The Personality of American Nations: An Exploratory Study

Kevin Lanning, Evan A. Warfel, Geoffrey Wetherell, Marina Perez, Ryan Boyd, David M. Condon

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Abstract

Some scholars have presented models of the United States as a set of "nations" with distinct settlement histories and contemporary cultures. We examined personality differences in one such model, that of Colin Woodard, using data from over 75,000 respondents. Four nations were particularly distinct: The *Deep South, Left Coast, New Netherland,* and *the Spanish Caribbean*. Differences between nations at the level of the individual person were typically small, but were larger at the level of community, revealing how aggregation can contribute to differences in the lived experience of places in nations such as *Yankeedom* or *Greater Appalachia*. We represented effects in a three-dimensional model defined by *Authoritarian conventionalism* (which differentiated 'Red' and 'Blue' nations) as well as *Cognitive resilience* and *Competitiveness* (which differentiated among the Blue nations). Finally, we adjusted Woodard's model to better fit the data, and found that nations largely maintained their boundaries, with the most drastic changes occurring on the East Coast.

The Personality of American Nations: An Exploratory Study

During the 19th Century, the United States largely transitioned from a plural entity to a singular one, from "the United States *are*…" to "the United States *is…"* (Burns, 1990; Santin et al., 2016). Yet in the 21st Century, divisions remain. Politically, the United States is one nation, but it is also fifty states and a handful of territories. Demographically, it can be seen as one people, but it is also divided by ethnicity, gender, marital status, education levels, age, and religion. American regions have become increasingly divergent in wealth (Manduca, 2019), ideology (Iyengar et al., 2019; McCarty & Shor, 2016) and, even prior to the COVID-19 pandemic, mortality rates (Vierboom et al., 2019).

Geographic regions of the United States are associated not just with demographic characteristics, but also with cultural parameters such as individualism vs. collectivism (Vandello & Cohen, 1999) and, of particular interest in the present study, personality (see, e.g., Rentfrow, 2020; Rentfrow & Jokela, 2016). Relations between geography and personality have been examined at varying levels of analysis, from the ZIP code to the nation-state, and from the item or nuance (McCrae, 2015) to the broad factor or domain. In the present study, we report on the personality characteristics associated with the American nations proposed by Colin Woodard (2011). We begin by considering several alternative models of American regional geography; the most familiar of these are the inter-related dichotomies of *South vs. North* and *Rural vs. Urban*.

History and the distinctiveness of the American South

The American South is distinct, and this distinctiveness is in part a legacy of antebellum lifestyles and beliefs including hierarchical structures from the plantation system (Reed, 1986). The South is particularly distinguished by cultural tightness, including lower latitude for permissiveness, higher rates of punishment for deviance, and the institutional maintenance of moral order (Harrington & Gelfand, 2014). In addition, the South is characterized by greater collectivism and an 'honor culture' with

increased sensitivity to perceived status disparities and insults (Cohen & Nisbett, 1994; Henry, 2009; Nisbett & Cohen, 2019; Vandello & Cohen, 2008). The distinctiveness of the American South appears to be both broad and longitudinally stable (Hurlbert, 1989; Rice et al., 2002).

The South is also distinguished by its rural character, as it is the least urbanized region of the United States (US Census Bureau, 2012). Like other rural areas, it is characterized by lower levels of openness to experience (Rentfrow et al., 2013) and traditionalism (Gimpel et al., 2020).

Network effects and the traditionalism of rural regions

The traditionalism of rural areas, both in the South and elsewhere, may be partly structural. Urbanization can be modeled as a network or gravitational effect in which large cities and counties grow disproportionately larger (Barabási & Albert, 1999; Batty, 2009; Vaz & Nijkamp, 2015). This rural-to-urban migration flow is sufficient to result in greater continuity (longer residential stability) in those who live in rural areas and greater change (shorter residency) in urban ones. In this way, network effects can drive both urbanization and differences in the composition of rural vs. urban communities.

The stability and interdependence of rural communities fosters a greater attachment to place, longer-lasting relationships, a moral code in which interpersonal loyalty is among the highest virtues, and political conservatism (Anton & Lawrence, 2014; Gimpel et al., 2020; Kesebir & Haidt, 2010; Motyl, 2014). These rural characteristics can be seen in analyses of natural language. For example, rural Twitter users disproportionately use words related to family, home life and significant others, theological concepts, and an 'inward' focus on family and faith (Rechkemmer et al., 2020). This stands in contrast to those from urban areas whose language is characterized by words related to arts and creativity, moral stances, friendship and what may be described as an 'outward' push towards creativity and sharing one's values.

