Tightness–looseness across the 50 united states

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This research demonstrates wide variation in tightness–looseness (the strength of punishment and degree of latitude/permissiveness) at the state level in the United States, as well as its association with a variety of ecological and historical factors, psychological characteristics, and state-level outcomes. Consistent with theory and past research, ecological and man-made threats—such as a higher incidence of natural disasters, greater disease prevalence, fewer natural resources, and greater degree of external threat—predicted increased tightness at the state level. Tightness is also associated with higher trait conscientiousness and lower trait openness, as well as a wide array of outcomes at the state level. Compared with loose states, tight states have higher levels of social stability, including lowered drug and alcohol use, lower rates of homelessness, and lower social disorganization. However, tight states also have higher incarceration rates, greater discrimination and inequality, lower creativity, and lower happiness relative to loose states. In all, tightness–looseness provides a parsimonious explanation of the wide variation we see across the 50 states of the United States of America.

culture | norms | ecology | index

Cross-cultural research has focused almost exclusively on accounting for variation across national cultures, often to the detriment of understanding the reasons for the large cultural variation that exists within nations, such as the United States (cf. refs. 1–4). Indeed, this trend is belied by ample anecdotal and empirical evidence documenting wide cultural differences between the regions and states of the United States (1–3, 5), as well as extensive state-level differences in ecological and historical conditions (1, 5–7), personality characteristics (8), and numerous outcomes, such as substance abuse, social organization, discrimination, and creativity, among others. To date, however, we have surprisingly very little insight as to what accounts for this variation. Why, for example, is the incidence of illicit substance use greater in states like Hawaii, Alaska, and New Hampshire relative to Mississippi, Ohio, and Oklahoma (9), but incidents of discrimination much higher in the latter than the former (10)? Why do states like Colorado and Connecticut score low on trait conscientiousness and high on trait openness, but other states, such as Alabama and Kansas, score high on trait conscientiousness and low on trait openness (8)? Why do some states, such as Oregon and Vermont, exhibit high levels of creativity (11), but have very low levels of social organization (12), whereas other states, such as Kentucky and North Dakota, exhibit the exact opposite patterns? What might shed light on the difference in anti-immigrant attitudes and legislation between Arizona and New York, states with similarly large populations of illegal immigrants (13)? In all, what does this seemingly diverse and wide array of state-level differences have in common?

We argue that there is a common principle by which we can understand many differences across the 50 states. Specifically, we contend that differences among states reflect a core cultural contrast that has been studied in anthropology, sociology, and psychology: the degree to which social entities are "tight" (have many strongly enforced rules and little tolerance for deviance) versus "loose" (have few strongly enforced rules and greater tolerance for deviance). The anthropologist Pelto (14) was the first to show that this cultural contrast was critical to understanding traditional societies. Pelto found that certain groups, such as the Hutterites and the Labara, had strong norms and severe punishments for norm-violators, whereas others, such as the Kung Bushman and the Cubeo, had greater latitude, permissiveness, and weak punishment of norm violators. More recently, tightness–looseness has been shown to be a critical contrast that explains variation across modern societies (15). Tight societies have more authoritarian governments, more media restrictions, less civil liberties, and greater use of the death penalty; have much more constraint in everyday situations; and have citizens who exhibit greater prevention-focus, cautiousness, impulse control, need for structure, and self-monitoring ability relative to loose societies. Tight societies have also experienced a greater number of ecological and historical threats, including fewer natural resources, more natural disasters, a greater incidence of territorial threat, higher population density, and greater pathogen prevalence compared with loose societies. Such threats increase the need for strong norms and the sanctioning of deviant behavior, which help humans coordinate social action for survival. In contrast, loose societies have fewer ecological and historical threats and can "afford" more deviant behavior. Although this research was conducted at the national level, there is increasing evidence that this critical contrast exists across different levels of analysis, differentiating, for example, organizations and industries (16). If tightness–looseness is a fundamental aspect of social systems, might it be an underlying principle that helps explain the wide variation that exists between the 50 US states?

In the research reported, we show that: (*i*) there is wide variation in tightness–looseness at the state level that is distinct from other dimensions of culture, such as individualism–collectivism; (*ii*) tightness–looseness is predicted by a number of ecological and historical factors across the 50 states, including natural disaster vulnerabilities, rates of disease, resource availability, and degree of external threat; (*iii*) tightness–looseness is related to variation in

Significance

The 50 states of the United States of America show great diversity in ecological and historical conditions, personality characteristics, and outcomes. Still, little insight exists that explains this variation. We argue that there is a common principle by which we can understand these differences: namely, that the states differ in tightness (many strongly enforced rules and little tolerance for deviance) versus looseness (few strongly enforced rules and greater tolerance for deviance). We develop a valid and reliable state-level tightness–looseness index, provide state rankings, and show how tightness is related to ecological and man-made threats, personality characteristics, and state-level outcomes. Ultimately, this substantiates theory suggesting that tightness–looseness is an adaptation to local environments and, therefore, is beneficial in understanding cultural variation across numerous levels of analysis.

