

ABSTRACT

Title of Thesis: TIGHTNESS-LOOSENESS IN THE UNITED STATES:
ECOLOGICAL PREDICTORS AND STATE LEVEL
OUTCOMES

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

TIGHTNESS-LOOSENESS IN THE UNITED STATES: ECOLOGICAL
PREDICTORS AND STATE LEVEL OUTCOMES

by

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INTRODUCTION AND LITERATURE REVIEW

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. Nisbett & Cohen, 1996; Plaut, Markus, Treadway, & Fu, 2012; Vandello & Cohen, 1999; Varnum & Kitayama, 2011). Indeed, this trend is belied by ample anecdotal and empirical evidence documenting wide cultural differences between the regions and states of the United States (Nisbett & Cohen, 1996; Vandello & Cohen, 1999; Varnum & Kitayama, 2011; Woodward, 2011), as well as extensive state-level differences in ecological and historical conditions (Fincher & Thornhill, 2012; Hall & Kerr, 1991; Nisbett & Cohen, 1996; Woodward, 2011), personality characteristics (Rentfrow, Gosling, & Potter, 2008), and numerous outcomes, such as substance abuse (U.S. Census Bureau, 2011), social organization (Baron & Straus, 1989), discrimination (U.S. Equal Employment Opportunity Commission, 2011), and creativity (U.S. Patent and Trademark Office, 2011), among others. To date, however, there is 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 (U.S. Census Bureau, 2011), but incidents of discrimination much higher in the latter than the former (U.S. Equal Employment Opportunity Commission, 2011)? 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 (Rentfrow, Gosling, & Potter, 2008)?

Why do some states, such as Oregon and Vermont, exhibit high levels of creativity (U.S. Patent and Trademark Office, 2011), but have very low levels of social organization (Baron & Straus, 1989), 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 (Hofer, Rytina, & Baker, 2011)? In all, what does this seemingly diverse and wide array of state-level differences have in common?

I argue that there is a common principle by which one can understand many differences across the 50 states. Specifically, I 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” versus “loose.”

Tightness-Looseness: Construct Definition, Theoretical Origins, and Empirical Evidence

Tightness-looseness denotes the strength of norms and deviance tolerance of a socio-cultural unit (Gelfand et al., 2011). More specifically, norm strength concerns both the amount of rules that exist and the level of social and institutional pressure to follow them, while deviance tolerance concerns the general amount of censure and punishment that results when norms are violated. Tight social entities have many strongly enforced rules and little tolerance for deviance, while loose social entities have few strongly enforced rules and greater tolerance for deviance. Pelto (1968), an anthropologist, was the first to show that this cultural contrast was critical to understanding traditional societies. In a study of 21 of these societies, Pelto found that certain groups—such as the Hutteries and the Labara—had strong norms and severe punishments for norm-breakers,

while others—such as the Kung Bushman and the Cubeo—had greater latitude, permissiveness, and norm ambiguity. More recently, research conducted by Gelfand and colleagues (2011) demonstrates that this distinction also differentiates large-scale, modern societies. In a 33-nation study, they found high between-nation variance in tightness-looseness and high within-nation agreement concerning the strength of social norms and tolerance for deviance. Loose nations included Venezuela, Australia, Estonia, Greece, Hungary, Israel, the Netherlands, New Zealand, Ukraine, and the United States, while Germany, India, Malaysia, Japan, Mexico, Pakistan, Singapore, Norway, China, Portugal, South Korea, and Turkey were found to be tighter.

The validity of Gelfand and colleagues (2011) 6-item tightness-looseness measure was established by theoretically predicted correlations with multiple convergent and divergent measures. These include expert ratings provided by Dr. Harry Triandis ($r = .61$, $p = .01$), greater pressures towards uniformity [percentage of population with left hand dominance, $r = -.61$, $p = .05$; accuracy of clocks in major cities, $r = -.60$, $p = .01$], less tolerant attitudes toward deviant behavior [justifiability of morally relevant behavior (mean ratings), $r = -.48$, $p = .01$; justifiability of morally relevant behavior (SD of ratings), $r = -.56$, $p = .01$; “unrestricted” sociosexuality orientation, $r = -.44$, $p = .04$; alcohol consumption (liter per capita), $r = -.46$, $p = .01$], preference for political systems that have a strong leader or are ruled by the army ($r = .38$, $p = .04$), endorsement of the notion that the most important responsibility of the government is to maintain order in society ($r = .61$, $p = .01$), and various measures of ethnocentrism and deviance tolerance, including agreement that a society’s ways of life need to be protected from foreign influence ($r = .57$, $p = .02$), desire not to have immigrants as neighbors ($r = .43$, $p = .02$),

percentage of the population that are international migrants ($r = -.32, p = .08$), and agreement that one's culture is superior to others ($r = .60, p = .01$).

Gelfand and colleagues (2011) further showed that tightness corresponded to socio-political institutions within these 33 nations in theoretically predicted ways; in other words, tightness was positively associated with more constraining institutions and institutional practices. Specifically, tightness was found to be associated with greater autocratic governing bodies ($r = .47, p = .01$), a less open and free media ($r = -.53, p = .01$), lowered access to new information and technology ($r = -.38, p = .04$), fewer political rights ($r = -.50, p = .01$) and civil liberties ($r = -.45, p = .01$), retention of the death penalty ($r = .65, p = .01$), a lower percentage of people who report participating in collective action, such as boycotts and strikes ($r = -.40, p = .03$), a greater percentage of people expressing that they would never participate in collective action ($r = .36, p = .05$), and a greater importance of God ($r = .37, p = .05$) and increased religious attendance ($r = .54, p = .01$).

In addition to uncovering the relationships between tightness-looseness and various convergent-divergent measures and macro-level institutional variables, Gelfand and colleagues (2011) also found that societal tightness-looseness was reflected in individual perceptions of behavioral constraint in everyday situations. Using methodology and measures adapted from Price and Bouffard (1974)—and after establishing cross-cultural equivalence, relevance, and translation accuracy—they had participants rate how appropriate certain behaviors were given a specific, everyday context (e.g., eating in an elevator or singing on a city sidewalk) and how constraining specific situations were (e.g., bank, doctor's office, public park). They found that

individuals in both tight and loose societies naturally rated certain contexts as more constraining than others (for instance, one's behavior in a library is considered to be more constrained than their behavior at home), but they also found that, relative to individuals from loose societies, those from tight societies perceived significantly more behavioral constraint and thought fewer behaviors were appropriate across any given context. In other words, tightness acts as a cultural amplifier (Gelfand, Leslie, & Fehr, 2008) that funnels behavior in particular, "appropriate" ways. Relatedly, Taras, Kirkman, and Steel (2010) found that the relationship between Hofstede's (1980, 2001) macro-level cultural values and associated individual and organizational outcomes was stronger in tighter societies relative to looser societies.

Gelfand and colleagues (2011) also found that tightness-looseness was significantly related to individual psychological characteristics in theoretically consistent ways. Individuals in tighter societies were found to exhibit greater prevention-focus (including greater dutifulness and cautiousness), self-regulation and impulse control, need for structure, and self-monitoring relative to individuals in looser societies, and hierarchical linear modeling found that higher perceptions of situational constraint were significantly related to all of these individual level tendencies. These results make sense in light of the fact that tighter environments are replete with numerous, generally unspoken behavioral rules that, if broken, are highly punishable. Consequently, regulating and monitoring one's actions, being vigilant and cautious, and relying on proven routines are all adaptive strategies in these societies. In sum, individual psychological processes converge with the relative tightness-looseness of a society—reflected in the socially understood constraints found in everyday situations—in a way

that is adaptive and rational in those contexts.

Ecological and Historical Affordances of Tightness-Looseness

Drawing on eco-cultural models (Barry, Child, & Bacon, 1959; Berry, 1979), Gelfand and colleagues (2011) demonstrated that national tightness or looseness was related to numerous ecological and historical threats. Specifically, tighter societies have higher historic (1500 CE) and projected (2050 CE) population densities ($r = .77, p = .01$ and $r = .40, p = .03$, respectively), a lower percentage of farmland ($r = -.37, p = .05$), a scarcity of crucial resources, such as food ($r = -.36, p = .05$), safe water ($r = -.50, p = .01$), clean air ($r = -.44, p = .02$), protein ($r = -.41, p = .03$) and fat supplies ($r = -.46, p = .01$), lower food production ($r = -.40, p = .03$), greater food deprivation ($r = .52, p = .01$), greater prevalence of historic pathogens and present-day death rates due to communicable diseases ($r = .36, p = .05$ and $r = .59, p = .01$, respectively), a greater vulnerability to natural disasters ($r = .47, p = .01$), and been subject to numerous territorial threats from 1918 to 2001 ($r = .41, p = .04$). In all, they argued that these ecological threats necessitate strong norms and less tolerance for deviance in order to coordinate social action (e.g., defense preparations, conservation of resources) that ensures survival. More recent evolutionary game theoretic models using the public goods game paradigm substantiate this point, finding that greater societal threat necessitates an increase in punishment propensity against non-cooperators to survive (Roos, Gelfand, Nau, Zuckerman, & Lun, under review). Indeed, societies that have historically failed to respond to important ecological threats through increased constraint and behavioral regulation have systematically collapsed (Diamond, 2005). In all, it is suggested that tightness is an effective response to external threat, coordinating the behavior of

individual actors in a way that is adaptive to local ecological and historical pressures. In contrast, loose societies have fewer ecological and historical threats and can “afford” more deviant behavior.

