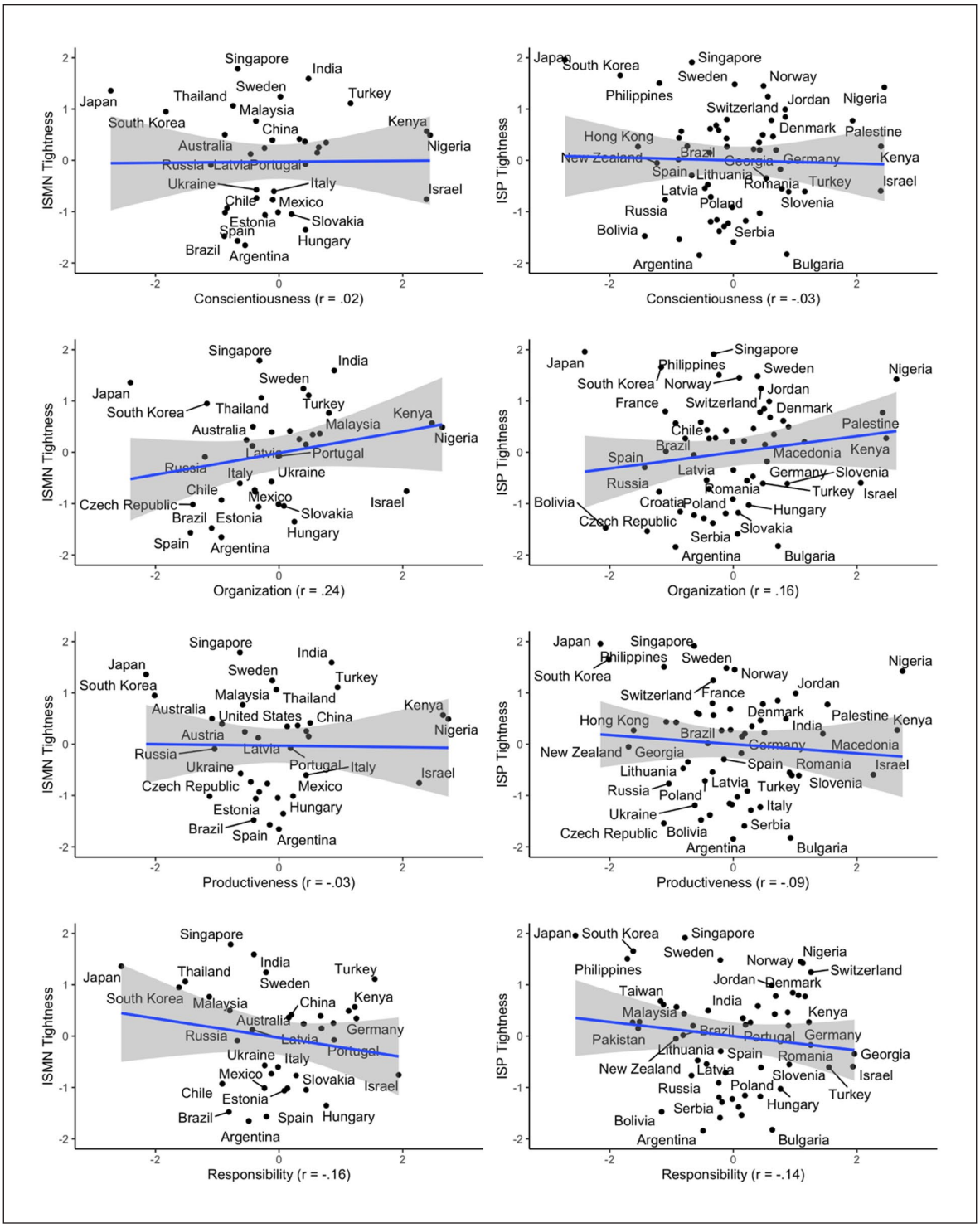

Figure 17. Nation-level relationship between tightness with conscientiousness and lower-order facets.
Note. *$p < .05$. **$p < .01$. ***$p < .001$.

regions experience tighter control and stronger regulation by the Chinese government (Chua et al., 2019). Thus, our findings add to a growing body of research illustrating diverging relationships between cultural tightness and outcomes across different units of analysis. As such, the extent to which the pattern of results we report in Studies 1 and 2 reflects meaningful differences across unique regions or levels of analysis, rather than failed replications, merits further investigation.

Table 7. Tightness as a Predictor of Conscientiousness.