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personality traits across the 50 states; and (*iv*) tightness–looseness is related to a number of important state outcomes, with both tightness and looseness producing their own costs and benefits. In all, tightness–looseness is a key organizing principle that explains variation across the 50 states. We detail these findings below and discuss their theoretical and practical implications.

Study 1: Do the 50 States Vary on Tightness–Looseness?

As noted previously, tightness–looseness denotes the strength of punishment and the degree of permissiveness in a social system. To capture tightness–looseness at the state level, we used a method that has been previously used and validated in studies by Vandello and Cohen (3) and Baron and Straus (12). First, we collected a broad array of potential indicators that were theorized to reflect the construct space. Following this initial selection, we narrowed down this pool to items that were mutually agreed to be relevant, nonredundant, and central expressions of the tightness–looseness construct. This process resulted in a composite index of nine items. Four items reflect strength of punishment: (*i*) the legality of corporal punishment in schools, (*ii*) the percentage of students hit/punished in schools, (*iii*) the rate of executions from 1976 to 2011, and (*iv*) the severity of punishment for violating laws (i.e., selling, using, or possessing marijuana). Two items reflect latitude/permissiveness: (*i*) access to alcohol (i.e., ratio of dry to total counties per state) and (*ii*) the legality of same-sex civil unions. Institutions that reinforce moral order and constrain behavior were assessed with two items: (*i*) state-level religiosity and (*ii*) percentage of individuals claiming no religious affiliation. The final indicator was the percentage of total population that is foreign. This variable estimates the degree to which there is high international diversity and an ambient mixture of people from different cultures, which reflects looseness. See the *Supporting Information* for an extended discussion of the index and the source of all index items.

Consistent with our goal of creating an index comprised of nonredundant items that reflect a single, core construct, we found that all items were correlated moderately (Table S1), were internally consistent ($\alpha = 0.84$) (Table S2), and represented a distinct single factor that accounted for 46.45% of the sample variance (Table S3; see *Supporting Information* for all factor analysis methods). All items were standardized, reverse-coded when necessary so that high scores indicated greater tightness, and summed into a composite tightness score for each state. These composite scores were further transformed (divided by 9, multiplied by 20, and then added to 50) to produce easily interpretable scores (see *Supporting Information* for further notes). Table 1 details the state tightness rankings on the index and Fig. 1 visually presents tightness quintiles in a map of the United States. As can be seen, the top 10 tight states (from highest to lowest) include: Mississippi, Alabama, Arkansas, Oklahoma, Tennessee, Texas, Louisiana, Kentucky, South Carolina, and North Carolina. The top 10 loose states (from highest to lowest) are: California, Oregon, Washington, Nevada, Maine, Massachusetts, Connecticut, Hawaii, New Hampshire, and Vermont.

A Welch ANOVA [Levene's test, $F_{(3, 46)} = 4.03$, $P = 0.01$] also indicated differences in tightness-looseness at the regional level; specifically, between the four primary regions—Northeast, South, Midwest, and West—recognized by the US Census Bureau, $F_{(3, 24.11)} = 23.10$, $P < 0.001$, $\eta^2 = 0.64$. Games–Howell post hoc tests demonstrate that the South [$n = 16$, mean = 63.03, SD = 10.18, 95% confidence interval (CI) (57.60, 68.46)] was the tightest region and was significantly different compared with the Northeast [$n = 9$, mean = 39.40, SD = 5.71, 95% CI (35.01, 43.78), $P < 0.001$], the Midwest [$n = 12$, mean = 51.47, SD = 4.63, 95% CI (48.53, 54.42), $P < 0.01$], and the West [$n = 13$, mean = 40.48, SD = 8.11, 95% CI (35.57, 45.38), $P < 0.001$]. The Midwest region was significantly different from and fell in-between the tighter South ($P < 0.01$) and the looser Northeast ($P < 0.01$) and West ($P < 0.01$). No significant differences existed between the Northeast and the West ($P = 0.98$). An ANOVA using the US Census's nine regional divisions (New