Distinctiveness of the Tightness-Looseness Construct

Tightness-looseness is related to but distinct from other cultural constructs, most notably collectivism-individualism. In general, collectivism emphasizes one’s duty, obligation to, and interdependence with an ingroup that supersedes individual goals and desires and emphasizes a preference for strongly-knit social networks, while individualism emphasizes the predominance of individual decisions, desires, independent autonomy, and loose social networks (Hofstede, 1980; Hofstede, 2001; Triandis & Suh, 2002). This construct also indicates the extent to which a person’s identity is primarily drawn from their ingroup or the perceptions of their own unique individual character (Hofstede, 1980, 2001). The often confounded nature of these two constructs stems the fact that previous studies on collectivism and individualism have predominantly juxtaposed individuals from East Asia and the United States. In addition to being collectivistic and individualistic, respectively, East Asian countries tend to be tight, while the United States is generally individualistic and loose (Chan, Gelfand, Triandis, & Tzeng, 1996; Gelfand et al., 2011). However, these constructs have been shown to be distinct. In qualitative work using ethnographies from the Human Relations Area Files, Carpenter (2000) found a moderate positive relationship between collectivism and tightness amongst traditional societies ($r = .44, p = .04$), and, consistent with this finding, Gelfand and colleagues (2011) found a relationship of a similar magnitude between individualism and tightness in their 33-nation study ($r = -.47, p = .01$). Accordingly, there

are nations that are both individualistic and tight, such as Germany, and collectivistic and loose, such as Brazil and Venezuela (Gelfand et al., 2011; Hofstede, 1980, 1984, 2001).

Other research contributes to the distinction between these constructs. For instance, while individualism is highly and positively associated with national wealth (Hofstede, 1980, 2001), tightness has no relationship with it (Gelfand et al., 2011). Additionally, as noted previously, meta-analysis has found that collectivism-individualism predicts various individual outcomes, while tightness-looseness often moderates those relationships (Taras, Kirkman, & Steel, 2010). Finally, a look at the measurements items used in research assessing state level differences in collectivism-individualism (Vandello & Cohen, 1999) demonstrates clear and meaningful differences from the tightness-looseness construct. For example, items used to assess collectivism-individualism include: the percentage of people living alone (Almapi, 1994), the percentage of households with grandchildren in them (Almapi, 1994), and the ratio of people carpooling to work versus people driving alone (Almapi, 1994). These questions have little theoretical relationship with tightness-looseness and, therefore, should not be accurate predictors of this construct. Indeed, I asked Harry Triandis, an expert on the topic, to provide tightness-looseness ratings on the U.S. 50 states (see Appendix A for actual ratings). Although not definitive, these ratings correlate with Vandello and Cohen's (1999) collectivism scores at only $r(50) = .33, p = .02$. In all, though tightness and collectivism are indeed positively related, the statistical results and the measurement differences noted above show that they are distinct. This research seeks to provide further evidence of their distinctiveness via the correlation of tightness-looseness state scores with the state level collectivism-individualism findings of Vandello and Cohen (1999).

Tightness-looseness has also been shown to be related to but distinct from other cultural dimensions beyond collectivism-individualism. Gelfand and colleagues (2011) found that tightness significantly correlates with power distance ($r = .42, p = .02$); Schwarz's (1994) cultural value dimensions of conservatism and harmony ($r = .43, p = .04$ and $r = .47, p = .03$, respectively); the GLOBE study's (House, Hanges, Javidan, Dorfman, & Gupta, 2004) measures of family collectivism ($r = .49, p = .01$), institutional collectivism ($r = .43, p = .03$), and future orientation ($r = .47, p = .02$); Leung and Bond's (2004) social axioms of fate control ($r = .44, p = .03$), spirituality ($r = .52, p = .01$), and reward for application ($r = .60, p = .01$); and Smith and colleagues' (2002) vertical sources of guidance ($r = .40, p = .03$) and measure of widespread beliefs in one's nation ($r = .54, p = .01$). In all, the correlation between tightness and these various cultural dimensions never exceeds .60, suggesting the distinctiveness of the tightness-looseness construct.

Tightness-Looseness within the U.S. Fifty States

The present research is motivated by the broader, theoretical question of whether tightness-looseness variations occur beyond the national level and if it remains associated with particular ecological factors, personality characteristics, and outcomes. As the United States exhibits great intranational variability in ecologies, social norms, ethnic groups, and regional histories, it is a prime testing ground for investigating these questions. I chose to examine the fifty states as my primary level of analysis for a few reasons. First, states are often perceived as self-contained, coherent entities that are often evoked in everyday situations in the United States. For instance, individuals often declare that they are from one state or another in conversation and tend to associate particular

cultural values, norms, and characteristics with some states over others (e.g., California is laid back, etc.). In short, much like nations, states commonly have an identity function that individuals often internalize and can easily express. Second, other constructs show substantial variation at the state level (e.g., collectivism), so intra-national tightness-looseness disparities, if they exist, should also be evident at this level of analysis. Third, there is a vast body of existing state level data that can be used to answer the questions posed above and allows comparison of any tightness-looseness findings with other state level constructs of interest, such as collectivism-individualism (Vandello & Cohen, 1999), personality characteristics (Rentfrow, Gosling, & Potter, 2008), and gender inequality (Baron & Straus, 1989).

There are a few reasons that I expect to find significant variation in tightness-looseness at the state level in the United States. First, the United States is, on the national scale, a looser society (Gelfand et al., 2011). Theory has surmised that the greater behavioral latitude and lower norm strength associated with looser entities may allow more internal variation in tightness-looseness across sub-groups relative to tighter entities (Gelfand, Nishii, & Raver, 2006). Second, one might also expect to see tightness-looseness variation due to the wide range of ecologies present within the U.S. given the predictive association between ecological factors and tightness demonstrated previously (Gelfand et al., 2011). Third, other research has already demonstrated wide state variation in the U.S. on other cultural dimensions. For instance, while the U.S. is individualistic when examined at a macro level, there are significant differences in collectivism and individualism between states (Vandello & Cohen, 1999), and research conducted by Rentfrow, Gosling, and Potter (2008) demonstrate clear state level differences on the Big

Five personality dimensions. Finally, more direct evidence for tightness-looseness variation within the U.S. can be found in a recent study by Plaut, Markus, Treadway, and Fu (2012). They found significant differences in tightness-looseness between the cities of San Francisco and Boston, with the former being significantly looser than the latter on the tightness-looseness scale previously developed by Gelfand and colleagues (2011). Using content analysis, Plaut and colleagues (2012) also found substantial differences in the cultural products produced by institutions in both cities. Specifically, the *Boston Globe* exhibited significantly more articles that focused on traditional and established domestic and international communities (e.g., the Catholic Church) relative to the *San Francisco Chronicle*, which had a more prominent focus on stories of cutting-edge innovation. A similar emphasis on traditional vs. innovation/novelty was also found on hospital and business websites in each respective city, demonstrating the recursive link between cultural tightness-looseness and the products that it creates. These relative differences in tightness arise despite Boston and San Francisco's apparent similarities, as both are predominantly Democrat in political orientation, urban, house the top two technology industries in the United States and many elite universities, and are individualistic. Notably, it was also found that the relative degree of tightness in each city had an influence on individual outcomes; specifically, well-being. In all, these results indicate that differences in tightness-looseness can be found at local levels of analysis, that these differences result in very real societal and individual-level outcomes, and that substantial within-nation variance in this construct might be present in the United States. However, no work to date has systematically examined tightness-looseness in the entire fifty United States, nor addressed the potential distal factors contributing to their

variance.

In the research reported below, I use four studies to address these issues at the state level of analysis. In Study 1, I construct a reliable and valid index of tightness-looseness and provide state rankings on this construct. In Studies 2, 3, and 4, I examine the associations between these tightness-looseness index scores and various ecological and man-made factors, personality characteristics, and state level outcomes, respectively. Overall, I show that: (1) there is wide variation in tightness-looseness at the state level that is distinct from other dimensions of culture, such as individualism-collectivism; (2) 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; (3) tightness-looseness is related to variation in personality traits across the 50 states; and (4) 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. I detail these findings below and discuss their theoretical and practical implications.

STUDY 1: Do the 50 States Vary on Tightness-Looseness?

In Study 1, I aim to create a reliable and valid multi-item index of tightness-looseness for the 50 states of the United States. Overall, the goal of Study 1 is to demonstrate that tightness-looseness varies quite widely between states.

Although this study is primarily exploratory in nature, I expect the states that comprise the South and Midwest to be the tightest in the United States for the following reasons. First, relative to other areas of the U. S., trait conscientiousness has been found high in both the South and the Midwest, while trait openness has been found to be low (Rentfrow, Gosling, & Potter, 2008). As past research demonstrates, conscientiousness taps into impulse control and overall self-constraint, and is associated with conformity to norms and rules, cautiousness and deliberate action, self-discipline, ability to delay gratification, desire for orderliness, and the need to plan, organize, and prioritize (John, Naumann, & Soto, 2008); on the other hand, openness taps into general open-mindedness and tolerance for deviance (e.g., the use of marijuana) (John, Naumann, & Soto, 2008). Based on theory and past research, tightness and conscientiousness should be, and appear to be, positively related, while tightness and openness are negatively related (Gelfand et al., 2011).

Second, the existence of cultures of honor in the South and parts of the Western region of the United States (Cohen, 1996, 1998; Cohen, Nisbett, Bowdle, & Schwarz, 1996; Nisbett & Cohen, 1996) and their reification and support by regional institutions (Cohen & Nisbett, 1997) may also suggest that the Southern and Midwestern states are tighter. Although one might assume that the presence of unfettered violence commonly

found in these cultures of honor is indicative of loose social norms, honor norms are actually highly structured and constraining. The logic of cultures of honor demand that an individual respond to a personal insult or affront with force, or else they be taken advantage of and lose social status in the eyes of others. Consequently, whether or not an individual wants to react with violence, the norms of the culture necessitates it. Indeed, argument-based (i.e., honor provoking) violence is more common in these areas relative to the North and is amplified by greater social organization (i.e., the cohesiveness of social values and social environment; Cohen, 1998), indicating that stronger values placed on honor norms more often funnels behavior into reactive violence. However, it must be stated that the honor culture construct is too narrow to be equivalent to tightness. While honor cultures are necessarily tight, not all tight cultures are honor cultures.

In all, I expect that patterns of tightness-looseness may fall into similar clusters indicated by the above evidence, with tighter states lying in the South and the Midwest and looser states in the Northeast, Atlantic seaboard and the Pacific West. I make no specific predictions for Alaska or Hawaii.