Processes of geographic differentiation

Geographic differentiation can be seen as both a cause and effect of personality. On the one hand, cultural adaptation, including both social and environmental influences, help shape who we are (Rentfrow et al., 2008). On the other, the choice of situations is in part a reflection of personality (Ickes et al., 1997), and this true for large-scale communities as for the places of quotidian life. The draw of cities is differentially felt among potential migrants: Rural-to-urban migration is more likely among young adults (Johnson & Lichter, 2019), those lower in life satisfaction (Hoogerbrugge & Burger, 2021), and those high in Openness to Experience (Jokela, 2009, 2020). Selective migration occurs not just towards cities, but towards other attractors as well, including topological features. In the laboratory, introversion is associated with a relative preference for mountains over beaches (Oishi et al., 2015); in studies of American residents, living in a hilly or mountainous ZIP code is positively associated with Openness to Experience and negatively with the remaining Big Five factors (Götz et al., 2020).

Selective migration is driven by social characteristics of communities as well. Homophily, or the process of being drawn to similar others contributes, for example, to the ethnic diversification of communities (Bilecen & Lubbers, 2021), as well as to segregation along ideological lines (Motyl, 2014; Rentfrow et al., 2008; Tam Cho et al., 2013). Over time, selective migration and homophily may in tandem accelerate a process of regional differentiation in which people increasingly live among similar others. For the individual, the outcome of this process – living with like-minded others - has been used as an index of person-environment fit (Bleidorn et al., 2016; Gebauer et al., 2020; Götz et al., 2018).

Regional personality as a reflection of ecology and cultural history

An influential taxonomy of American regional geography proposed by Garreau (1981) included nine nations, such as *New England* and *Dixie,* as well as some areas considered to be "aberrations," including New York City and Washington DC (Baerwald, 1983). Fischer (1991) argued that the character

of American regions such as *Appalachia*, *New England*, and the *Deep South* have their roots in distinct British cultures. Today, these regional differences continue to be salient and make complementary contributions to the national fabric (Klein, 2021). Lieske (1993) performed a cluster analysis of American counties based on various demographic and cultural indices and arrived at a solution with ten regions (e.g., Mormons concentrated in Utah, Nordics on the northern plains), including a discontiguous set of urban and urbanizing communities.

More recently, Woodard (2011) has presented a model of American regions based explicitly on the "Doctrine of First Effective Settlement" (Zelinsky, 1973), which claims, in essence, that the characteristics of the initial settlers of an area are critical in determining its social and cultural geography. Woodard's model posits fourteen largely distinct regions of North America, including thirteen nations (four of which, such as *Spanish Caribbean*, consist primarily of areas outside of the borders of the United States) and the "anomalous" District of Columbia, which is referred to as *Federal Entity*. Woodard's nations include two which closely resemble regions described by Fischer (1991), i.e., *Yankeedom*, initially settled by well-educated Puritans and characterized by an appreciation for education and enlightenment, and *Appalachia*, settled by Scots-Irish escaping "war-ravaged borderlands," which remains characterized by independence and skepticism of government (O'Donnell, 2005). Similarly, the rough outlines of Garreau's *MexAmerica* can be seen in Woodard's *El Norte*, while *Ecotopia,* inspired by literature (Callenbach, 1975) before being articulated by Garreau, is closely mapped by Woodard's *Left Coast*.

Empirically, Woodard's nations have been reported to differ in entrepreneurship (Audretsch et al., 2017), economic development (Wheeler & Pappas, 2019), mortality (Wolf, 2017), and voting behavior (Woodard, 2017). As with Fischer's model, Woodard's taxonomy is grounded in our settlement history; like that of Garreau, the model is comprehensive and addressed to the contemporary structure

of society. A map depicting Woodard's model is included in Figure 1. Brief descriptions of each of the nations are provided in Table 1.

Figure 1

Woodard's (2011) nations of the Continental United States

(Figure caption)

Woodard's *American Nations*. Note that Washington DC is considered a separate region (*Federal Entity*). Hawaii and portions of Alaska comprise *American Polynesia* and *First Nation*, respectively. These three regions are not depicted here. Inset depicts counties with missing data shown as white space.