Table 1. State tightness–looseness rankings

Rank	State	Score
1	Mississippi	78.86
2	Alabama	75.45
3	Arkansas	75.03
4	Oklahoma	75.03
5	Tennessee	68.81
6	Texas	67.54
7	Louisiana	65.88
8	Kentucky	63.91
9	South Carolina	61.39
10	North Carolina	60.67
11	Kansas	60.36
12	Georgia	60.26
13	Missouri	59.60
14	Virginia	57.37
15	Indiana	54.57
16	Pennsylvania	52.75
17	West Virginia	52.48
18	Ohio	52.30
19	Wyoming	51.94
20	North Dakota	51.44
21	South Dakota	51.14
22	Delaware	51.02
23	Utah	49.69
24	Nebraska	49.65
25	Florida	49.28
26	Iowa	49.02
27	Michigan	48.93
28	Minnesota	47.84
29	Arizona	47.56
30	Wisconsin	46.91
31	Montana	46.11
32	Illinois	45.95
33	Idaho	45.50
34	Maryland	45.50
35	New Mexico	45.43
36	Rhode Island	43.23
37	Colorado	42.92
38	New Jersey	39.48
39	New York	39.42
40	Alaska	38.43
41	Vermont	37.23
42	New Hampshire	36.97
43	Hawaii	36.49
44	Connecticut	36.37
45	Massachusetts	35.12
46	Maine	34.00
47	Nevada	33.61
48	Washington	31.06
49	Oregon	30.07
50	California	27.37

Higher scores indicate greater tightness.

England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain, and Pacific) exhibited similar patterns, $F_{(8, 41)} = 30.07$, $P < 0.001$, $\eta^2 = 0.85$ (see Table S4 for all descriptive statistics and the results of Tukey's honestly significant difference post hoc tests). We note that previous research has found that the South and parts of the Midwest can be characterized as honor cultures (1, 17–19). Consequently, our regional rankings suggest that honor is positively associated with tightness. This finding is theoretically consistent; we would expect that honor cultures, by their nature, have strict rules regarding expected behavior. Tightness, however, is a broader construct than honor; although many honor cultures are tight, not all tight cultures are honor oriented.
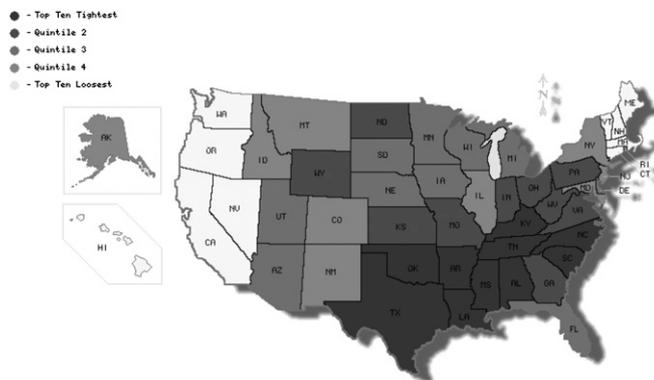
Fig. 1. Patterns of tightness-looseness at the state level in the United States. States are organized into quintiles based upon tightness-looseness index scores. This map was constructed at www.diymaps.net.

We collected a wide range of variables from different databases (e.g., DDB Lifestyle Survey, US Census Bureau, Gallup, General Social Survey) to test the validity of the index (see Table S5 for specific variables and associated databases). Consistent with previous research (15, 20), the index was only moderately correlated with collectivism, or the degree to which individuals are interdependent with their families and in-groups [$r_{(49)} = 0.37$, $P < 0.01$]. Because Hawaii was a statistical outlier relative to all other states on Vandello and Cohen's (3) collectivism index, we excluded it from the analysis; when Hawaii is included in the analysis, the correlation between tightness and collectivism is $r_{(50)} = 0.23$, $P = 0.11$. This result demonstrates that tightness–looseness and collectivism–individualism are distinct constructs. Data from our index and Vandello and Cohen's (3) state-level index of collectivism–individualism demonstrate that there are tight states that are collectivistic (e.g., Alabama, Mississippi, Texas, South Carolina), loose states that are collectivistic (e.g., Hawaii, New Jersey, Maryland, California), loose states that are individualistic (e.g., Oregon, Washington, New Hampshire, Vermont), and tight states that are individualistic (e.g., Wyoming, Kansas, Oklahoma, Ohio).