Method

Development of the Tight-Loose Index

My method for developing the tightness-looseness index parallels the method previously validated by Vandello and Cohen (1999) in their study of state differences in collectivism-individualism. Similar to these researchers, I first collected a broad array of potential indicators that were theorized to reflect the construct space. I then narrowed down this pool to items that were mutually agreed to be relevant, non-redundant, and central expressions of the tightness-looseness construct. This process resulted in a

composite index of 9 items. As specified in the definition presented in the introduction, the tightness-looseness construct space concerns the strength of norms and tolerance for deviance. The strength of norms indicates the degree to which various behaviors are socially *and* institutionally permitted or restricted, while tolerance for deviance is indicative of the level of punishment incurred when norms are broken. Consequently, the breakdown of these 9 index items reflects this space. Four items reflect strength of punishment: *the legality of corporal punishment in schools*, *the percentage of students hit/punished in schools*, *the rate of executions from 1976-2011*, and *the severity of punishment for violating laws* (e.g., selling, using, or possessing marijuana). Two items reflect latitude/permisiveness: *access to alcohol* (i.e., ratio of dry to total counties per state) and *the legality of same sex civil unions*. Institutions that reinforce moral order and constrain behavior were assessed with two items: *state-level religiosity* and *percentage of individuals claiming no religious affiliation*. The final indicator was the *percentage of total population that is foreign*, which reflects the ambient level of tolerance and deviance in a state. Each variable—including its source and coding scheme, where appropriate—will be described and discussed in turn.

Legality of School Corporal Punishment. (*The Center for Effective Discipline, 2005-2006; <http://www.stophitting.com/index.php?page=statesbanning>*). This variable indicates the legality versus illegality of physical corporal punishment (e.g., paddling) in schools and reflects the strength of punishment, as well as the degree of deviance tolerance and pressure to follow appropriate norms, in educational settings. States were dichotomously coded: they were given a score of “2” if corporal punishment was legally permitted in schools and given a score of “1” if it was not.

Percentage of Students Hit in Schools. (*The Center for Effective Discipline, 2005-2006 rates; data available at <http://www.stophitting.com/index.php?page=statesbanning>*). Greater amount of physical punishment, or at least the threat and presence of it, is indicative of low tolerance for deviance and strong norms for following appropriate behavior. States were scored with the percentage reported by The Center for Effective Discipline; states in which school corporal punishment is illegal were given a score of zero percent. I note that it is theoretically possible for school corporal punishment to occur in states where it is illegal. As there are no reported corporal punishment rates in these states due to its illegality, I have no way of verifying whether or not this is the case. Nevertheless, a tightness–looseness index that excludes this variable is correlated with the original index at $r = 0.99$.

Rate of Executions from 1976-2011. (*Death Penalty Information Center, 2012; data available at deathpenaltyinfo.org/state-execution-rates*). This variable divides the cumulative executions from each state between the years of 1976 and 2011 by the population taken from the 2010 Census. It captures divergent rates of execution and severity of punishment at the state level.

Severity of Marijuana Laws. (*Sorens & Ruger, 2009; data available at <http://www.statepolicyindex.com/>*). This variable reflects the severity of punishment for breaking laws related to marijuana use, possession, cultivation, and sale. The legalization of marijuana for medicinal use and light punishment or lack of punishment for first offenders is indicative of greater latitude and permissiveness. This variable was computed through an unweighted, z-scored, and summed composite (reversing scores as necessary so that higher scores indicated greater punishment) that included the following variables

reported by Sorens and Ruger: the legality of low-level marijuana possession, the decriminalization of low-level marijuana possession for first offenders, whether or not low-level marijuana possession for a first-time offender is a misdemeanor, whether or not low-level cultivation of marijuana is a misdemeanor, mandatory minimums (in years) for low-level marijuana cultivation or sale, the legality of medical marijuana, and the maximum possible prison term (in years) for any single marijuana offense.

Ratio of Dry to Total Counties by State. (British Broadcasting Corporation, 2012; data computed from county map found at <http://www.bbc.co.uk/news/magazine-17291978>). Permissiveness in states is reflected in access to such substances as alcohol. Following the 1933 repeal of prohibition, many states or localities chose to maintain temperance laws. In such contexts, it is illegal to produce, sell, or distribute alcohol or these practices are severely or partially restricted. Lower tolerance for drunkenness and the enactment of laws to curb its incidence are indicative of greater behavioral constraint and, consequently, tightness. A team of researchers originally compiled county-level data for each state (excluding Georgia) for the British Broadcasting Corporation (BBC); their sources included the National Alcohol Beverage Control Association and various state governments. Their coding scheme denoted state counties as dry (strict alcohol controls), partially dry (some alcohol controls), and wet (alcohol is not banned). I coded each designation using the following scheme so that higher scores were indicative of greater constraint: dry counties (“1”), partially dry counties (“0.5”), wet counties (“0”). I then computed the sum of all county scores and divided the result by the total number of state counties. The resulting variable assesses the relative degree of alcohol constraint at the state level.

Legality of Same Sex Civil Unions. (reversed; Sorens & Ruger, 2009; data available at <http://www.statepolicyindex.com/>). Social norms uphold deeply rooted traditions, and allowing deviations from traditions reflects looseness. Same sex civil unions is one such practice that deviates from traditional values in many nations, including the United States. Accordingly, allowing same sex civil unions is indicative of greater looseness and lowered tightness in a state. Sorens and Ruger previously coded this variable in the following manner: same sex marriage or extensive domestic partnerships allowed (“1”), limited domestic partnerships allowed (“0.5”), or no same-sex unions allowed (“0”).

Percentage of Individuals for Whom Religion is Important in their Daily Life. (Gallup, 2009; data available at <http://www.gallup.com/poll/114022/state-states-importance-religion.aspx#2>). Religions are prescriptive in that they provide rules for behavior and sanctions for noncompliance, constraining individual choice and prompting a narrower socialization relative to more secular surroundings (Norenzayan, 2013). Accordingly, greater rates of religiosity reinforce and sustain state levels of tightness. I note, however, that although norm enforcement is prominent in Abrahamic and other world religions that comprise the dominant faiths in the United States today, it is not necessarily a universal feature of all religions, particularly those found in small-scale societies. As Norenzayan (2013) argues, norm enforcement may have proliferated in religions because of their ability to produce prosociality and coordination among diverse social groups unconnected by kinship relations.

Percentage of Individuals with No Religious Affiliation. (reversed; Gallup, 2000-2004; data available at <http://www.gallup.com/poll/12091/tracking-religious->

affiliation-state-state.aspx#2). Relative to the previous indicator—*percentage of individuals for whom religion is important in their daily life*—a lack of religious affiliation is indicative of a high degree of latitude and less constraint by social norms and sanctions, reflecting looseness at the state level.

Percentage of Population that is Foreign. (*reversed; U.S. Census Bureau, 2007; data available at http://www.census.gov/compendia/statab/2007/population/native_and_foreignborn_populations.html*). This variable estimates the degree to which there is high (versus low) international diversity and an ambient mixture of people from different cultures in a state, which reflect looseness.

Validity Variables

I 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 6 for specific variables and associated databases. As tightness-looseness is related to but distinct from individualism-collectivism, there should be a moderate and positive correlation between these two constructs. In addition, as tightness is indicative of greater constraint, the index should correlate positively with attitudes favoring greater media, civil liberty, and legal limitations, perceptions that norm deviance is harmful, dogmatic moral views, and more insular (i.e., less open) economic and consumer practices. Tightness may also be related to the presence of greater blue-collar occupational structures, greater political conservatism, and lower residential mobility. It is important to note that, unlike the index variables mentioned above, these validity variables are not representative of the tightness-looseness construct. In other words, they are not objective indicators of norm strength or deviance tolerance but, rather, are

reflective of particular attitudes, beliefs, and practices (or are separate constructs) that tightness-looseness engenders or is related to.

Results

Index Reliability and Factor Analysis

As expected, all nine index items were correlated moderately (see Table 1) and were internally consistent ($\alpha = .84$; see Table 2). This indicates that items are non-redundant and reflective of a single construct. This is consistent with theory, as tightness-looseness is thought to lie on a single continuum. To further test this point, I employed exploratory factor analysis with maximum likelihood estimation. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was equal to .78—exceeding the recommended value of .6 (Kaiser, 1970, 1974)—and the Bartlett’s Test of Sphericity was statistically significant, $\chi^2(36) = 170.87, p < .001$, indicating that the data was suitable for factor analysis (Bartlett, 1954). I used parallel analysis (Horn, 1965) to determine the number of factors to retain, a procedure that has been consistently shown to be one of the most accurate factor retention methods (Hayton, Allen, & Scarpello, 2004). To perform this procedure, 100 random data matrices with the same sample size, number of variables, and scale ranges as our sample data were created, and parallel eigenvalues were drawn from this data. As suggested by parallel analysis methods, eigenvalues found in the sample data were compared with the 95th percentile value of the parallel eigenvalues produced from the randomly generated data (Glorfeld, 1995). To be retained, factors are required to exhibit eigenvalues greater than those generated randomly (i.e., they need to be above random chance). Parallel analysis indicated that a single factor solution was optimal (see Figure 1), a conclusion further bolstered by a scree plot that plateaued after the first

factor. Accordingly, I constrained the extraction to a single factor. All index items loaded highly on this single factor (see Table 3), which accounted for approximately 46.45% of the sample variance. In all, the tightness index was found to be reliable and to load on a single factor, consistent with theory and previous research (Gelfand et al., 2011).

Composite Index Scores and State Rankings

All nine index 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, a method consistent with previous research (Vandello & Cohen, 1999). However, tightness composites for Alaska, Hawaii, and Georgia were only comprised of eight items. Hawaii and Alaska were missing data for the *percentage of individuals claiming no religious affiliation*, while Georgia was missing data for the *ratio of dry to total counties*. Consequently, their composite z-scores were only divided by 8.

Table 4 details the state tightness rankings on the index and Figure 2 visually presents tightness quintiles in a map of the United States. As one can see, index scores exhibited substantial variation at the state level. The top ten tight states (starting with the tightest) include: *Mississippi, Alabama, Arkansas, Oklahoma, Tennessee, Texas, Louisiana, Kentucky, South Carolina, and North Carolina*. The top ten loose states (starting with the loosest) are: *California, Oregon, Washington, Nevada, Maine, Massachusetts, Connecticut, Hawaii, New Hampshire, and Vermont*.