	Conscientiousness		Organization		Productiveness		Responsibility	
Tightness data source	ISMN	ISP	ISMN	ISP	ISMN	ISP	ISMN	ISP
Predictor								
Constant	0.08 (0.46)	−0.03 (0.34)	−0.03 (0.33)	0.02 (0.27)	0.21 (0.32)	0.11 (0.31)	−0.01 (0.12)	−0.05 (0.09)
Tightness	0.03 (0.15)	−0.08 (0.12)	0.20 (0.14)	0.05 (0.13)	−0.06 (0.15)	−0.16 (0.11)	−0.10 (0.13)	−0.11 (0.11)
Median age	−0.53* (0.23)	−0.28 (0.23)	−0.65** (0.22)	−0.45* (0.25)	−0.36 (0.24)	−0.03 (0.22)	−0.50 (0.26)	−0.19 (0.18)
Sex ratio	0.11 (0.15)	0.15 (0.11)	0.15 (0.14)	0.10 (0.12)	0.15 (0.15)	0.31** (0.11)	−0.08 (0.18)	0.02 (0.12)
Population density	−0.02 (0.12)	0.02 (0.10)	−0.05 (0.12)	0.12 (0.11)	0.06 (0.13)	0.10 (0.10)	0.08 (0.14)	−0.08 (0.10)
Human development index	−0.11 (0.18)	0.05 (0.17)	−0.09 (0.17)	0.05 (0.19)	−0.28 (0.19)	−0.23 (0.17)	0.26 (0.22)	0.27† (0.16)
Model type	*Spatial error*	*Spatial error*	*Spatial error*	*Spatial error*	*Spatial error*	*Spatial error*	*Spatial lag*	*Spatial lag*

Note. Standard errors in parentheses. ISMN: International Study of Metanorms; ISP: International Situations Project.
†$p < .10$. *$p < .05$. **$p < .01$.

Future research should further explore other regional units of analysis, as well as how cultural tightness interacts with other cultural, economic, and sociopolitical factors to predict regional outcomes.

Limitations and Future Directions

A major limitation of this research is that our approach is correlational, which limits our ability to infer causality. Whether tightness gives rise to regional differences in sociopolitical ideologies, beliefs, and personality traits, or emerges as a result of regional differences in sociopolitical ideologies, beliefs, and personality traits remains an empirical question. Past theorizing suggests several ecological antecedents at the origin of tightness. For example, regions that experience greater threat to survival, such as disease prevalence, natural disaster, and resource scarcity, develop stronger cultural norms with lower tolerance for deviance (Gelfand et al., 2011). Thus, predictable and socially approved ranges of behaviors are adaptive in threatening contexts because they help to ensure safety and coordinate social responses to threats. In turn, conscientiousness, need for order, and right-wing authoritarianism are consequences of tightness, in that they help to reinforce norms and discourage deviance – suggesting a reciprocal relationship. Although our data cannot directly address this point, future research should seek further evidence of causal and recursive relationships between tightness and regional psychology.

Future research might also investigate other mechanisms that contribute to the geographical distribution of beliefs, values, and personality traits. For example, research in regional psychology has proposed selective migration as an underlying cause of geographic variation in psychological characteristics (Rentfrow et al., 2008). To the extent that individuals seek environments that satisfy their psychological needs, intellectually curious and creative people may migrate to places with culturally loose norms. This mechanism and others merit further study.

Non-Representative Data

Study 1 data consisted of self-selected U.S.-based Project Implicit respondents who volunteered to visit the Project Implicit website and chose to participate in a testing session. Study 2 data primarily reflected the responses of undergraduate students across 56 nations. Consequently, none of these samples were representative of their respective populations. For example, Project Implicit visitors tend to be younger, more educated, and more likely to identify as women compared to the general public (Hehman et al., 2019). That said, previous research has demonstrated similar patterns of responses on psychological measures between Project Implicit visitors nationally-representative samples (Ofosu et al., 2019). Future research should interrogate the extent to which the relationships identified in the present research persist across other populations using representative data.