Our index is also correlated in expected directions with public opinion across the 50 states (see Table S5 for a list of all variables and their sources): tight states desire greater media restrictions [$r_{(48)} = 0.68$, $P < 0.001$], exhibit greater dogmatic and less-flexible notions of morality [$r_{(38)} = 0.62$, $P < 0.001$], perceive immoral and norm-deviant actions as more socially harmful [$r_{(38)} = 0.52$, $P < 0.001$], desire much greater behavioral constraint (e.g., not distributing condoms in high schools, not having same-sex marriage) [$r_{(41)} = 0.81$, $P < 0.001$], desire stricter law enforcement [$r_{(44)} = 0.49$, $P < 0.001$], endorse the use of any force necessary to maintain law and order [$r_{(48)} = 0.65$, $P < 0.001$], and possess lower feelings of personal control [$r_{(48)} = -0.47$, $P < 0.01$]. Tight states also have lower circulation of pornographic magazines [$r_{(50)} = -0.46$, $P < 0.01$], lower support for civil liberties [$r_{(50)} = -0.63$, $P < 0.001$], and are also more insular: they exhibit greater endorsement of isolationist economic practices [e.g., buying American products exclusively; $r_{(48)} = 0.78$, $P < 0.001$] and policies [e.g., supporting government restriction of imported products; $r_{(48)} = 0.51$, $P < 0.001$]. Tightness–looseness is also related to occupational structures; there is a lower ratio of white-collar relative to blue-collar workers in tight states [$r_{(50)} = -0.47$, $P < 0.01$]. This finding is consistent with sociological research that has found that blue-collar workers typically experience more constraint and less discretion in their work environments compared with white-collar workers (21). Tightness was also negatively associated with residential mobility, or the extent to which individuals are transient and, consequently, have weaker social ties and more freedom from social constraints (22) [$r_{(50)} = -0.44$, $P < 0.01$]. Finally, tightness was positively related to conservative political orientation [$r_{(50)} = 0.72$, $P < 0.001$] and was positively related to the percentage of individuals voting for Republican candidate Mitt Romney in the 2012 Presidential Election [$r_{(50)} = 0.64$, $P < 0.001$]. We note that conservatism and tightness are related but distinct constructs. Conservatism is an individual-level set of beliefs that that includes two key features: (*i*) resistance to or fear of change, and (*ii*) preferences for inequality (23). Tightness describes an external social reality that exists independent of any one individual and reflects the relative strength of norms and degree of behavioral constraint versus latitude in a social system as a whole. Although distinct, we note that the constructs are likely mutually reinforcing. For example, tight cultures are reinforced by cultivating individuals who are resistant to change, as these individuals will enforce the stability of norms and thwart challenges to loosen them. Acceptance of inequality can also reinforce tighter norms, because desire for and progress toward social equality often leads to tolerance for greater behavioral variation and looser norms. In all, there is strong validity evidence for the tightness–looseness index.

Study 2: Are There Ecological and Historical Bases of Tightness–Looseness in the United States?

At the national level, tightness–looseness has been found to be an adaptation to various ecological and historical threats (15). We examined whether such patterns also exist at the state level. In particular, we predicted that tight states would exhibit a higher incidence of natural disasters, greater environmental vulnerability, fewer natural resources, greater incidence of disease and higher mortality rates, higher population density, and greater degrees of external threat. Data were collected from a variety of sources, including the US Census Bureau, the Disaster Center, the Kaiser Family Foundation, the US Department of Agriculture, and the Social Science Research Council. See Table S5 for a compiled list of all variables and their corresponding data sources.

Natural Disasters, Environmental Vulnerabilities, and State-Level Tightness–Looseness. Tight states experience greater ecological vulnerabilities than loose states. Tight states have higher death rates due to heat [$r_{(50)} = 0.36$, $P < 0.05$], lightning [$r_{(50)} = 0.54$, $P < 0.001$], and storms and floods [$r_{(50)} = 0.76$, $P < 0.001$] from 1979 through 2004 (24). Death rates from cold and earth movements were not significantly related to the index: $r_{(50)} = -0.06$, $P = 0.69$, and $r_{(50)} = -0.24$, $P = 0.09$, respectively. Tight states also have much higher tornado risk, as indexed by data from the Disaster Center [$r_{(50)} = 0.64$, $P < 0.001$]. Tightness is also negatively associated with environmental and ecological health [$r_{(50)} = -0.77$, $P < 0.001$], as assessed by the "green condition" index (6), which is based on 179 criteria across the states, including air and water pollution, hazardous waste production, and community and workplace health, among others.

Natural Resources and State-Level Tightness–Looseness. Tight states have fewer natural resources than loose states. In particular, tight states have higher rates of food insecurity [$r_{(50)} = 0.43$, $P < 0.01$], very low food security [$r_{(50)} = 0.32$, $P < 0.05$], and food-insecure households [$r_{(50)} = 0.53$, $P < 0.001$], as assessed with data provided by the US Department of Agriculture. Tightness was also positively related to poverty rates reported by the US Census Bureau [$r_{(50)} = 0.67$, $P < 0.001$]. This result is similar to findings at the national level (15), which demonstrated that low food supply, low food production, and greater incidence of food deprivation were all related to greater tightness across nations.