Regional Variation

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 [$N = 16, M = 63.03, SD = 10.18, 95\% \text{ CI } (57.60, 68.46)$] was the tightest region and was significantly different compared with the Northeast [$N = 9, M = 39.40, SD = 5.71, 95\% \text{ CI } (35.01, 43.78), p < 0.001$], the Midwest [$N = 12, M = 51.47, SD = 4.63, 95\% \text{ CI } (48.53, 54.42), p < 0.01$], and the West [$N = 13, M = 40.48, SD = 8.11, 95\% \text{ CI } (35.57, 45.38), p < 0.001$]. 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 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 5 for all descriptive statistics and the results of Tukey honestly significant difference post hoc tests). As noted previously, research has found that the South and parts of the Midwest can be characterized as honor cultures (Cohen, 1996, 1998; Cohen, Nisbett, Bowdle, & Schwarz, 1996; Nisbett & Cohen, 1996). Consequently, these regional findings suggest that honor is indeed positively associated with tightness. This finding is theoretically consistent; I would expect that honor cultures, by their nature, have strict rules regarding expected behavior. However, I reiterate that tightness is a broader construct than honor; although many honor cultures are tight, not all tight cultures are honor oriented.

Index Validity

Consistent with previous research (Carpenter, 2000; Gelfand et al., 2011), the index was only moderately correlated with collectivism, or the degree to which individuals are interdependent with their families and in-groups ($r(49) = 0.37, p < 0.01$). As Hawaii was a statistical outlier relative to all other states on Vandello and Cohen's (1999) collectivism index, I 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 the tightness-looseness index and Vandello and Cohen's (1999) 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).

The tightness-looseness index is also correlated in expected directions with public opinion across the 50 states (see Table 6 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 (Kohn, 1977). 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 (Oishi, 2010) ($r(50) = -0.44$, $p < 0.01$). 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 ($r(50) = 0.64$, $p < 0.001$). I note that conservatism and tightness are related but distinct constructs. Conservatism is an individual-level set of beliefs that includes two key features: (i) resistance to or fear of change, and (ii) preferences for inequality (Jost, Glaser, Kruglanski, & Sulloway, 2003). 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, these 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.

Discussion

The index created in Study 1 demonstrates that there is significant variation in tightness-looseness at the state level in the United States. Consistent with theory and past empirical research (Gelfand et al., 2011; Gelfand, Nishii, & Raver, 2006), this index was also found to represent a single, coherent factor and demonstrated convergent validity with theoretically relevant variables. In all, these analyses support my contention that this index is a valid and reliable representation of the tightness-looseness construct.

Subsequent studies will demonstrate how this index, and the substantial state level variance in tightness-looseness that it reflects, relates to ecological and man-made threats, state level personality characteristics, and state level outcomes.

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 (Gelfand et al., 2011). Study 2 examines whether such patterns also exist at the state level. Relative to looser states, I predict that tighter states will 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.

Method

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 6 for a compiled list of all variables and their corresponding data sources.

Results

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 (Thacker, Lee, Sabogal, & Henderson, 2008). 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 (Hall & Kerr, 1991), 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 ($r(50) = 0.67, p < 0.001$).

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 (Fincher & Thornhill, 2012) 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 I 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 transformed due to non-normality) and tightness–looseness at the state level ($r(50) = -0.05, p = 0.73$).

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 (Gelfand et al., 2011). 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’” (Woodard, 2011). As Woodard reminds us: “The confederacy went down in defeat in 1865, its cities occupied by ‘foreign’ troops, its slaves emancipated by presidential decree.” In contrast, the North did not fight the war so much over threat (e.g., over resources), but more so to preserve the Union. I thus expected that the states that were the most reliant on slavery would be

the most threatened and would have higher degrees of tightness in the present day. Indeed, I 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. One also finds the same relationship when looking at only those states where slavery was legal ($r(15) = 0.48, p = 0.07$). More contemporaneously, I 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 ($r(41) = -0.33, p < 0.05$).

Discussion

Study 2 found that tightness is positively related to ecological and historical threats. This is consistent with my hypotheses, as well as previous theory and empirical research (Gelfand et al., 2011). Importantly, Study 2 demonstrates that tightness exhibits similar relationships with threat at both the state and national levels. However, it is notable that the expected positive relationship between tightness and population density was not found in the present study. It may be that population is not be sufficiently dense within the United States 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.

Additionally, the reader may also question how tightness could be related to urbanity, but not population density. 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.

It is also important to note that although I have presented many of the above 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) (Nisbett & Cohen, 1996; Woodard, 2011)—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 (Gelfand et al., 2011). Accordingly, I 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 (Rentfrow, Gosling, & Potter, 2008). I 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 (John, Naumann, & Soto, 2008). 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 (Rentfrow, Gosling, & Potter, 2008; John, Naumann, & Soto, 2008). Consequently, I predicted that openness would be negatively associated with tightness at the state level. I also explored the relationship of extraversion, agreeableness, and neuroticism with tightness–looseness, but had no a priori hypotheses for these traits.

Method

State-level averages for Big Five data were drawn from a study previously conducted by Rentfrow, Gosling, and Potter (2008). Additional validity data to assess cautiousness and cultural openness were taken from the DDB Life Style Survey. See Table 6 for a full list of all variables and their corresponding data sources.

Results

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. I also cross-validated these relationships with other theoretically similar variables. Tightness is 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 is 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”. 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 non-significantly. Neuroticism is unrelated to tightness ($r(50) = 0.20, p = 0.16$).

Discussion

Study 3 demonstrates that tightness-looseness is related to average state level personality characteristics in expected ways. As hypothesized, tightness is positively related to conscientiousness, but negatively related to openness. 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” (Held, 1996). In all, these results may suggest that personality and social norms are mutually reinforcing; personality characteristics are developed in response and adapted to the surrounding social milieu and, additionally, support and reify it in turn.

STUDY 4: Does Tightness-Looseness Have Consequences for State Outcomes?

Study 4 investigates the associations that tightness-looseness has with a variety of 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, I 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. I also explored linear and curvilinear effects of tightness-looseness for state-level happiness. Finally, I conduct a path analysis to simultaneously explore all of the data from Studies 1-4 in a single model.

Method

Data about state outcomes were compiled from a variety of sources, including Baron and Straus (1989), the Equal Employment Opportunity Commission, the U.S. Patent and Trademark Office, and the U.S. Census Bureau. See Table 6 for a compiled list of all variables and their corresponding data sources.

Results

Social Organization and State-Level Tightness–Looseness

Tightness is negatively correlated with a five-item index of social disorganization— which assesses the relative degree of social instability at the state level

in the United States—created by Baron and Straus (1989) ($r(50) = -0.42, p < 0.01$).

Baron and Straus's initial 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, I recalculated their social disorganization index without this variable. The five-item index 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, it should be noted 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 (Gelfand et al., 2011). 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 (John, Naumann, & Soto, 2008). 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), I found that this relationship dissipated when controlling for poverty ($r(50) = -0.06, p = 0.71$). I 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 (Gelfand et al., 2011), 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

(Rentfrow, Gosling, & Potter, 2008). 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 (Florida, 2002)—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, I 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, Sex 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 ($r(50) = 0.61, p < 0.001$). I 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 (1989) 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 ($r(50) = -0.68, p < 0.001$), but 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 ($r(50) = -0.26, p = 0.06$). It should be noted 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

I 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 (Mitchell, Frank, Harris, Dodds, Danforth, 2013), I 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 all, the negative relationship between happiness and tightness may be due to the fact that the United States is a looser nation (Gelfand et al., 2011) that propagates the value of individual freedom in its national narrative. Consequently, due to the misalignment between this value and everyday realities, excessive constraint may promote greater unhappiness in tighter states.

Path Analysis

In sum, tightness–looseness in the 50 U. S. states is related to a variety of ecological and historical factors, personality traits, and state outcomes. I used path analysis to assess overall model fit and to determine the significance of the relationships between tightness, ecological and human-made factors, personality traits, and state-level outcomes. In the model, ecological and human-made factors predicted tightness, and

tightness predicted personality traits (“conscientiousness” and “openness”) and state-level outcomes derived from four categories from Study 4 (social disorganization from the “social organization” category, illicit drug use per capita from the “self-control” category, Equal Employment Opportunity Commission discrimination charges per capita from the “discrimination/equality” category, and patents per capita from the “creativity” category).

I incorporated a broad range of ecological and human-made pressures in our model that tapped into each of the five categories presented in the main text, including tornado risk from the “natural disasters/environmental vulnerabilities” category, percentage of food insecure households from the “natural resources” category, life expectancy (reversed) from the “health vulnerabilities” category, ratio of urban to rural population (reversed) from the “population variables” category, and rate of military recruitment from the “external threat” category. Percentage of slave-owning families could not be used to represent historical threat, as this variable lacks data for those 17 states that did not exist in 1860 and would have substantially reduced our sample size. Before path modeling, I performed a factor analysis of these ecological and human-made factors. The Kaiser–Meyer–Olkin Measure of Sampling Adequacy was equal to 0.70 and the Bartlett’s Test of Sphericity was statistically significant, $\chi^2(10) = 65.85, p < 0.001$, indicating that the data were suitable for factor analysis (Bartlett, 1954; Kaiser, 1970, 1974). A factor analysis demonstrated that a single solution was optimal and explained 50.82% of the variance; all items loaded highly on this factor and were reliable ($\alpha = 0.74$). Accordingly, I summed the standardized scores of each of the above variables into a singular ecological/human-made threat factor.

I ran the model with Mplus, v5.21 and used maximum-likelihood estimation.

Despite a small sample size, the model achieved good fit, $\chi^2(6, n = 50) = 11.48, p = 0.08$, relative χ^2 (χ^2/df) = 1.91, comparative fit index = 0.97, standardized root mean square residual = 0.04 (confidence interval at 0.90 = 0.00; 0.25). The critical value for path significance was ± 1.96 . All of the following reported β -values reflect standardized values. The path between ecological and man-made threat and tightness was significant and in the hypothesized direction ($\beta = 0.75, p < 0.001$). Similarly, the paths between tightness and openness ($\beta = -0.53, p < 0.01$), conscientiousness ($\beta = 0.66, p < 0.01$), social disorganization ($\beta = -0.61, p < 0.01$), illicit drug use per capita ($\beta = -0.84, p < 0.001$), Equal Employment Opportunity Commission discrimination charges per capita ($\beta = 0.93, p < 0.001$), and patents per capita ($\beta = -0.74, p < 0.001$) were all significant and in the expected direction.