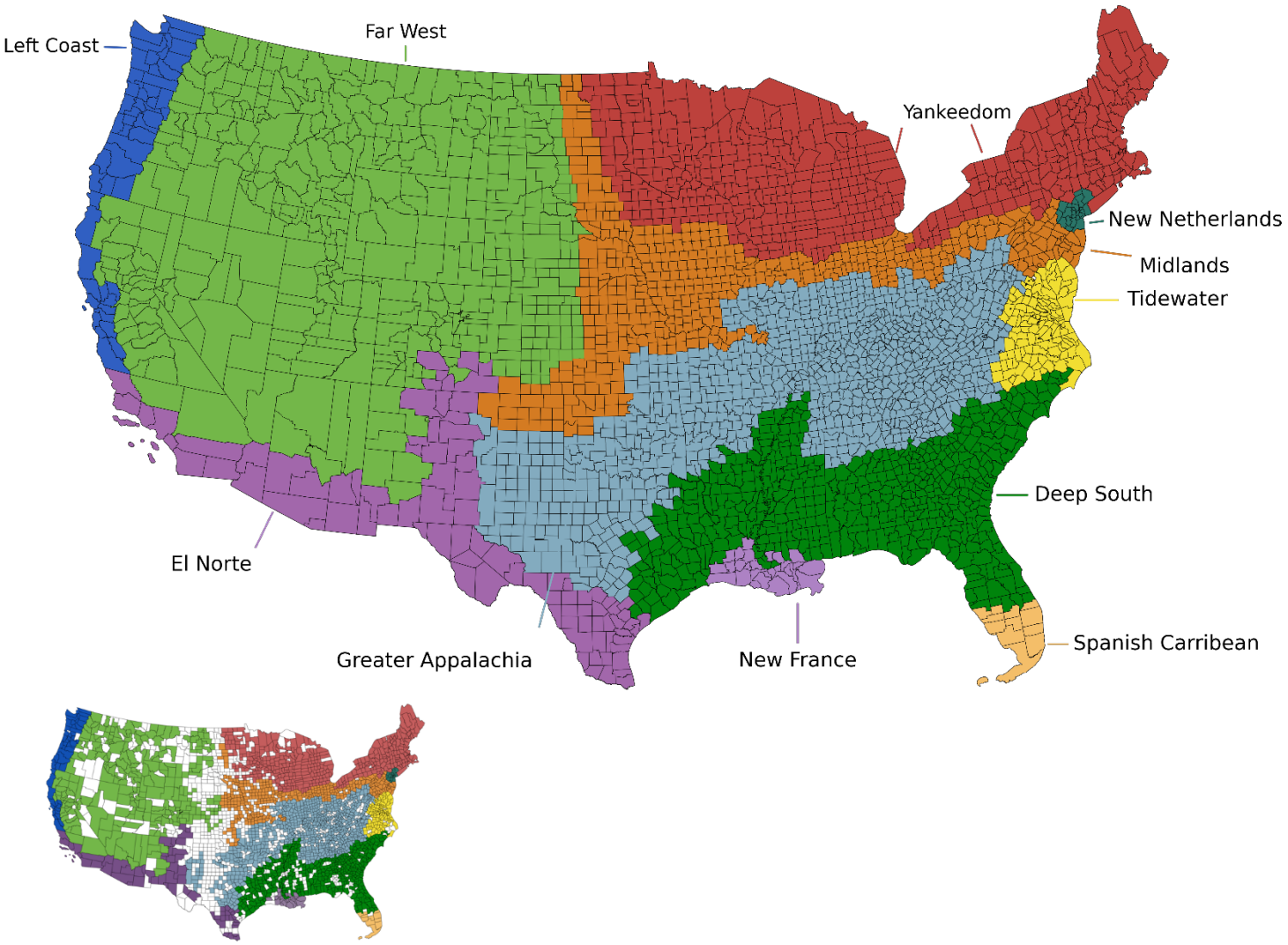

Left Coast
Far West
Yankeedom
New Netherlands
Midlands
Tidewater
Deep South
El Norte
Greater Appalachia
New France
Spanish Carribean

Table 1:

Selected characteristics of American nations

Geography		Sample characteristics					
Nation	Region	N	Age (mean)	% Female	% Non-white	Educ.[a]	Associated 'narrow' IPIP measures[b]
Southern nations							
Greater Appalachia (GA)	North Texas to West Virginia	12190	29.3	63.3	19.5	0.02	HEXACO Fairness; NEO & HEXACO Modesty
Deep South (DS)	East Texas to South Carolina	10030	29.1	67.7	36.2	-0.16	NEO Orderliness, Self-Discipline, Morality; HEXACO Organization, Gentleness; 31 others
Tidewater (TW)	North Carolina to Delaware	3568	28.8	67.2	31.4	-0.03	NEO Low Self-Consciousness
Spanish Caribbean (SC)	South Florida	1353	30.6	64.2	37.1	-0.01	NEO Achievement-Striving, Orderliness, low Stress Reaction, low Depression; HEXACO Liveliness; 7 others
Western nations							
El Norte (EN)	Southern California to Texas	7598	28.4	62.2	43.4	0.01	NEO low Morality, low Dutifulness; HEXACO Fairness, Sincerity, Modesty; 4 others
Far West (FW)	Great Basin to Western Plains	6658	29.2	63.5	28.6	-0.02	HEXACO Anxiety, Inquisitiveness, low Sociability
Left Coast (LC)	Pacific Northwest	5261	30.4	60.6	25.9	0.19	NEO Intellect, low Orderliness; HEXACO Inquisitive., Unconv., low Organization; 24 others

Table 1 (continued):