Disease, Health Vulnerabilities, and State-Level Tightness–Looseness. Tightness at the state level is positively related to all indicators of disease prevalence reported by the US Census Bureau, including influenza and pneumonia death rate [$r_{(50)} = 0.52$, $P < 0.001$], rate of HIV diagnosis [$r_{(50)} = 0.29$, $P < 0.05$], rate of *Chlamydia* [$r_{(50)} = 0.46$, $P < 0.01$], and a parasite/disease stress index (7) derived from 15 years of data from the Centers for Disease Control [$r_{(50)} = 0.55$, $P < 0.001$]. Indicators of health

vulnerability and mortality reported by the Centers for Disease Control, the Social Science Research Council, and the Kaiser Family Foundation were similarly associated with tightness; infant mortality rate [$r_{(50)} = 0.76$, $P < 0.001$], child mortality rate [$r_{(50)} = 0.60$, $P < 0.001$], and death rate [$r_{(50)} = 0.75$, $P < 0.001$] were all higher in tight states, whereas life expectancy at birth [$r_{(50)} = -0.80$, $P < 0.001$] was lower.

Population Variables and State-Level Tightness-Looseness. The ratio of urban to rural population (reported by the US Census Bureau) is a demographic characteristic that we expect to be negatively associated with tightness, as urban environments cultivate more anonymity and, consequently, greater behavioral latitude. This expected relationship was found [$r_{(50)} = -0.51$, $P < 0.001$]. There was no relationship between the US Census Bureau's reported levels of population density (log) and tightness–looseness at the state level [$r_{(50)} = -0.05$, $P = 0.73$]. Within the United States, population may not be sufficiently dense to the point that it is ecologically threatening. Indeed, there is much greater variation in population density at the national level, particularly at the higher end of the spectrum. According to Singapore's Department of Statistics, Singapore had a population density of 18,782.70 people per square mile in 2010, whereas New Jersey— the state with the highest population density in the United States —had a density of 1,195.5 people per square mile in 2010, according to the US Census Bureau (25). We also note that although urbanity and population density are correlated to a moderate degree—$r_{(50)} = 0.49$, $P < 0.001$—the US Census Bureau considers an urban space to be comprised of a certain population size (i.e., 50,000 people or more for urbanized areas and at least 2,500 but less than 50,000 for urban clusters), but sets no limit on the particular geographical area that it is allowed to encompass. Thus, you may have, by their definition, a self-contained and coherent urban area that is quite spread out and low in density.

External Threat and State-Level Tightness–Looseness. At the national level, history of external conflict on one's territory was an important predictor of tightness (15). High degrees of external threat necessitate a greater need for coordination and adherence to norms to produce greater defensive capabilities. The United States has historically experienced very little external threat on its own soil, with a few localized exceptions (e.g., 9/11, Pearl Harbor). However, the Civil War represented a large threat for the Southern states. Although this was not an international threat per se, it was nevertheless a clear external threat to the South, who stood to lose the source of their economic livelihood (e.g., slavery) and who were "defending their 'tradition', 'heritage' and 'way of life'" (5). As Woodard reminds us: "The confederacy went down in defeat in 1865, its cities occupied by 'foreign' troops, its slaves emancipated by presidential decree" (5). In contrast, the North did not fight the war so much over threat (e.g., over resources), but more so to preserve the Union. We thus expected that the states that were the most reliant on slavery would be the most threatened and would have higher degrees of tightness. Indeed, we found that the percentage of slave-owning families at the state level, as counted in the 1860 US Census, was positively related to state tightness [$r_{(33)} = 0.78$, $P < 0.001$]. All existing states in the United States at the year 1860 were incorporated in this analysis, including those where slavery was outlawed and percentage of slave-owning families was zero. We also see the same relationship when looking at only those states where slavery was legal [$r_{(15)} = 0.48$, $P = 0.07$]. More contemporaneously, we found that tight and loose states vary in their perception of ambient threat. For example, there is more of a military presence in tight compared with loose states, with tight states exhibiting much higher rates of military recruitment [$r_{(50)} = 0.40$, $P < 0.01$]. Similarly, individuals in loose states are more likely to believe that too much money goes toward defense spending, whereas those in tight states are more inclined to disagree with this assessment [$r_{(41)} = -0.33$, $P < 0.05$]. It is important to note that although we have presented many of these

threats as stemming from ecological circumstances, it is possible that some, particularly in the southern part of the United States, are also self-inflicted. For example, low work motivation and lack of education—by-products of slavery as well as the cultures of the settlers in the southern United States (e.g., Scotch-Irish immigrants and African slaves, who were historically low skilled and poorly educated) (see refs. 1 and 5)—likely contribute to the aforementioned ecological threats (e.g., food insecurity, poverty) alongside other clearly uncontrollable natural threats such as natural disasters.