Discussion

Study 4 demonstrates that tightness-looseness relates to particular state level outcomes. Tight states tend to be more socially stable and exhibit greater personal self-control, but also tend to have higher incarceration rates, greater discrimination, lower creativity, and lower happiness. Loose states, on the other hand, have higher creativity, more equality, and greater happiness, while also exhibiting higher drug and alcohol abuse and greater social instability. In addition, a path model wherein ecological and man-made threats predict tightness and tightness predicts state-level outcomes and personality traits achieved good fit. This is consistent with our theoretical model. It is important to note, however, that the path model cannot demonstrate causality among the variables included, but merely demonstrates that such a causal structure is theoretically plausible.

GENERAL DISCUSSION

The present 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 paper, 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 (Gelfand et al., 2011). 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 negative link between tightness and openness.

To better facilitate these comparisons, Table 7 presents a complete juxtaposition, where possible, between the results of the present state-level study and the previous national level study conducted by Gelfand and colleagues (2011). Both studies demonstrate that tightness exhibits similar relationships with a myriad of variables at the

state and national levels, including more negative attitudes toward deviant behavior, greater desire for order, lower substance use and higher self-control, and more negative attitudes towards foreigners and foreign influence. Both studies also demonstrated that tightness was positively related to collectivism and negatively related to egalitarianism (however, despite a solid trend between egalitarianism and tightness in the national study, $r = -.41$, the relationship was statistically non-significant, $p = .06$). This similarity was also reflected in various institutional indicators, as both studies demonstrated that tightness is negatively related to media openness (whether actual or desired) and fewer civil liberties. However, tightness was only related to greater police presence in the state-level study and only related to lower crime in the national-level study; they were unrelated, otherwise. Finally, both the state and national studies exhibit a high degree of convergence regarding the relationship between tightness and various ecological and historical factors. Specifically, both found that tightness was associated with more natural disasters, fewer natural resources, more disease stress and infant mortality, poorer environmental health, and higher actual or perceived external threat. However, unlike the national-level study, the state-level study did not find a positive correlation between population density and tightness. As surmised in the discussion following Study 2, this may be due to the fact that the United States does not exhibit large variation in population density relative to the national level. In all, tightness–looseness demonstrates a high degree of predictive and explanatory utility across levels of analysis.

Although one cannot infer causality given the correlational nature of the present research, the findings are consistent with tightness–looseness theory (Gelfand et al., 2011) and general eco-cultural approaches to explaining cultural differences (Berry,

2011). 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 greater vigilance and adherence to social norms. 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 also shown that tightness–looseness is also systematically associated with state-level outcomes. 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. 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 and, more broadly, at multiple levels of analysis.

Limitations and Future Directions

As mentioned previously, one significant limitation of this study is that it is correlational in nature. Consequently, no causal conclusions can be drawn from this research; rather, they can only be suggested. Future research would benefit from examining these relationships in controlled environments, where causal relationships can be isolated. Some studies have attempted this already using computational models (Roos, Gelfand, Nau, Zuckerman, & Lun, under review); however, using human participants would be an important contribution to tightness-looseness research and validate the causal models that are part and parcel of its theoretical edifice. One potential laboratory method that is currently in development are tightness-looseness primes. Their use would isolate the influences that tightness-looseness has on various individual level phenomena, including explicit measures of creativity and need for closure and implicit measures of attitudes towards “deviant” others (e.g., Implicit Association Tests of obese vs. thin people).

Additional methodologies could also explore how threat manipulations causally influence the development of tighter or looser norms amongst groups of individuals in a controlled laboratory setting. As all of the current work on tightness-looseness uses cross-sectional methods, this type of longitudinal study would begin to help researchers

understand how and why tightness-looseness develops and changes over time at the group level of analysis and, combined with non-experimental longitudinal data, provide a useful theoretical model for discussing more macro-level fluctuations in states, regions, and nations. This is an important area of tightness-looseness theory that has yet to be explored, but offers many intriguing questions. For instance, one may ask if and how tight and loose societies shift from one pole to the other. Exposure to threat in looser nations may result in a gradual, generally peaceful tightening over social and institutional norms over time, while shifts towards looseness in tight societies may require violent upheaval to overcome the strong constraints arrayed against such shifts. The former may look a lot like the United States in the wake of 9/11, where tighter policies, such as the Patriot Act, were passed in reaction to a threatening event, while the recent Arab Spring of 2010-2011 might exemplify the latter. Shifts in tightness and looseness may also be the result of self-selection processes, whereby individuals who favor one environment over the other are moving to tighter or looser states and subsequently helping to augment those environments in turn.

Future work might also look at the potential curvilinear relationships between tightness-looseness and various outcomes. As I noted in Study 4, I anticipated that happiness might exhibit a curvilinear relationship with tightness-looseness, as one pole exhibits high constraint and a limitation of individual freedom and the other exhibits high social instability. Both should curtail the perceived well-being of individuals. Indeed, theoretical work by Etzioni (1996) suggests that, at the societal level, autonomy and order are symbiotic and mutually enhancing if properly balanced. For instance, legal rights to protect individual freedom of speech are a form of order enhancing autonomy; likewise,

individual behavior that respects another's right to free speech is a form of autonomy enhancing order. In Etzioni's thinking, it is only when order or autonomy become too extreme in a society that you start to experience a downturn of outcomes, as they lose their symbiotic edge. In the present study, the lack of curvilinear findings at the state level may possibly be due to low variance in outcomes relative to other levels of analysis. Consequently, to better address this potential issue, we (Harrington, Gelfand, & Boski, in preparation) have launched a study that uses archival data at the national level to explore this question. Thus far, we have found positive evidence the tightness-looseness exhibits a curvilinear relationship with a variety of psychosocial (e.g., reported happiness, suicide rate), health (e.g., life expectancy), and economic outcomes (e.g, GDP per capita).

In addition to these more theoretical questions, future research should undertake a more direct approach to examining tightness-looseness at the state-level. In particular, employing the 6-item tightness-looseness scale developed by Gelfand and colleagues (2011) would another useful measure that may further validate the conclusions suggested by the present research. In addition, unobtrusive measures of tightness-looseness, which are being developed and piloted worldwide by our lab, would also be useful to gather in the U.S. 50 states.

Finally, future research would benefit by expanding investigations on tightness-looseness to other levels of analysis, including both the community and organizational levels (e.g., Gelfand, Nishii, & Raver, 2006; Plaut, Markus, Treadway, & Fu, 2012). Indeed, 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). In addition, intranational variation in tightness-

looseness should also be explored in other countries for a variety of reasons. First, larger countries may experience more variation tightness-looseness relative to smaller countries, simply because they are more likely to have significant variance in the ecological and man-made factors that appear to provide the causal foundation for tightness-looseness differences. Second, it is possible that looser nations may experience more significant tightness-looseness variation due to their greater tolerance for norm divergence. Tight nations may not allow those divergent elements to exist in the first place by preventing their initial development, whatever the local ecological and man-made factors at play. Put simply, the within-nation variance in tightness-looseness may be moderated by the overall size of a nation and/or its overarching degree of national tightness-looseness. Future research is needed to address these hypotheses.

Practical Benefits

By showing how states vary on tightness and looseness, this research can help to understand what many have termed the “culture wars” (Hunter, 1991) between the states in last few decades (see also Graham, Haidt, & Nosek, 2009). 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. Understanding and being cognizant of the fact that people may desire and call for tighter norms following threatening events can help regulate how unnecessarily tight state and federal policies might get following these occurrences. In other words, it may help to attenuate these tendencies at a policy making level.

Understanding state level tightness-looseness and the various psychological tendencies related to it (e.g., conformity, impulse control) may also be beneficial for policy-makers and organizations in other ways. They may, for example, result in an apprehension of the cultural roadblocks to policy implementation or successful business strategies at the state and regional levels. For instance, it may be that looser states foster creativity and innovation within organizational contexts due to their greater behavioral latitude relative to states higher in tightness, while tighter states may have lower incidence of industrial accidents due to higher overall cautiousness and lowered impulsivity. In all, then, some industries may have certain comparative advantages relative to others in tight or loose states. Likewise, previous research has found that injunctive norms have a significant influence on individual behavior, with implications for successful strategies in resource management (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). Combined with the finding that tightness acts as a cultural amplifier (Taras, Kirkman, & Steel, 2010), policy-makers that adopt this injunctive norm strategy in tighter states may be met with more success, while looser states may require additional or different strategies to be as effective.

Benefits to the Field of Cross-Cultural (and Cultural) Psychology

It is my hope that this research contributes the growing challenge to two dominant

paradigms in the fields of cross-cultural (and cultural) psychology; namely, the primary focus on (1) examining differences between cultures and nations and (2) boiling most cross-cultural (and within-cultural) difference to the omnipresent goliath that is collectivism-individualism. Regarding the former, it is important that cross-cultural psychologists increasingly conduct research on the differences that exist within nations. Not only is there amazing intranational variability to be found, but exploration of these different levels of analysis will widen the theoretical purview of many constructs in the cross-cultural field by examining their general homology and variation across levels.

Regarding the second point, the dimension of collectivism-individualism, while very important, has often been a catch-all explanation for any cultural difference found between, and sometimes within, nations. While I agree that it is an important cultural dimension that accounts for significant cultural variation, research should continue to investigate existing and develop additional constructs that, alongside collectivism-individualism, may more fully capture the incredible diversity that is the essence of human culture.

Conclusion

To conclude, this paper demonstrates that tightness-looseness provides a unifying, parsimonious explanation for a variety of disparate phenomena in the United States, including ecological factors, personality characteristics, and state level outcomes. Notably, these findings are strikingly similar to those found at the national level. This convergence suggests that tightness-looseness is an important, fundamental aspect of social systems across multiple levels of analysis.

Table 1.