Conclusion

The present research investigated the relationship between cultural tightness and beliefs, values, and personality traits within the United States and across 56 nations. Across the United States, tightness consistently predicted right-wing authoritarianism, Protestant ethic, belief in a just world, Bayesian racism, humanitarianism/egalitarianism, conscientiousness, openness, need for cognition, and various dimensions of the need for cognitive closure. Cross-nationally, tightness predicted extraversion and creativity. Taken

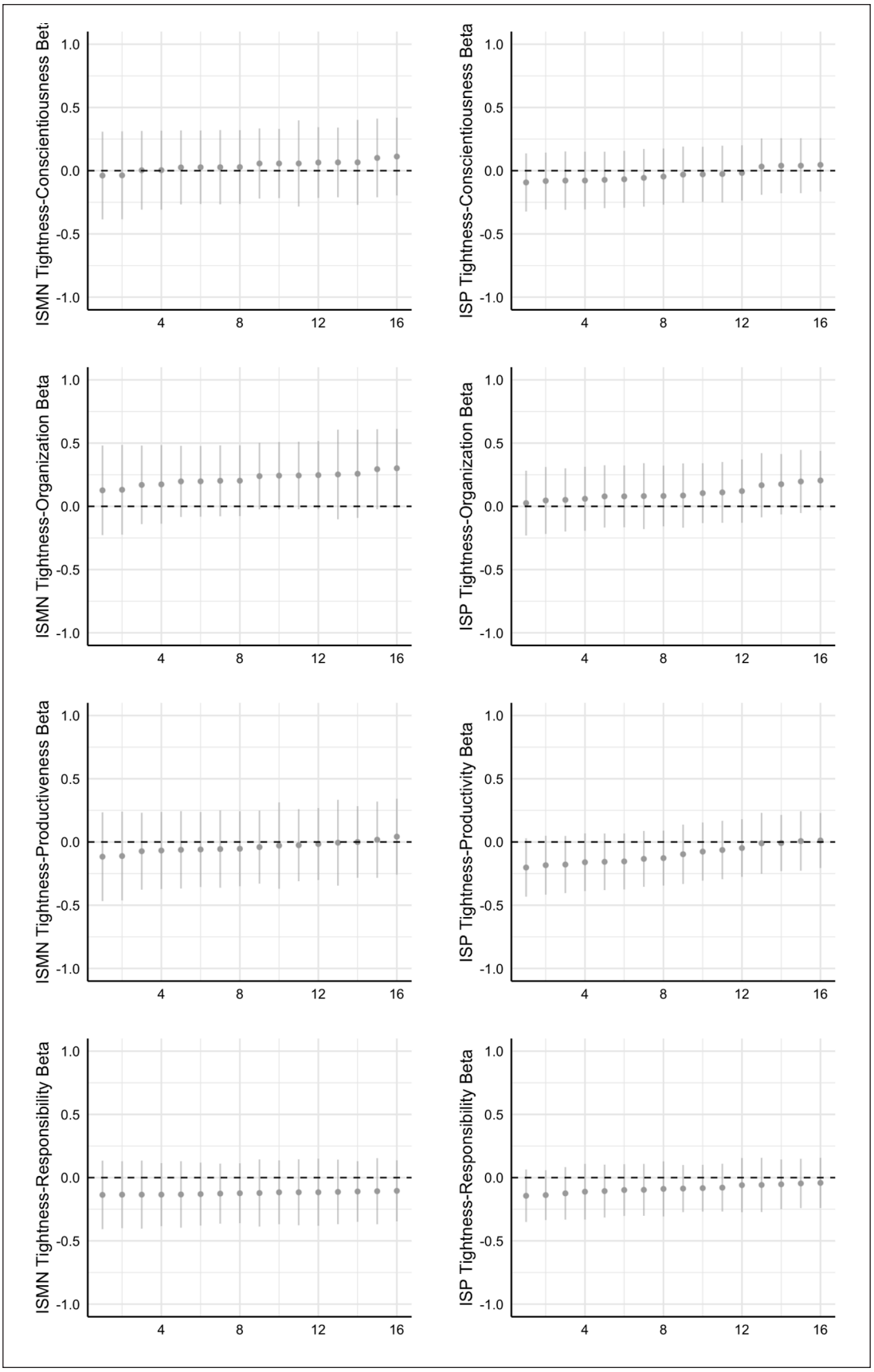

Figure 18. Specification curves of relationships between cultural tightness with conscientiousness and conscientiousness facets.