Study 3: Does Tightness–Looseness Explain Variation in Personality Across the 50 States?
Living in a tight versus a loose state should cultivate and reinforce the expression of certain psychological traits, which are adaptive and reinforce the strength of norms in that context (15). Accordingly, we examined the relationship of our index with state-level scores for traits from the five-factor model of personality: agreeableness, extraversion, conscientiousness, neuroticism, and openness (8). We expected tightness to correlate positively with conscientiousness, as this dimension reflects greater impulse control and overall self-constraint and is associated with cautiousness, self-discipline, ability to delay gratification, desire for orderliness, and conformity to norms (26). Openness, on the other hand, is associated with nontraditional values and beliefs, breadth of experience, interest and curiosity toward new ideas, tolerance for other cultures, and a preference for originality (8, 26). Consequently, we predicted that openness would be negatively associated with tightness at the state level. We also explored the relationship of extraversion, agreeableness, and neuroticism with tightness–looseness, but had no a priori hypotheses for these traits. See Table S5 for a list of all variables and their corresponding data sources.

The results showed support for the notion that tight states exhibit greater conscientiousness [$r_{(50)} = 0.40$, $P < 0.01$] and lower openness [$r_{(50)} = -0.37$, $P < 0.01$] relative to looser states. We also cross-validated these relationships with other theoretically similar variables. Tightness was positively related to greater cautiousness—$r_{(48)} = 0.61$, $P < 0.001$—as assessed via a composite score of the following two items from the DDB Needham Life Style Survey: "I don't like to take chances" and "I am the type of person who would try anything once" (reversed). Tightness was also negatively related to cultural openness—$r_{(48)} = -0.58$, $P < 0.001$—which was assessed from the same database with the following item: "I am interested in the cultures of other countries". Notably, this latter finding may also be indicative of a negative relationship between tightness and cosmopolitanism, which has been defined as "an intellectual and aesthetic openness towards divergent cultural experiences, a search for contrasts rather than uniformity" (27). Agreeableness is also positively related to tightness [$r_{(50)} = 0.34$, $P < 0.05$], as is extraversion [$r_{(50)} = 0.27$, $P = 0.06$], although nonsignificantly. Neuroticism is unrelated to tightness [$r_{(50)} = 0.20$, $P = 0.16$]. In summary, tightness–looseness is related in expected ways to personality traits at the state level.

Study 4: Does Tightness–Looseness Have Consequences for State Outcomes?
Finally, we explored the implications of tightness–looseness for state-level outcomes. Given that tightness is, in part, a cultural adaptation to threat, where strong norms and intolerance for deviant behavior develop to maintain social cohesion and coordination, we predicted that state-level tightness would be associated with increased social organization, including higher self-control in states (e.g., lowered drug use, lower debt) and greater monitoring and order (i.e., more police per capita, less crime and homelessness). However, the stability and social organization that results from greater constraint and reduced tolerance for deviance should also result in higher incarceration rates, greater discrimination, lower equality, and lower creativity. We also explored linear and curvilinear effects of tightness–looseness for state-level happiness. See Table S5 for a compiled list of all variables and their corresponding data sources.

Social Organization and State-Level Tightness–Looseness. Tightness is negatively correlated with a five-item index of social disorganization created by Baron and Straus (12) [$r_{(50)} = -0.42, P < 0.01$]. Baron and Straus's social disorganization index was originally comprised of six items, which included the percentage of state population lacking religious affiliation. Because this variable was already included in our tightness index, we recalculated their social disorganization index without this variable. This index assesses the relative degree of social instability at the state level in the United States; it includes the percentage of the population moving from a different state or from abroad (1975–1980), ratio of tourists to residents (1977), percent divorced (1980), percent of female-headed families with children under age 18 (1980), and nonfamilied male householders per capita (1980). Accordingly, there is more social instability in loose compared with tight states. Tight states also have higher incarceration rates [$r_{(50)} = 0.62, P < 0.001$] and more state and local law enforcement full-time employees per capita [$r_{(50)} = 0.29, P < 0.05$] compared with loose states, as assessed by the Bureau of Justice Statistics and the Social Science Research Council. Tightness at the state level is negatively related to homeless rates [$r_{(50)} = -0.55, P < 0.001$], based on statistics reported by the National Alliance to End Homelessness. Tightness is unrelated to crime rates per capita reported by the US Census Bureau [violent crime rate, $r_{(47)} = 0.04, P = 0.77$; property crime rate, $r_{(47)} = 0.19, P = 0.19$; murder rate, $r_{(47)} = 0.19$, $P = 0.20$; forcible rape rate, $r_{(47)} = 0.01, P = 0.96$; robbery rate, $r_{(47)} = -0.03, P = 0.85$; aggravated assault rate, $r_{(47)} = 0.07, P = 0.65$; burglary rate, $r_{(47)} = 0.22, P = 0.14$; theft rate, $r_{(47)} = 0.24$, $P = 0.10$; and vehicle theft rate, $r_{(47)} = -0.23, P = 0.12$]. As poverty is a prominent factor influencing crime, all analyses were partial correlations that controlled for state-level poverty rate. Although there is no relationship between tightness and crime, we would note that the relationship between tightness and higher incarceration rates may be facilitated by more law enforcement per capita, stricter enforcement, and a lower threshold for arresting potential criminals in tight states.