Selected characteristics of American nations

Geography		Sample characteristics					
Nation	Region	N	Age (mean)	% Female	% Non-white	Educ.[a]	Associated 'narrow' IPIP measures[b]
Northeastern and Midwestern nations							
Yankeedom (YK)	New England and Great Lakes	16228	28.5	65.8	18.5	-0.01	NEO Self-Consciousness; HEXACO Low Creativity, Low Liveliness; MPQ Stress Reaction, Low Unlikely Virtues; 11 others
Midlands (ML)	Industrial East and Midwest	8285	28.0	66.2	19.6	0.02	MPQ Stress Reaction
New Netherland (NN)	Greater NYC	3586	27.6	61.2	33.3	0.14	NEO Low Gentleness; HEXACO Fairness, Modesty, Morality, Greed Avoidance; 26 others
Small nations							
New France (NF)	Southern Louisiana	427	28.8	71.9	30.2	-0.06	NEO Low excitement-seeking
Federal Entity (FE)	Washington DC	318	29.5	63.2	32.4	0.54	NEO Intellect, Self-Consciousness; HEXACO Inquisitiveness, Unconventionality, Expressiveness;
American Polynesia (AP)	Hawaii	203	30.3	59.6	53.7	0.31	MPQ Low Stress Reaction
Sum / Mean		75705	28.9	64.6	26.9	0	46/65 measures are associated with one or more nations

[a] Education level (Educ.) is standardized (0,1). For each nation, scales from the IPIP-MPQ and facet scales from the IPIP-NEO and IPIP-HEXACO are shown for $|z/s.e.| > 3.0$.

[b] Narrow IPIP measures include the facet measures of the NEO and HEXACO as well as the MPQ scales excluding traditionalism

Do American regions differ in personality?

The five-factor model has achieved the status of a paradigm in personality measurement, a compass rose for mapping the core traits for personality description (John et al., 2008). The model has been important in illuminating relations between geography and personality as well. Rentfrow and colleagues have found that inter-state or inter-regional differences in personality are particularly robust for the traits of openness and neuroticism (Rentfrow, 2010; Rentfrow et al., 2008). In an extended replication, Elleman and colleagues (2018) found support for these effects, as well as for the rank-order stability of inter-state differences on the Big Five personality traits from 1999 through 2015. Across these studies, however, differences were modest in size.

States may not be an ideal level of analysis for examining relations between personality and geography (Elleman et al., 2018, 2020). One alternative is to examine larger areas. Rentfrow and colleagues (2013) found that three regions can be isolated: *Friendly and Conventional* states, characterized by low openness, included a swath of the country from the South through the Midwest. *Relaxed and Creative* states, characterized by high openness and low neuroticism, included much of the American West. Finally, *Temperamental and Uninhibited* states, characterized by high neuroticism and low conscientiousness, were found primarily in the Northeast. These regions were largely though not entirely contiguous, for example, Texas was associated with the 'Temperamental' states of the Northeast.

Another alternative to inter-state differences is to look at discontiguous 'regions.' Chinni and colleagues (2011; 2021) have identified a patchwork model based on rational as well as statistical grounds. These regions have been found to vary in entrepreneurialism (high openness, extraversion, and conscientiousness with low agreeableness and neuroticism): Counties in the regions defined as

Industrial Metropolis and *Boom Towns* are particularly entrepreneurial, while those in *Service Worker Centers* and *Evangelical Epicenters* are less so (Audretsch et al., 2017).

A third approach is to look at smaller units of both geography and personality. Elleman and colleagues (2018) found that between-state differences account for roughly 0.3% of the variance in scores for broadband measures of the Big Five. When smaller geographic regions and narrower measures of personality are examined, effects are more than four times larger (Elleman et al., 2020).

Beyond the Big Five. Although the five factors are important in understanding regional differences, the trait space arguably extends beyond the five factors, and personality is more than traits. In addition to a posited sixth factor of honesty-humility (Ashton & Lee, 2020), personality includes domains such as interpersonal styles (Schmitt & Buss, 2000; Shaver & Brennan, 1992), emotional skills (Melchers et al., 2016), coping and defense strategies (Cramer, 1998; O'Brien & DeLongis, 1996), social and cognitive maturity (Lanning et al., 2018; Loevinger, 1966), and motives (Winter et al., 1998) or values (Caprara et al., 2006; Schwartz et al., 2014). Phenomenologically, these structural aspects are overlapping features of identity; empirically, they are interrelated aspects of personality.

Two of these characteristics are of particular importance for the present study. Ideology (and its proxy, partisanship or party identification) is an important feature of identity for many Americans (Huddy et al., 2015); it is closely linked with both personality (Johnston et al., 2017; Tomkins, 1963) and with regional variability (Elleman et al., 2020; Phillips, 1969). Similarly, honesty-humility is related to strata of personality and identity such as religiosity and moral values (Aghababaei et al., 2016; Silvia et al., 2014; Zeigler-Hill et al., 2015) and, empirically, to rural rather than urban residency (Greaves et al., 2015).

The present study

In the present study, we examine personality characteristics associated with Woodard's model. We focus on seven broad-bandwidth constructs (the Big Five, ideology, and honesty-humility), and also examine narrower characteristics of Woodard's nations. We examine these nations using two levels of analysis, county and person – the former provides an index of how communities differ, while the latter describes variability at the level of the individual.

Finally, in addition to examining the correlates of Woodard's nations, we also explore the possibility of adjusting their boundaries to better represent inter-regional differences. To do this, we draw from a similar problem in cognitive linguistics, namely, that of determining whether color term boundaries reflect optimal partitions of the color space (Regier et al., 2007). In both cases, a categorization scheme can be considered well-formed to the extent that intra-category variation is minimized while inter-category variation is maximized. That is, the goodness of the set of boundaries drawn between nations can, like the set of boundaries between colors, be assessed by looking at overall model fit.