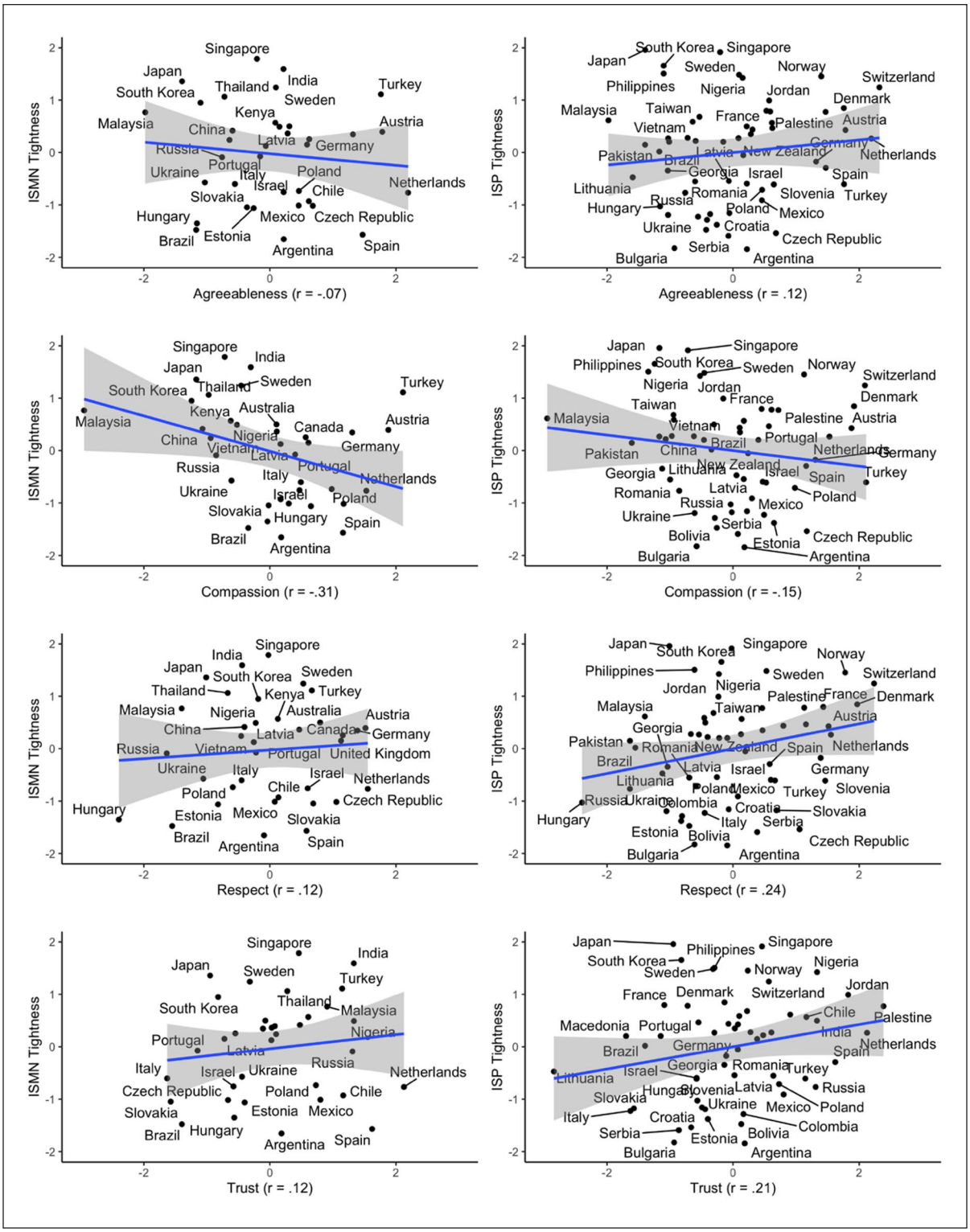

Figure 19. Nation-level relationship between tightness with agreeableness and lower-order facets.
Note. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

Table 8. Tightness as a Predictor of Agreeableness.

	Agreeableness		Compassion		Respect		Trust	
Tightness data source	ISMN	ISP	ISMN	ISP	ISMN	ISP	ISMN	ISP
Predictor								
Constant	0.02 (0.14)	−0.01 (0.10)	−0.002 (0.13)	−0.01 (0.09)	−0.03 (0.12)	−0.003 (0.09)	0.08 (0.15)	−0.01 (0.12)
Tightness	−0.01 (0.15)	−0.06 (0.12)	−0.08 (0.14)	−0.16 (0.11)	0.12 (0.14)	0.02 (0.11)	0.02 (0.17)	−0.004 (0.15)
Median age	−0.31 (0.28)	−0.30 (0.20)	−0.14 (0.26)	−0.22 (0.18)	−0.42† (0.25)	−0.23 (0.18)	−0.27 (0.32)	−0.53* (0.24)
Sex ratio	0.03 (0.20)	0.21 (0.13)	−0.13 (0.18)	0.06 (0.12)	0.12 (0.18)	0.23† (0.12)	0.14 (0.22)	0.16 (0.16)
Population density	0.02 (0.15)	0.02 (0.11)	0.05 (0.14)	0.03 (0.10)	−0.01 (0.14)	−0.001 (0.10)	−0.001 (0.17)	0.09 (0.13)
Human development index	0.44† (0.24)	0.54*** (0.18)	0.38† (0.22)	0.51*** (0.16)	0.67** (0.22)	0.59*** (0.17)	−0.08 (0.27)	0.17 (0.21)
Model type	*Spatial lag*	*Spatial lag*	*Spatial lag*	*Spatial lag*	*Spatial lag*	*Spatial lag*	*OLS*	*OLS*