Self-Control and State-Level Tightness–Looseness. Looseness has previously been linked to greater impulsivity, reduced cautiousness, and decreased self-regulatory strength (15). Study 3 also demonstrated that loose states have lower conscientiousness, a personality variable associated with the ability to delay gratification and engage in deliberate, well-planned behavior (26). Consequently, state-level outcomes that reflect greater behavioral impulsivity and less self-control should be higher in loose compared with tight states. Our analyses show that compared with tight states, there is more illicit drug use per capita [$r_{(50)} = -0.52, P < 0.001$] and more alcohol binge drinking [$r_{(50)} = -0.29, P < 0.05$] in loose states. Tightness is also negatively related to variables that are indicative of poor financial self-control, such as state level credit card debt [$r_{(50)} = -0.45, P < 0.01$]. However, given that poverty is negatively associated with credit card debt [$r_{(50)} = -0.63, P < 0.001$] and also related to tightness (Study 2), we found that this relationship dissipated when controlling for poverty [$r_{(50)} = -0.06$, $P = 0.71$]. We suspect that this occurs because poverty limits access to credit, which necessarily constrains the amount of credit card debt that can be accrued.

Creativity and State-Level Tightness–Looseness. Tightness is associated with greater behavioral constraint and narrower behavioral options across contexts (15), and should accordingly curtail the degree to which innovative and creative activities, ideas, and commodities are produced. Tightness is also negatively related to openness, a positive predictor of creativity (8). Consequently, tightness and creativity should be negatively related. Consistent with our prediction, tight states have much fewer utility patents per capita—a commonly used indicator of creativity and innovation (28)—from 1963 to 2011, according to the US Patent and Trademark Office [$r_{(50)} = -0.45, P < 0.01$]. Using data from the Bureau of Labor Statistics, we found that tight states

also have a much lower number of fine artists (e.g., painters, illustrators, writers) per capita compared with loose states [$r_{(32)} = -0.62, P < 0.001$].

Discrimination, Equality, and State-Level Tightness–Looseness. Tight states have less tolerance for deviance, which may relate to rates of discrimination and inequality. Our results show that tight states have more charges of employment discrimination per capita compared with loose states, as documented by the Equal Employment Opportunity Commission [$r_{(50)} = 0.61, P < 0.001$]. We also expected that tightness would be associated with more restricted sex roles, cultivating fewer behavioral choices for women and resulting in greater gender inequality. State-level indices reflecting economic, legal, and political (i.e., representation in public office) gender inequality created by Baron and Straus (12) were used to evaluate this relationship across the 50 states. As expected, tightness is significantly associated with lower political [$r_{(50)} = -0.61, P < 0.001$] and legal equality [$r_{(50)} = -0.68, P < 0.001$]. Tightness is unrelated to economic inequality [$r_{(50)} = -0.23, P = 0.11$]. Tightness was also negatively associated with the percentage of minority-owned firms [$r_{(46)} = -0.37$, $P < 0.01$] and negatively associated with percentage of women-owned firms, although not significantly [$r_{(50)} = -0.26, P = 0.06$]. We note that the former correlation controls for percentage of minorities reported by the US Census Bureau, as this variable differs significantly by state.

Happiness and State-Level Tightness–Looseness. We examined both linear and nonlinear relationships between tightness–looseness and happiness. On the one hand, the greater constraint associated with tightness may have a linear (and negative) effect on happiness. On the other hand, both extremes may produce greater unhappiness; very tight states might have high unhappiness because of excessive constraint and behavioral restriction, whereas very loose states might have high unhappiness because of excessive latitude, instability, and social disorganization. Using state level averages from a large, national dataset collected via social media (29), we found a negative and linear relationship between tightness and happiness [$r_{(50)} = -0.61, P < 0.001$]. This relationship held despite controlling for poverty rate [$r_{(47)} = -0.50, P < 0.001$]. No curvilinear relationship was found between tightness–looseness and happiness.