Correlations Between Tightness-Looseness Index Items

Indicators	1	2	3	4	5	6	7	8	9
1. Legality of corporal punishment in schools	-								
2. Percentage of students hit/punished in schools	.48**	-							
3. Rate of executions, 1976-2011	.42**	.39**	-						
4. Severity of punishment for marijuana law violations	.39**	.39**	.41**	-					
5. Legality of same sex civil unions (reversed)	.41**	.20	.27 [†]	.30*	-				
6. Ratio of dry to total counties	.39**	.41**	.28 [†]	.32*	.19	-			
7. State religiosity	.62**	.59**	.46**	.56**	.65**	.51**	-		
8. Percentage of individuals with no religious affiliation (reversed)	.24 [†]	.41**	.29*	.64**	.55**	.36*	.69**	-	
9. Percentage of population that is foreign (reversed)	.22	.26 [†]	.08	.22	.40**	.16	.34*	.31**	-

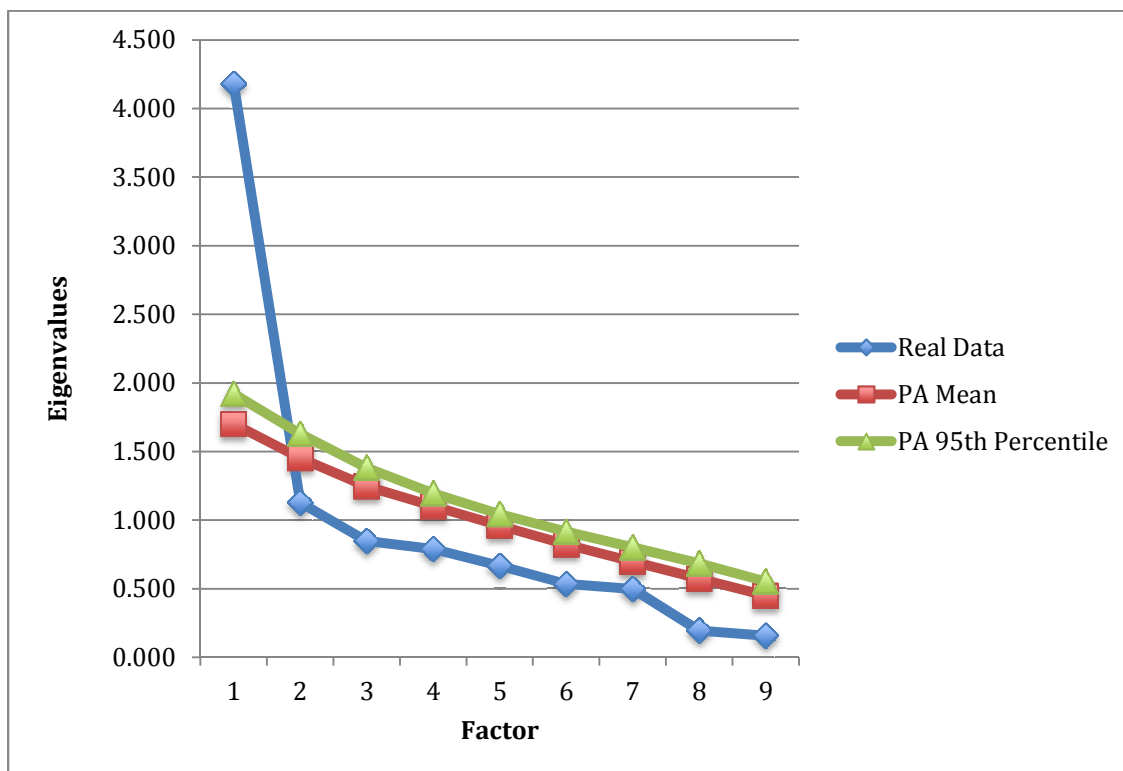
* $p < .01$; ** $p < .01$; [†] $p < .10$

Table 2.

Reliability Statistics for Tightness-Looseness Index Items

Indicators	Corrected Item- Total Correlations	Alpha if Item Deleted
Legality of corporal punishment in schools	.57	.81
Percentage of students hit/ punished in schools	.58	.81
Rate of executions, 1976- 2011	.45	.83
Severity of punishment for marijuana law violations	.67	.83
Legality of same sex civil unions (reversed)	.56	.82
Ratio of dry to total counties	.47	.83
State religiosity	.86	.78
Percentage of individuals with no religious affiliation (reversed)	.62	.81
Percentage of population that is foreign (reversed)	.35	.84

$a = .84$

Figure 1.

Plot of actual versus randomly generated eigenvalues.

Table 3.

Factor Loadings for Tightness-Looseness Index Items

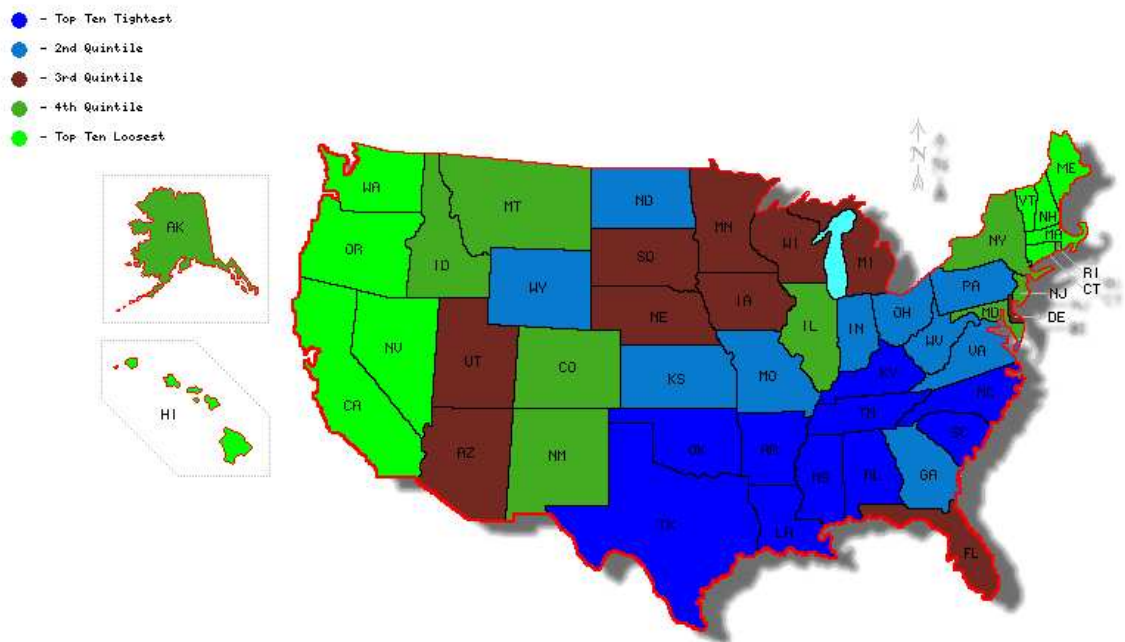
Indicators	Factor Loadings
Legality of corporal punishment in schools	.63
Percentage of students hit/punished in schools	.61
Rate of executions, 1976-2011	.49
Severity of punishment for marijuana law violations	.60
Legality of same sex civil unions (reversed)	.66
Ratio of dry to total counties	.53
State religiosity	.97
Percentage of individuals with no religious affiliation (reversed)	.72
Percentage of population that is foreign (reversed)	.37

Table 4.

State Tightness-Looseness Rankings

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

Higher scores indicate greater tightness.

Figure 2.

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.

Table 5.

Tightness-Looseness Index Scores for the Nine U.S. Census Regional Divisions

Region	N	Mean Tightness-Looseness Score	Standard Deviation	95% Confidence Interval
1. New England ^{* 3,4,5,6,7}	6	37.15	3.22	33.78 – 40.53
2. Middle Atlantic ^{† 6,7}	3	43.89	7.68	24.81 – 62.96
3. East North Central ^{‡ 1,6,7,9}	5	49.73	3.64	45.21 – 54.25
4. West North Central ^{§ 1,6,7,9}	7	52.72	5.11	47.99 – 57.45
5. South Atlantic ^{¶ 1,6,7,8,9}	8	54.75	5.99	49.74 – 59.75
6. East South Central ^{1,2,3,4,5,8,9}	4	71.76	6.69	61.11 – 82.41
7. West South Central ^{** 1,2,3,4,5,8,9}	4	70.87	4.85	63.15 – 78.59
8. Mountain ^{†† 5,6,7,9}	8	45.35	5.50	40.75 – 49.94
9. Pacific ^{‡‡ 3,4,5,6,7,8}	5	32.68	4.62	26.95 – 38.42

Note. Superscripted numerals indicate significant differences (< .05 based on Tukey post-hoc tests) with the regional division corresponding to that number. Higher scores indicate greater tightness.

* Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

† New Jersey, New York, Pennsylvania

‡ Illinois, Indiana, Michigan, Ohio, Wisconsin

§ Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

¶ Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia

|| Alabama, Kentucky, Mississippi, Tennessee

** Arkansas, Louisiana, Oklahoma, Texas

†† Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, Wyoming

‡‡ Alaska, California, Hawaii, Oregon, Washington

Table 6.