Note. Standard errors in parentheses. OLS = ordinary least squares; ISMN = International Study of Metanorms; ISP = International Situations Project.
$^{\dagger}p < .10$. $^{*}p < .05$. $^{**}p < .01$. $^{***}p < .001$.

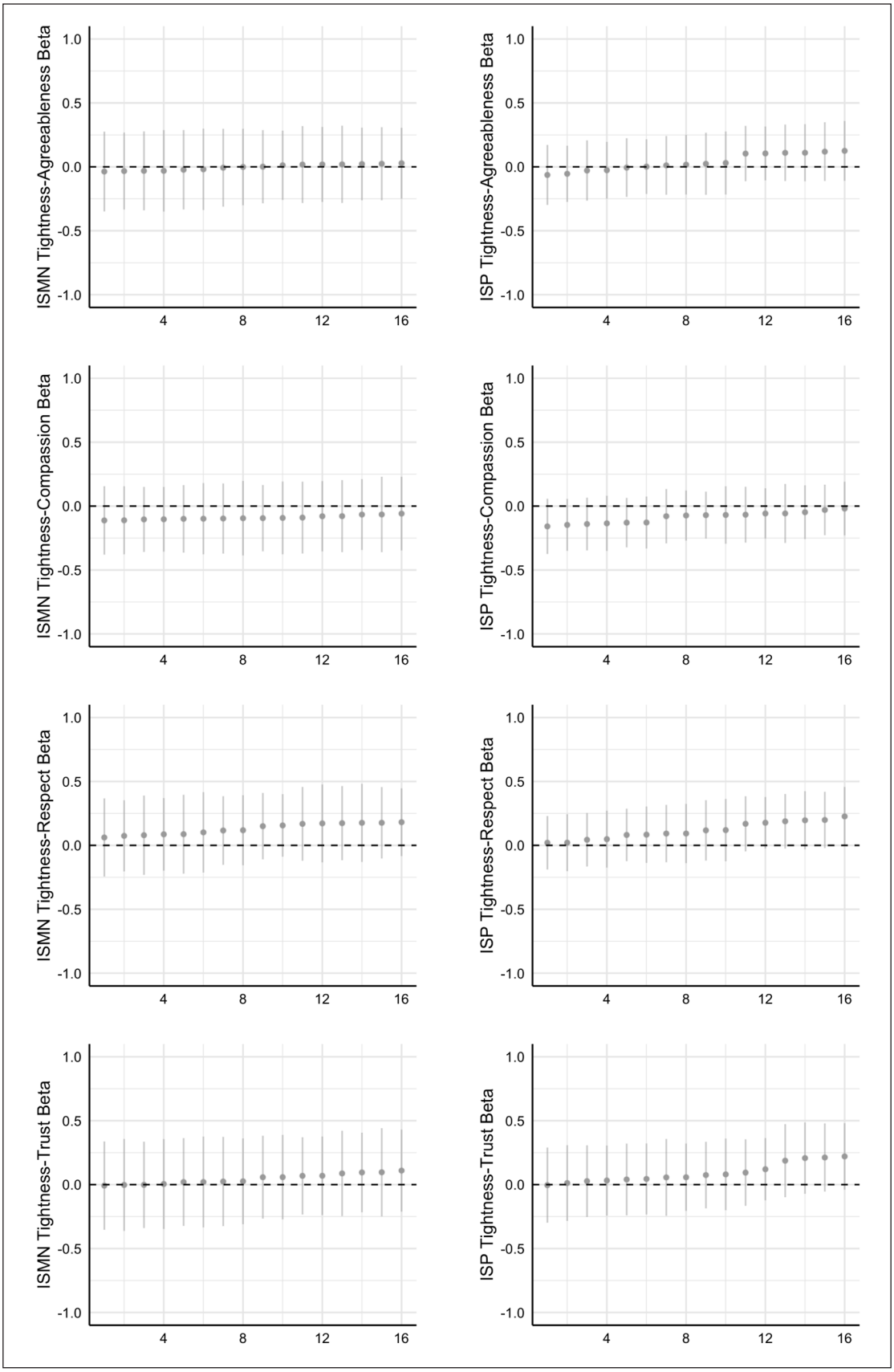

Figure 20. Specification curves of relationships between cultural tightness with agreeableness and agreeableness facets.