In sum, tightness–looseness in the 50 US states is related to a variety of ecological and historical factors, personality traits, and state outcomes. We used path analysis to simultaneously examine these relationships and assess the overall fit of our theoretical model. Consistent with our argument, a path model wherein ecological and man-made threats predict tightness and tightness predicts state-level outcomes and personality traits, achieved good fit (see *Supporting Information* for full details).

Discussion

This research illustrates that there is wide variability in tightness–looseness across the 50 states of the United States, which provides a parsimonious explanation for numerous disparate and seemingly unrelated phenomena, including ecological and historical factors, psychological characteristics, and state-level outcomes. Returning to the questions posed at the beginning of this report, we see that tightness–looseness can account for the divergence of substance abuse and discrimination rates between states such as Hawaii and Ohio, reliably predicts the psychological differences in conscientiousness and openness between Colorado and Alabama, helps to explain the contrasts in creativity and social organization between Vermont and North Dakota, and provides some understanding concerning the dissimilarity in insularity and resistance toward immigration between Arizona and New York. Heretofore, tightness–looseness has only been examined at the national level (15). This research shows that the same general principles of tightness–looseness apply to the state level of analysis. Specifically, both the national and state levels have demonstrated similar relationships between tightness–looseness

and destabilizing ecological and historical factors, as well as the positive link between tightness and conscientiousness and the negative link between tightness and openness (for the interested reader, see the *Supporting Information* and Table S6 for direct comparisons, where possible, between the results of the state-level and the national-level studies of tightness-looseness). In all, tightness–looseness has predictive and explanatory utility across levels of analysis. Future research would benefit by conducting research at the organizational and community levels of analysis (e.g., ref. 4). For example, it is theoretically feasible for tight states to have pockets of loose communities (e.g., New Orleans in Louisiana) and loose states to have pockets of tight communities (e.g., Orange County in California). State and community variation in tightness–looseness also needs to be examined in other countries.

Although we cannot infer causality given the correlational nature of the present research, the findings are consistent with tightness–looseness theory (15) and general eco-cultural approaches to explaining cultural differences (30). Specifically, local environmental and man-made factors are theorized to provide a context wherein various psychological traits, behavioral patterns, and cultural norms become adaptive. In localities with a high degree of either environmentally induced or human-inflicted threat (i.e., natural disasters, resource scarcity, disease, conflict that threatens one's livelihood), it is adaptive to develop a cultural milieu with stronger norms, greater behavioral constraint, and lower deviance tolerance. Excessive behavioral latitude and permissiveness would be maladaptive in such environments, making it difficult to coordinate social action to deal with such threats. These high-threat environments also make certain psychological characteristics more or less adaptive. Greater conscientiousness, cautiousness, impulse control, prevention-focus, desire for order, and lower openness to experience become highly adaptive in threatening contexts by promoting adherence to norms and punishment avoidance. Thus, personality characteristics and culture are interrelated and mutually reinforcing. In contrast, localities with lower threat can afford more unconstrained behavior and more flexible norms, promoting greater openness and less need for conscientiousness, prevention-focus, and impulse control.

This research has shown that tightness–looseness is also systematically associated with state-level outcomes, which may yield important policy implications. Tight states have greater social stability and self-control, including lower drug and alcohol use, lower rates of homelessness, and lower social disorganization. However, tight states also have lower sex equality, greater discrimination and inequality, greater rates of incarceration, decreased innovation and creativity, and lower happiness. On the other side, loose states have much higher social disorganization and drug use, despite other outcomes, such as increased creativity, cultural openness, and greater happiness. Put simply, both tightness and looseness have relative costs and benefits, depending on one's vantage point.

By showing how states vary on tightness and looseness, this research can help to understand what many have termed the "culture wars" (31) between the states in last few decades (see also ref. 32). This research not only facilitates understanding about why such differences exist, but also suggests how they are maintained, as well as their psychological underpinnings. By beginning to understand why differences in tightness–looseness arise at the state level, we can better appreciate our intranational differences and, ultimately, manage our own diversity therein. Moreover, this research can also help to predict when changes in tightness–looseness might occur at the state level. For example, events that increase threat may lead to dramatic increases in the tightness of states, as evidenced by the policies passed in the wake of the events of September 11th, 2001, and the martial law temporarily imposed following the Boston bombing on April 15th, 2013. In all, this research illustrates that tightness–looseness is an important cultural dimension that is critical to understanding variation at the state level in the United States.

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