Variables and Sources

Validity Variables (Study 1)		
Variable	Source	States with Missing/Insufficient* Data (excluded from analysis)
<i>Collectivism</i>	Vandello & Cohen (1999)	HI
<i>Openness of the Media</i> “The government should exercise more control over what is shown on TV” (avg.)	DDB Needham Life Style Survey (1975-1998)	AK, HI
<i>Conceptions of Morality</i> “Right and wrong are not usually a simple matter of black and white; there are many shades of gray” (reversed) (avg.)	General Social Survey, Cumulative File (1972-2010)	AK, DE, MS, MT, NE, NV, NH, ND, RI, SD, UT, VT
“Immoral actions by one person can corrupt society in general” (avg.)	General Social Survey, Cumulative File (1972-2010)	AK, DE, MS, MT, NE, NV, NH, ND, RI, SD, UT, VT
<i>Behavioral Constraint</i> Behavioral Constraint Index (avg.) [†]	DDB Needham Life Style Survey (1975-1998)	AK, DE, HI, ID, NH, ND, SD, VT, WY
Pornographic magazine circulation	Baron & Straus (1987)	
<i>Civil Liberties</i> American Civil Liberties Union Senate Scorecard Rankings, 2009-2010	American Civil Liberties Union	
<i>Strictness of Punishment</i> “I am in favor of very strict enforcement of all laws” (avg.)	DDB Needham Life Style Survey (1975-1998)	AK, HI, NV, NM, VT, WY
“Police should use whatever force necessary to maintain law and order” (avg.)	DDB Needham Life Style Survey (1975-1998)	AK, HI
<i>Personal Control</i> Feelings of Control Composite Score (avg.) [‡]	DDB Needham Life Style Survey (1975-1998)	AK, HI

<i>Isolationist Attitudes and Exclusivity</i>		
“Americans should always buy American products” (avg.)	DDB Needham Life Style Survey (1975-1998)	AK, HI
“The government should restrict imported products” (avg.)	DDB Needham Life Style Survey (1975-1998)	AK, HI
<i>Latitude of Occupational Structures</i>		
Ratio of white collar to blue collar workers, 2009-2010	Kaiser Family Foundation	
<i>Residential Mobility</i>		
Percentage of people born in state of residence (reversed), 2010	U.S. Census Bureau	
<i>Conservatism</i>		
Conservative Advantage, 2012 (% of self-reported liberals subtracted from % of self-reported conservatives)	Gallup	
Percentage of individuals voting for Mitt Romney in the 2012 Presidential Election	National Broadcasting Corporation	
Ecological and Historical Variables (Study 2)		
Variable	Source	States with Missing Data (excluded from analysis)
<i>Natural Disasters and Environmental Vulnerabilities</i>		
Death rate due to cold, 1979-2004	Thacker et al. (2008)	
Death rate due to heat, 1979-2004	Thacker et al. (2008)	
Death rate due to lightning, 1979-2004	Thacker et al. (2008)	
Death rate due to storms and floods, 1979-2004	Thacker et al. (2008)	
Death rate due to earthquakes, 1979-2004	Thacker et al. (2008)	
Tornado Risk, 1950-1995 [§]	The Disaster Center	
Green Conditions Index, 1991-1992	Hall & Kerr (1991)	

Natural Resources

Rate of food insecurity, 2008-2010	U.S. Department of Agriculture (2011)
Rate of very low food security, 2008-2010	U.S. Department of Agriculture (2011)
Percentage of food insecure households, 2007	Social Science Research Council (2010-2011 dataset)
Poverty rate, 2009	U.S. Census Bureau Statistical Abstract (2012)

Disease and Health Vulnerabilities

Influenza and pneumonia death rate, 2008	Kaiser Family Foundation
Rate of HIV diagnosis, 2009	U.S. Census Bureau Statistical Abstract (2012)
Rate of chlamydia, 2009	U.S. Census Bureau Statistical Abstract (2012)
Parasite/Disease Stress Index, 1993-2007	Fincher & Thornhill (2012)
Infant mortality rate, 2003-2005	Social Science Research Council (2010-2011 dataset)
Child mortality rate, 2007	Social Science Research Council (2010-2011 dataset)
Life expectancy at birth, 2010	Kaiser Family Foundation
Death rate, 2008	Kaiser Family Foundation

Population Variables

Ratio of urban to rural population, 2000	U.S. Census Bureau Statistical Abstract (2012)
Population density (log), 2010	U.S. Census Bureau Statistical Abstract (2012)

Perceptions of External Threat

Percentage of slave-owning families, 1860 [¶]	Civilwarcauses.org; University of Virginia Census Archive (1860 U.S. Census)	AK, AZ, CO, HI, ID, KS, MT, NE, NV, NM, ND, OK, SD, UT, WA, WV, WY
“The United States spends too much money on national defense” (avg.)	DDB Needham Life Style Survey (1975-1998)	AK, DE, HI, ID, NH, ND, SD, VT, WY
Rate of military recruitment, 2008	Social Science Research Council (2010-2011 dataset)	

Personality Variables (Study 3)		
Variable	Source	States with Missing Data (excluded from analysis)
<i>Five Factor Model</i>		
Agreeableness	Rentfrow, Gosling, & Potter (2008)	
Extraversion	Rentfrow, Gosling, & Potter (2008)	
Conscientiousness	Rentfrow, Gosling, & Potter (2008)	
Neuroticism	Rentfrow, Gosling, & Potter (2008)	
Openness	Rentfrow, Gosling, & Potter (2008)	
<i>Convergent Items</i>		
Cautiousness Composite Score (avg.)	DDB Needham Life Style Survey (1975-1998)	AK, HI
“I am interested in the cultures of other countries” (avg.)	DDB Needham Life Style Survey (1975-1998)	AK, HI
Outcome Variables (Study 4)		
Variable	Source	States with Missing Data (excluded from analysis)
<i>Social Organization</i>		
Social Disorganization Index	Baron & Straus (1987)**	
Incarceration rate, 2008	Social Science Research Council (2010-2011 dataset)	
State and local law enforcement, full-time employees per capita, 2008	Bureau of Justice Statistics (2011)	
Homeless rate, 2009	National Alliance to End Homelessness & Homelessness Research Institute (2011)	
Violent crime rate, 2009	U.S. Census Bureau Statistical Abstract (2012)	
Property crime rate, 2009	U.S. Census Bureau Statistical Abstract (2012)	
Murder rate, 2009	U.S. Census Bureau Statistical Abstract (2012)	

Forcible rape rate, 2009	U.S. Census Bureau Statistical Abstract (2012)	
Robbery rate, 2009	U.S. Census Bureau Statistical Abstract (2012)	
Aggravated assault rate, 2009	U.S. Census Bureau Statistical Abstract (2012)	
Burglary rate, 2009	U.S. Census Bureau Statistical Abstract (2012)	
Larceny and theft rate, 2009	U.S. Census Bureau Statistical Abstract (2012)	
Vehicle theft rate, 2009	U.S. Census Bureau Statistical Abstract (2012)	
<i>Self-Control</i>		
Illicit drug-use per capita, 2007-2008	U.S. Census Bureau Statistical Abstract (2012)	
Alcohol binge drinking per capita, 2007-2008	U.S. Census Bureau Statistical Abstract (2012)	
Credit card debt (avg.), 2011	CNN; Credit Karma	
<i>Creativity</i>		
Utility patents per capita, 1963-2011 ^{††}	U.S. Patent and Trademark Office (2011)	
Fine artists per capita, 2012	Bureau of Labor Statistics	AK, AR, DE, ID, KY, MS, MT, NE, NV, NH, NM, ND, RI, SC, SD, VT, WV, WY
<i>Discrimination and Gender Equality</i>		
Employment discrimination charges per capita, 2010 ^{††}	Equal Employment Opportunity Commission	
Gender Equality Index, economic	Baron & Straus (1987)	
Gender Equality Index, legal	Baron & Straus (1987)	
Gender Equality Index, political	Baron & Straus (1987)	
Percentage of women-owned firms, 2007	U.S. Census Bureau (2010)	
Percentage of minority-owned firms, 1997 ^{‡‡}	U.S. Department of Commerce (1997)	WA

Happiness
Happiness

Mitchell, Frank, Harris, Dodds, &
Danforth (2013)

* Insufficient data indicates that sample size was too low to aggregate to the state level (i.e., less than 50 per state).

† This index is a composite score comprised of seven reverse-scored items that reflect a single factor assessing desire for greater behavioral and societal constraint: “Public high schools should be allowed to distribute condoms to students”; “I am in favor of legalizing same sex marriages”; “I think the women’s liberation movement is a good thing”; “I am in favor of legalizing doctor-assisted suicide”; “I am in favor of legalized abortions”; “The use of marijuana should be legalized”; and “Couples should live together before getting married.” All items were originally assessed at the individual level and were averaged to produce state level scores; items were highly correlated and reliable ($\alpha = .94$). Additionally, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .90 (recommended cut-off is .60) and the Bartlett’s Test of Sphericity was significant ($\chi^2(36) = 199.65, p < .001$) indicating suitability for factor analysis. Exploratory factor analysis with maximum likelihood estimation and no rotation indicated a single factor solution that accounted for 73.1% of the variance.

‡ This composite score reflects feelings of efficacy and personal control and is comprised of state averages for two items: “Sometimes I feel that I don’t have enough control over the direction my life is taking” (reversed) and “My opinions on things don’t count very much” (reversed).

§ Reversed from original scoring so that higher scores indicated greater tornado risk.

¶ The 15 states included in the slave-state only analysis reported in the manuscript footnotes were as follows: Alabama, Arkansas, Delaware, Georgia, Florida, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, South Carolina, Tennessee, Texas, and Virginia.

|| This composite score reflects cautiousness and is comprised of two items: “I don’t like to take chances” and “I am the type of person who would try anything once” (reversed).

** Although this index of social disorganization is from 1986, it is the most recent that we could locate.

†† We divided the original variable by the state population from the year 2010 (U.S. Census Bureau Statistical Abstract, 2012) to acquire a per capita rate.

‡‡ This was the latest year that we could locate this data.

Table 7.