Method

We examined Woodard's model using data drawn from the SAPA-Project (SAPA, sapa-project.org). SAPA is a data collection platform that makes use of a planned missingness design for large-scale personality assessment (Revelle et al., 2016). This approach allows for precise, narrow-bandwidth assessment without imposing an unrealistic test-taking burden on individual respondents, though at the cost of a large number of missing values for each item and person. (Our OSF page with code is at https://osf.io/mnbjc).

The present sample included 75,716 adults who took the SAPA between 2013 and 2017 and for whom county-level geocoding was available. This includes the participants described in Condon et al.

(2017), Condon and Revelle (2015), and Elleman et al. (2020). The diverse sample is well characterized with respect to age, race/ethnicity, educational attainment, socioeconomic status, and a number of additional variables, including geography. These participants responded to a subset of 696 personality items drawn from the International Personality Item Pool (IPIP; Goldberg et al., 2006). Across these items, the average response ranged from 3.65 to 3.72 (on a 1-6 scale) for respondents in the thirteen nations, indicating no meaningful effects in this aspect of response style. The typical participant responded to 76 of these items; consequently, 89% of the personality data are missing. Importantly, participants' geography was based on self-reported ZIP code data, from which the county-of-residence was mapped. In cases where ZIP codes spanned two or more counties, participants were assigned to the county representing the largest proportion of the ZIP code area. These data are available at https://dataverse.harvard.edu/dataverse/SAPA-Project. Because geocoded data at the county-level may unwittingly de-anonymize individual participants, this information cannot be made available without the consent of the original investigators.

From these items, we used existing keys to assess the 78 facets, scales, and domains of the Multidimensional Personality Questionnaire (MPQ; Tellegen & Waller, 2008), the NEO-PIR (Costa Jr & McCrae, 2008), and the HEXACO (Ashton et al., 2007) using the psych package of the R statistical programming language (Revelle, 2021). In addition to these items and scales, we created seven omnibus measures by averaging standardized scores on two corresponding measures. For Ideology, we used the IPIP-NEO Liberalism (O6) and IPIP-MPQ Conservatism scales, with the first of these reversed. Honesty-Humility was assessed by the Morality (A2) and Modesty (A4) facets from the IPIP-NEO and from IPIP-HEXACO HH (Ashton et al., 2014). Openness and Agreeableness were assessed by the remaining IPIP-NEO O and A facets and from the corresponding measures on the IPIP-HEXACO. Extraversion, Agreeableness, and Emotionality were assessed by corresponding domain scores on the IPIP-NEO and IPIP-HEXACO, with IPIP-HEXACO E reversed. Item overlap between these corresponding measures

ranged from 3% (2 of the 78 items for Agreeableness) to 67% (8 of 12 items for the briefer measures of Ideology).

We linked these data with an American Nation 'crosswalk' derived from a list provided by Colin Woodard (personal communication, January 3, 2020). Of the fourteen nations, one (*First Nation*) included only eleven participants, and so was excluded from further analysis. The remaining regions included 75,705 participants, with individual regions ranging from 203 in *American Polynesia* to 16,228 in *Yankeedom*, with a median of 5,261. Sample characteristics are provided in Table 1.

Community-level analyses: Development of county-composites. In order to assess the characteristics of communities, we initially aggregated persons into counties. However, the number of respondents in most counties was small: Of the 2486 counties represented in the data, 64% (1587) included 9 or fewer cases. These small counties, however, included only 7% (5406/75705) of the total sample. To provide aggregates that were both more stable and less likely to compromise the identity of individual persons, we constructed county-composites by joining the smallest counties with the next-smallest adjacent counties within the same American Nation until each contiguous county composite included a minimum of ten cases. This led to a set of 1250 county-composites which included 75636 individuals, i.e., all but 69 of those in the sample.[1]

By treating county-composites rather than individuals as observations, the percentage of missing data was reduced from 89% to 12.4% at the item level, and from 30.3% to less than .02% at the level of scales. For the scales, we estimated the remaining missing values using multiple imputation (MICE; Buuren & Groothuis-Oudshoorn, 2011), first standardizing scores, then estimating missing values from the demographic measures and remaining scales by using five imputations with predictive mean matching. These solutions were compared by examining the extent to which IPIP- MPQ Alienation (which included 5 of the 17 missing values in the data) could be predicted by associated measures on

the IPIP-NEO (i.e., Agreeableness and Neuroticism; Church, 1994). R-squared values for the five analyses differed by no more than .001, and so we used the simple average of these five estimates in our subsequent analyses.