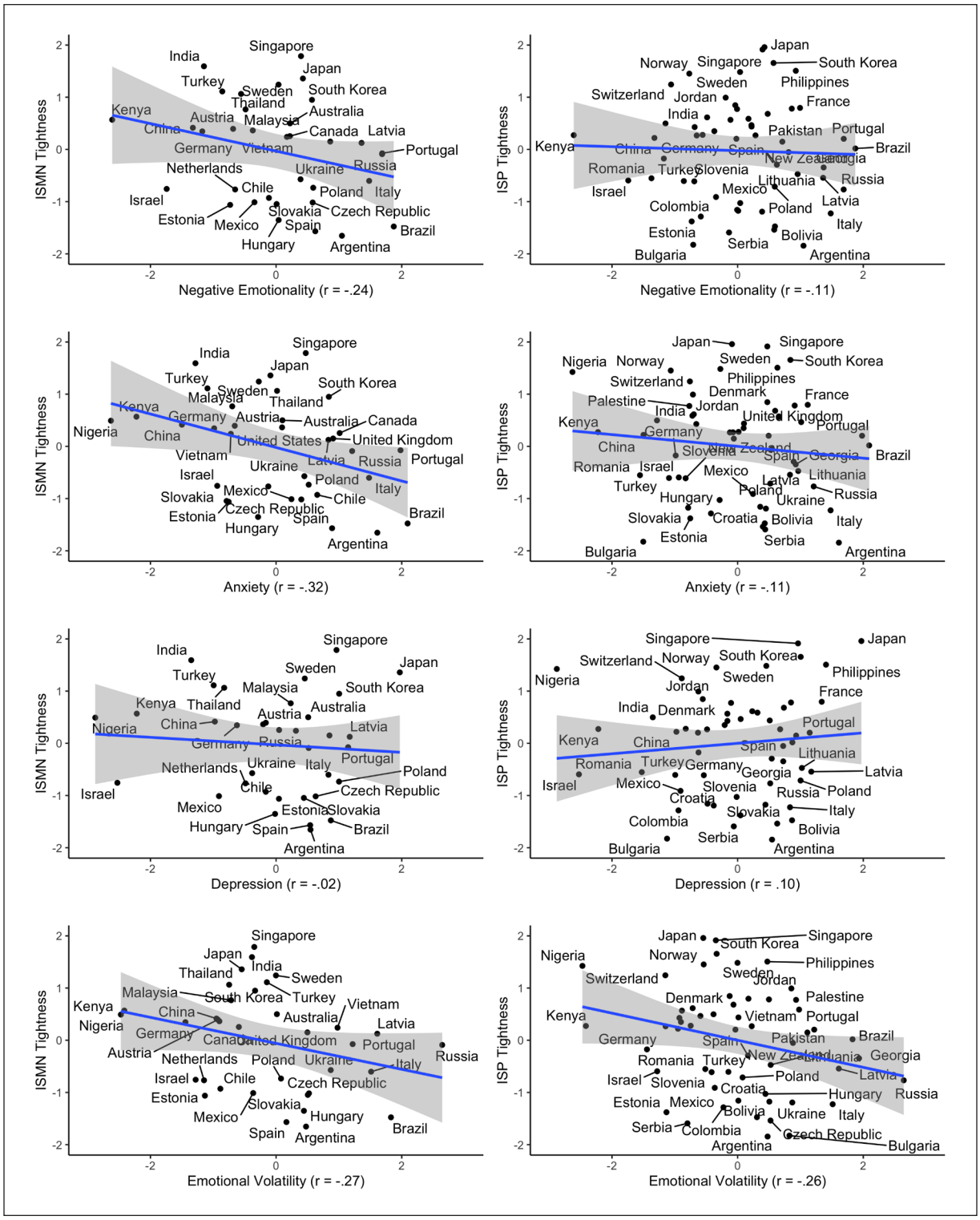

Figure 21. Nation-level relationship between tightness with trait negative emotionality and lower-order facets.
Note. *$p < .05$. **$p < .01$. ***$p < .001$.

Table 9. Tightness as a Predictor of Negative Emotionality.