International and State-Level Research: Comparing Correlations with Tightness-Looseness

Ecological and Historical Indicators		
Construct	National Variable	State Variable
<i>Natural Disasters</i>	Natural Disaster Vulnerability N = 30 $r = .47$ $p = .01^{**}$ Environmental Sustainability Index (2005)	Natural Disaster Vulnerability* N = 50 $r = .84$ $p = .001^{**}$ Thacker, Lee, Sabogal, & Henderson (2008); Disaster Center
<i>Natural Resources</i>	Food Deprivation N = 30 $r = .52$ $p = .01^{**}$ FAOSTAT (2002)	Food Insecurity [†] N = 50 $r = .46$ $p = .001^{**}$ U.S. Department of Agriculture (2012); Social Science Research Council (2010-2011 dataset)
<i>Health Vulnerabilities: Disease Stress</i>	Historical Prevalence of Pathogens N = 32 $r = .36$ $p = .05^{*}$ Murray & Schaller (2010)	Parasite Stress Index N = 50 $r = .55$ $p = .001^{**}$ Fincher & Thornhill (2012)
<i>Health Vulnerabilities: Infant Mortality</i>	Infant Mortality Rate (log) N = 32 $r = .42$ $p = .02^{*}$ United Nations (2009)	Infant Mortality Rate [‡] N = 50 $r = .76$ $p = .001^{**}$ Social Science Research Council (2010-2011 dataset)
<i>Environmental Health</i>	Access to safe water N = 31 $r = -.50$ $p = .01^{**}$ Kurian's World Rankings (2001)	Green Index [§] N = 50 $r = -.77$ $p = .001^{**}$ Hall & Kerr (1991)

	<p>Air Quality</p> <p>N = 30 $r = -.44$ $p = .02^*$</p> <p>Environmental Sustainability Index (2005)</p>	
<i>External Threat</i>	<p>Total Number of Territorial Threats</p> <p>N = 27 $r = .41$ $p = .04^*$</p> <p>International Crisis Behavior Data (1918-2001)</p>	<p>Percentage of Slave-Owning Families, 1860</p> <p>N = 33 $r = .78$ $p = .001^{**}$</p> <p>Civilwarcauses.org; University of Virginia Census Archive (1860 U.S. Census)</p>
		<p>Military Recruitment</p> <p>N = 50 $r = .40$ $p = .01^{**}$</p> <p>Social Science Research Council (2010-2011 dataset)</p>
		<p>The U.S. spends too much on national defense</p> <p>N = 41 $r = -.33$ $p = .03^*$</p> <p>DDB Needham Lifestyle Survey (1975-1998)</p>
<i>Population Density</i>	<p>Population Density (log)</p> <p>N = 32 $r = .31$ $p = .10$</p> <p>United Nations (2009)</p>	<p>Population Density (log)</p> <p>N = 50 $r = -.05$ $p = .73$</p> <p>U.S. Census Bureau Statistical Abstract (2012)</p>
Institutional Indicators		
Construct	International Variable	State Variable
<i>Government and Media</i>	<p>Openness of the media (lower scores = less open)</p> <p>N = 29 $r = -.53$</p>	<p>The government should exercise more control over what is shown on TV (higher scores = less open)</p> <p>N = 48 $r = .68$</p>

	$p = .01^{**}$ Freedom House (2001)	$p = .001^{**}$ DDB Needham Life Style Survey (1975-1998)
<i>Criminal Justice</i>	Police presence per capita N = 27 $r = .31$ $p = .12$ Kurian's World Ranking (2001)	Total state and local law enforcement agencies and full-time employees per capita N = 50 $r = .29$ $p = .04^*$ Bureau of Justice Statistics (2011)
<i>Civil Liberties</i>	Civil Liberties N = 30 $r = -.45$ $p = .01^{**}$ Freedom House (2001)	American Civil Liberties Union Senate Scorecard Rankings N = 50 $r = -.63$ $p = .001^{**}$ American Civil Liberties Union (2009-2010)
Convergent Variables		
Construct	International Variable	State Variable
<i>Attitudes Toward Deviant Behavior</i>	Justifiability of morally relevant behavior (lower scores = less justifiability) [†] N = 32 $r = -.48$ $p = .01^{**}$ World Value Survey (1995)	Behavioral Constraint Index [‡] N = 41 $r = .81$ $p = .001^{**}$ DDB Needham Life Style Survey (1975-1998)
		Right and wrong are not usually a simple matter of black and white; there are many shades of gray (reversed) N=38 $r = .38$ $p = .001^{**}$ General Social Survey, Cumulative File (1972-2010)

		<p>Immoral actions by one person can corrupt society in general (higher scores = greater agreement)</p> <p>N = 38 r = .52 p = .001**</p> <p>General Social Survey, Cumulative File (1972-2010)</p>
<i>Desire for Order</i>	<p>Preferences of political systems that have a strong leader or are ruled by the army</p> <p>N = 30 r = .38 p = .04*</p> <p>World Value Survey (1995)</p>	<p>I am in favor of very strict enforcement of all laws</p> <p>N = 44 r = .49 p = .001**</p> <p>DDB Needham Life Style Survey (1975-1998)</p>
	<p>Most important responsibility of government is to maintain order of society</p> <p>N = 18 r = .61 p = .01**</p> <p>World Value Survey (1995)</p>	<p>Police should use whatever force is necessary to maintain law and order</p> <p>N = 48 r = .65 p = .001**</p> <p>DDB Needham Life Style Survey (1975-1998)</p>
<i>Attitudes Towards Foreigners</i>	<p>Agreement on ways of life needs to be protected from foreign influence</p> <p>N = 16 r = .57 p = .02*</p> <p>Pew Global Attitude Project (2002)</p>	<p>Americans should always buy American products</p> <p>N = 48 r = .78 p = .001**</p> <p>DDB Needham Life Style Survey (1975-1998)</p>
		<p>The government should restrict imported products</p> <p>N = 48 r = .51 p = .001**</p> <p>DDB Needham Life Style Survey (1975-1998)</p>

	<p>Agreement on one's culture is superior</p> <p>N = 16 r = .60 p = .01**</p> <p>Pew Global Attitude Project (2002)</p>	<p>I am interested in the cultures of other countries</p> <p>N = 48 r = -.58 p = .001**</p> <p>DDB Needham Life Style Survey (1975-1998)</p>
Cultural Dimensions and Outcomes		
Construct	International Variable	State Variable
<i>Collectivism</i>	<p>Collectivism (lower scores=higher collectivism)</p> <p>N = 30 r = -.47 p = .01**</p> <p>Hofstede (2001)</p>	<p>Collectivism (higher scores= higher collectivism)**</p> <p>N = 49 r = .37 p = .01**</p> <p>Vandello & Cohen (1999)</p>
<i>Egalitarianism</i>	<p>Egalitarian Commitment</p> <p>N = 22 r = -.41 p = .06</p> <p>Schwartz (1994)</p>	<p>Gender Equality Index^{††}</p> <p>N = 50 r = -.77 p = .001**</p> <p>Baron & Straus (1987)</p>
		<p>Discrimination charges per capita</p> <p>N = 50 r = .61 p = .001**</p> <p>Equal Employment Opportunity Commission</p>
<i>Substance Use and Self-Control</i>	<p>Alcohol consumption (liter per capita)</p> <p>N = 31 r = -.46 p = .01**</p> <p>World Health Organization (2004)</p>	<p>Alcohol binge drinking (per capita)</p> <p>N = 50 r = -.29 p = .05*</p> <p>National Survey on Drug Use and Health (2000-2009)</p>

		Drug use per capita, any illicit drug N = 50 $r = -.52$ $p = .001^{**}$ National Survey on Drug Use and Health (2000-2009)
<i>Crime</i>	Murder per 100,000 N = 31 $r = -.45$ $p = .01^{**}$ Kurian's World Ranking (2001)	Murder rate N = 47 $r = .19$ $p = .20$ U.S. Census Bureau Statistical Abstract (2012)
	Burglary per 100,000 N = 28 $r = -.47$ $p = .01^{**}$ Kurian's World Ranking (2001)	Burglary rate N = 47 $r = .22$ $p = .14$ U.S. Census Bureau Statistical Abstract (2012)

* Composite of death rate due to heat (1979-2004), death rate due to lightning (1979-2004), death rate due to storms and floods (1979-2004), and tornado risk (1950-1995).

† Composite of rate of food insecurity (2008-2010), rate of very low food security (2008-2010), and percentage of food insecure households (2007).

‡ Infant mortality rates for the state level data were normally distributed. Consequently, they were not log transformed. The results are the same with transformed data.

§ The Green Index is a measure environmental health and vulnerability comprise of 179 criteria that include air and water pollution, hazardous waste production, community and workplace health, and other indicators.

¶ This measure is comprised of the following behaviors rated for moral justifiability: Claiming government benefits to which you are not entitled, avoiding a fare on public transport, cheating on taxes if you have a chance, buying stolen goods, someone accepting a bribe in the course of one's duties, homosexuality, prostitution, abortion, divorce, euthanasia (or ending the life of the incurably sick), and suicide.

|| This index is a composite score comprised of seven items that reflect a single factor assessing desire for greater behavioral and societal constraint: "Public high schools should be allowed to distribute condoms to students"; "I am in favor of legalizing same sex marriages"; "I think the women's liberation movement is a good thing"; "I am in favor of legalizing doctor-assisted suicide"; "I am in favor of legalized abortions"; "The use of marijuana should be legalized"; and "couples should live together before getting married." All items were originally assessed at the individual level and were averaged and reverse scored to produce state level scores that reflect greater constraint; items were highly correlated and reliable ($\alpha = .94$). Additionally, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .90 (recommended cut-off is .60) and the Bartlett's Test of Sphericity was significant (for factor analysis. Exploratory factor analysis with maximum likelihood estimation and no rotation indicated a single factor solution that accounted for 73.1% of the variance.

** This result does not include Hawaii, as analysis indicated that it was a significant outlier. With Hawaii included, the correlation is $r(50) = .23, p = .11$.

†† Composite of Gender Equality Index (political) and Gender Equality Index (legal).

APPENDIX A

Expert Ratings of State Tightness Provided by Harry Triandis, PhD

	How tight or loose is this state where 1 = extremely loose and 5 = extremely tight	How familiar are you with this state? 1=not at all and 5= very much
Alabama	4	3
Alaska	2	2
Arizona	3	3
Arkansas	3	3
California	1	5
Colorado	2	4
Connecticut	2	3
Delaware	2	4
Florida	2	3
Georgia	4	3
Hawaii	3	5
Idaho	3	3
Illinois	3	5
Indiana	3	4
Iowa	3	3
Kansas	3	3
Kentucky	4	3
Louisiana	5	4
Maine	2	2
Maryland	3	4
Massachusetts	2	4
Michigan	3	4
Minnesota	3	3
Mississippi	4	2
Missouri	3	3
Montana	2	2
Nebraska	3	3
Nevada	3	2
New Hampshire	3	3
New Jersey	2	3
New Mexico	3	4
New York	2	4
North Carolina	3	3
North Dakota	3	2
Ohio	3	4
Oklahoma	4	1
Oregon	2	3

Pennsylvania	2	4
Rhode Island	2	3
South Carolina	4	2
South Dakota	3	2
Tennessee	3	3
Texas	4	3
Utah	5	3
Vermont	2	2
Virginia	3	4
Washington	3	3
West Virginia	3	2
Wisconsin	3	3
Wyoming	3	3

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