Assessing and optimizing model coherence. Woodard's model can be assessed by examining the fit of communities (here, the 1250 county-composites) into nations. Using the data from the 78 personality scales, we computed Euclidean distances between communities, then constructed a 'well-formedness' score based on the extent to which communities within each nation were similar to each other and different from communities outside the nation (Regier et al., 2007). Then, to compare Woodard's model against possible alternatives and to assess the resilience of individual nations, we examined the subset of county-composites which bordered on other nations and iteratively 'moved' ill-fitting communities to their best-fitting adjacent neighbor nations. We repeated this process until an asymptote was reached.[2]

Results

Our analyses include, first, a comparison of the effect sizes for nations when examined at the level of community and person. Second, we examine the characteristics of particular American nations at three levels of analysis, that is, broadband constructs, narrow and mid-range scales and facets, and finally items. Third, we consider one of the nations – the *Deep South* – in depth. Fourth, we examine the multivariate structure of differences between nations, reducing the measures to a small number of dimensions and examining the nations, scales, and items associated with these dimensions. Finally, we explore the effect of adjusting the boundaries to increase the coherence of our map, that is, to maximize the percentage of variance accounted for by a small set of contiguous regions.

Community and person effects

Relations between geography and personality may be understood at the level of both the individual and the community: In the present study, the first is concerned with the extent to which people in different American nations are themselves different. The second, aggregate level, addresses the extent to which communities (here, county-composites) differ across these same nations.

Figure 2 shows these person and county-composite effects for the two IPIP measures of ideology (MPQ Traditionalism and NEO O6 Liberalism) and for six broadband constructs, i.e., Honesty-Humility and the Big Five, each assessed from IPIP NEO and HEXACO measures. In each case, the intraclass correlation (r_{icc1}, a measure of variance-accounted-for) is evaluated against the results of 1000 simulated reshufflings of the data into random nations. For both person and county results, effects for different measures of the same construct can be expected to be similar, in part because of the item overlap in IPIP measures of corresponding traits.

As in Elleman et al.'s (2020) analysis of these data at the level of American states, personality differences between people in 'large' geographical units are 'small', with intraclass correlations less than .01 for all of the broadband personality measures. Differences between nations in the two personality measures of ideology, NEO Liberalism and MPQ Traditionalism, were larger, at .017 and .016, respectively.

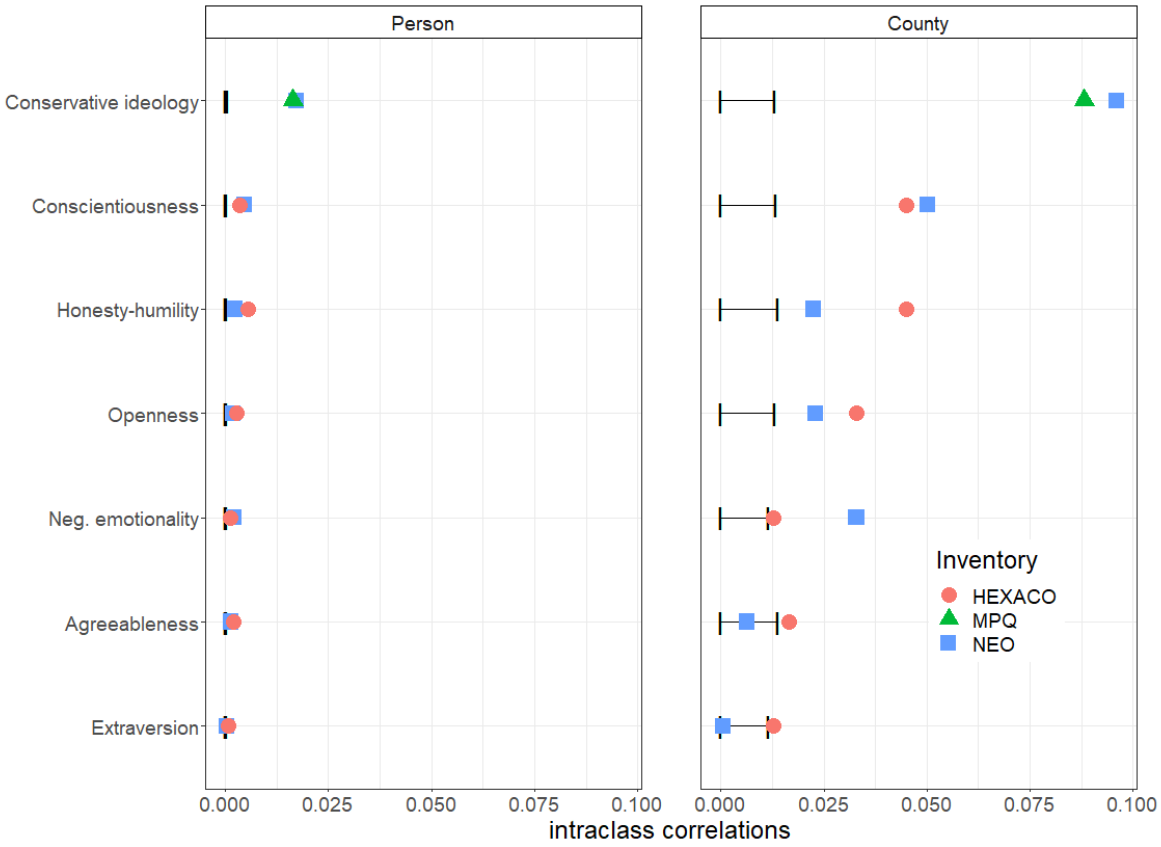
At the aggregate level of counties, differences are more substantial. Counties in different American nations differ particularly in Conscientiousness (r_{icc1} = .05) as well as in Honesty-Humility and Openness. For ideology, intraclass correlations were still higher (.10 and .09 for the NEO and MPQ measures respectively). Across these measures, the average of the county effects is more than an order of magnitude (i.e., 16 times) greater than the person effect.