	Negative emotionality		Anxiety		Depression		Emotional volatility	
Tightness data source	ISMN	ISP	ISMN	ISP	ISMN	ISP	ISMN	ISP
Predictor								
Constant	−0.07 (0.15)	−0.01 (0.13)	−0.02 (0.15)	−0.02 (0.12)	−0.05 (0.14)	−0.02 (0.21)	−0.11 (0.17)	−0.01 (0.13)
Tightness	−0.08 (0.17)	0.08 (0.16)	−0.19 (0.17)	0.06 (0.15)	0.09 (0.16)	0.23 (0.15)	−0.07 (0.19)	−0.07 (0.16)
Median age	0.40* (0.32)	−0.04 (0.25)	0.13 (0.32)	0.11 (0.25)	0.59* (0.29)	0.17 (0.27)	0.37 (0.34)	−0.09 (0.26)
Sex ratio	−0.23 (0.23)	−0.39* (0.17)	−0.19 (0.23)	−0.35* (0.16)	−0.03 (0.20)	−0.25† (0.15)	−0.38 (0.24)	−0.40* (0.17)
Population density	−0.14 (0.17)	−0.15 (0.14)	−0.14 (0.17)	−0.20 (0.14)	−0.08 (0.16)	−0.04 (0.13)	−0.12 (0.18)	−0.11 (0.14)
Human development index	0.22 (0.27)	0.18 (0.22)	0.42 (0.27)	0.31 (0.22)	0.24 (0.24)	0.07 (0.22)	−0.09 (0.29)	−0.03 (0.23)
Model type	*OLS*	*OLS*	*OLS*	*OLS*	*OLS*	*Spatial error*	*OLS*	*OLS*

Note. Standard errors in parentheses. OLS = ordinary least squares; ISMN = International Study of Metanorms; ISP = International Situations Project.
†$p < .10$. *$p < .05$.