Figure 2

Variation across American nations (r_{icc1}) in ideology and broadband measures of personality at two levels of analysis.

(Figure caption)

Small differences between persons lead to substantial differences between communities. Error bars indicate 99% of intraclass correlations in simulated (random) data. Conservative ideology includes IPIP-MPQ conservatism and IPIP-NEO O6 liberalism (reversed). NEO Honesty-Humility is assessed by IPIP-NEO facets A2 and A4. The IPIP-NEO Openness and Agreeableness measures shown here exclude these three facets. Correlations are computed over 75,705 persons (left panel) or 1250 county composites (right panel).


Person
County
Conservative ideology
Conscientiousness
Honesty-humility
Openness
Neg. emotionality
Agreeableness
Extraversion
0.000
0.025
0.050
0.075
0.100
intraclass correlations
Inventory
HEXACO
MPQ
NEO

Distinguishing characteristics of individual nations

Although the omnibus effects seen in Figure 2 appear modest, there are clear differences between individual nations. Figure 3 depicts scores for each of the nations on these seven broad constructs. In the figure, each score represents the average of two standardized IPIP measures. Symbols are proportional to sample size, and critical ratios (CR or z-statistic) with absolute values of three or greater ($|z|/se > 3.0$, $p < .003$) are labeled. For Conservative ideology, nine of the nations are marked by these characteristic scores, and the difference between the most extreme nations, the *Deep South* and *Federal Entity*, is more than .6 sd. For Openness, the same two nations are separated by .3 sd. For Honesty-Humility and Conscientiousness, the *Deep South* was separated from *New Netherland* by approximately .25 sd. Eleven of the nations (all but the small samples from *New France* and *American Polynesia*) are distinguished by significant scores on at least one of the constructs.

Narrow and mid-level scales. For the narrower-bandwidth measures, including the IPIP measures of the MPQ scales and the NEO and HEXACO facets, characteristic measures for each of the nations are represented in the last column of Table 1 (above). Three of the narrow measures were each associated with five nations: The average *Deep Southerner* and *Greater Appalachian* attained high scores on Fairness and Modesty, while those on the *Left Coast*, *El Norte,* and *New Netherland* attained low scores. Those in *New Netherland* and *Yankeedom* attained high scores on Stress Reaction, while those in the *Deep South*, *Spanish Caribbean*, and *American Polynesia* – the three most temperate nations – were distinguished by low stress. Descriptive statistics for all 78 broad and narrow personality measures for each of the 13 nations are provided in Supplementary Table 1.