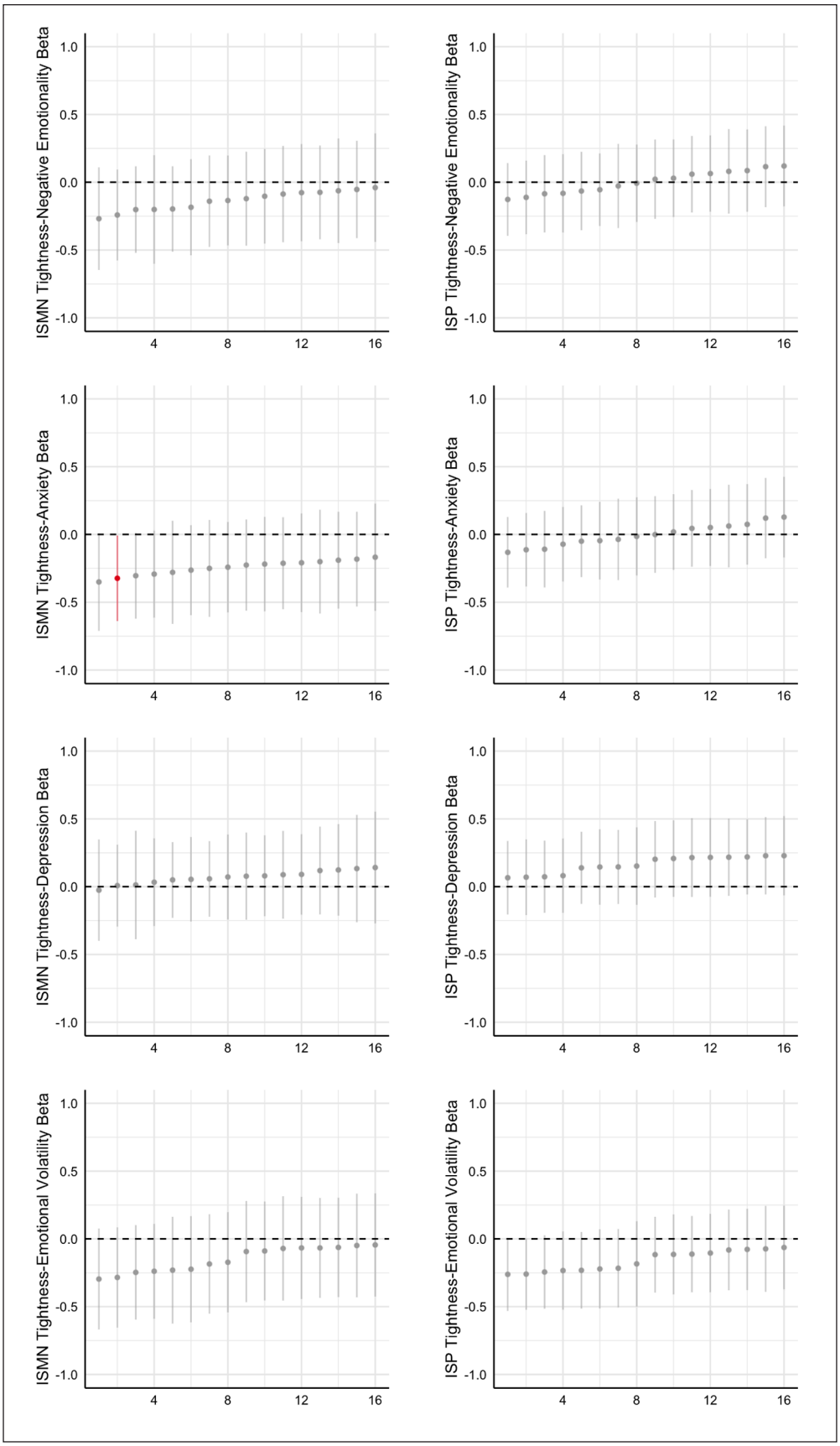

Figure 22. Specification curves of relationships between cultural tightness with negative emotionality and negative emotionality facets.

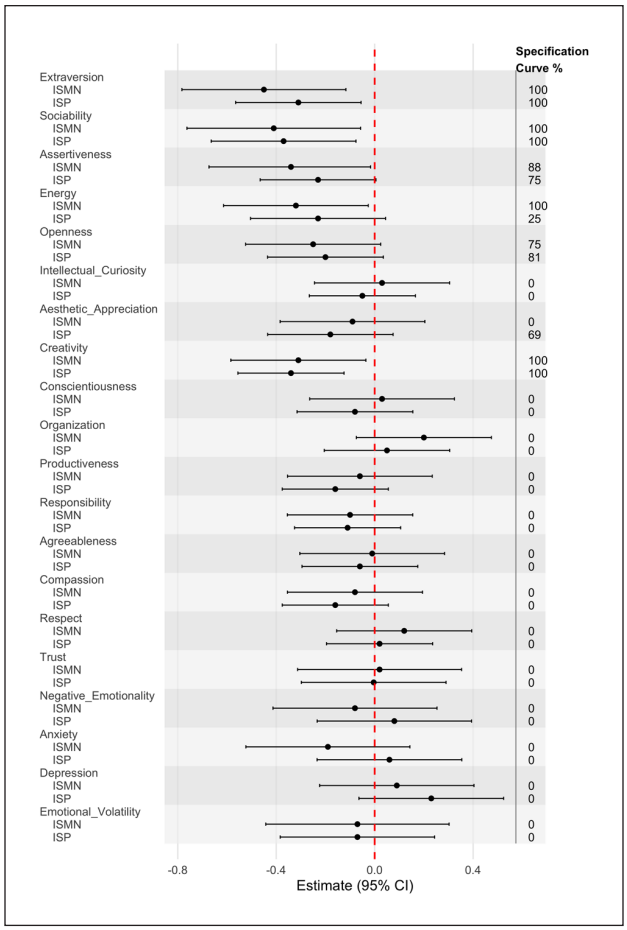

Figure 23. Forest plot summarizing Study 2 results.

together, this work contributes to a growing atlas of psychological differences across regions.

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Data Availability Statement

Data, code, and a comprehensive list of pre-registered predictions are available at https://osf.io/btn96/overview

Supplemental Material

Supplemental material is available online with this article.

Notes

1. The current paper reflects a subset of the predictions articulated in our pre-registration. We plan to publish results for the remaining predictions in a separate paper.
2. Project Implicit no longer administered the same self-report scales in 2024, so we were unable to achieve temporal alignment with the self-reported tightness measure and sociopolitical ideologies, beliefs, and personality traits.
3. We limited analyses to visitors who self-identified their race as White.
4. Right-Wing Authoritarianism data was collected from 2008 to 2010.
5. Humanitarianism/Egalitarianism was collected from 2007 to 2010.
6. Because the primary focus of Project Implicit is on implicit bias, the site is organized such that visitors begin by selecting an Implicit Association Test (IAT; Greenwald et al., 1998) from a variety of content domains. Then, they complete a variety of self-report measures either before or after the IAT. We focused on the self-report responses of visitors who chose the Race IAT because this is the largest of the available datasets.
7. Due to the planned missing data design, Project Implicit visitors did not respond to all items within a single measure. Consequently, the number of responses for each measure that we report below reflect the total number of responses to all items on a measure divided by the total number of items on the measure. In Supplemental Tables S9 to S11 in the supplementary materials, we report the sample size for each measure per state.
8. See the supplement for additional details on our spatial analytic methods.

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