Figure 3

Scores for American nations in ideology and broadband personality measures

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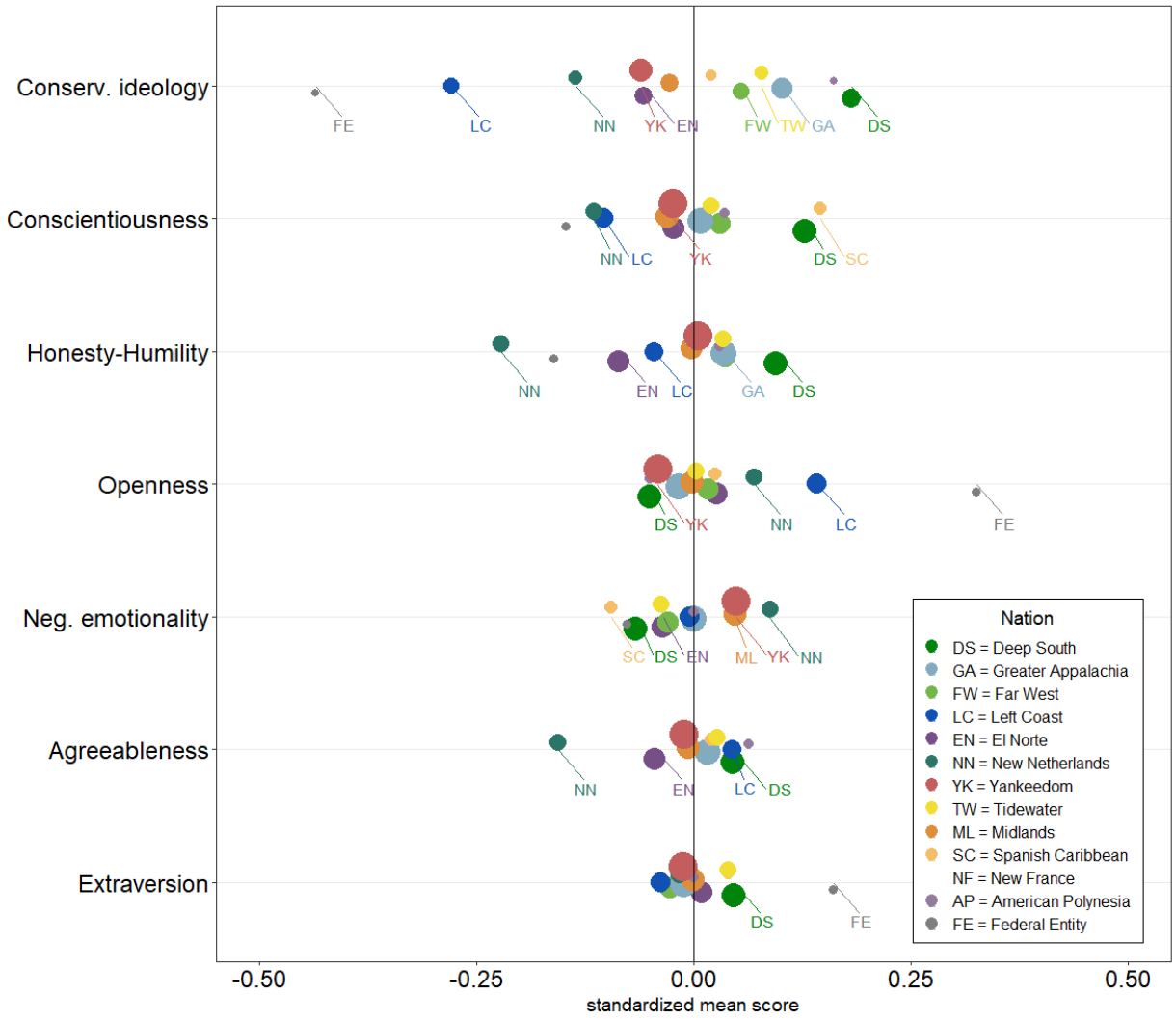
(Figure caption)

Mean scores for American nations on seven constructs. Each score represents the average of two standardized IPIP measures in the person-level data. Symbols are proportional to sample size. Values less than three standard errors from the mean (|CR| < 3.0) are not labeled. Ns are shown in Table 1.


Conserv. ideology
Conscientiousness
Honesty-Humility
Openness
Neg. emotionality
Agreeableness
Extraversion
FE
LC
NN
YK
EN
FW
TW
GA
DS
SC
ML
-0.50
-0.25
0.00
0.25
0.50
standardized mean score
Nation
DS = Deep South
GA = Greater Appalachia
FW = Far West
LC = Left Coast
EN = El Norte
NN = New Netherlands
YK = Yankeedom
TW = Tidewater
ML = Midlands
SC = Spanish Caribbean
NF = New France
AP = American Polynesia
FE = Federal Entity

Items. To obtain a still finer-grained picture of each of the American nations, we sought to determine the items, as well as the scales, associated with each of the nations. As with the other measures, we chose to interpret only measures which exceeded a CR of 3.0. With this criterion, approximately 45% of the items (315/696) were associated with one or more of the nations.[3] Table 2 provides a brief overview of these item-level results, including the number of characteristic items (those significantly different from the sample-wide average), the number of uniquely characteristic items (significant for only one particular nation), and the two most characteristic items of each type for each nation. For example, *Return extra change when a cashier makes a mistake* is the item with the strongest association with *Greater Appalachia.* That item is also the single most characteristic item, in the opposite direction, for *New Netherland*. Exactly two items are characteristic of *Greater Appalachia* and no other nation, including *Don't pride myself on being original* and *Tire out quickly*. Summary statistics for the 696 items for each of the 13 nations are provided in Supplementary Table 2.

The uniqueness of the Deep South

These analyses of scale and item effects suggest that there is substantial variability in the distinctiveness of the individual nations. To examine this more systematically, for each nation we considered the absolute values of the simple means and critical ratios of both scales and items, as well as the number of significant scales and items cited in Tables 1 and 2. Across these measures, four of the nations appeared particularly distinct – the *Deep South*, *Left Coast*, *New Netherland*, and the *Spanish Caribbean*. Of these, one nation stood out. The *Deep South* was the only nation marked by significant scores on all seven of the broad-bandwidth constructs, and, in addition, was associated with more of the narrower scales and more of the items than any of the remaining nations.

Table 2

Items most characteristic of individual American nations

Nation	Characteristic items	Uniquely characteristic items
Southern nations		
Greater Appalachia	Return extra change when a cashier makes a mistake. Believe in one true religion. (10 items)	Don't pride myself on being original. Tire out quickly. (2 items)
Deep South	Am an extraordinary person. *Let myself be influenced by others* (184)	Have a strong personality *Feel a sense of worthlessness or hopelessness* (82)
Tidewater	*Need the approval of others.* Am able to stand up for myself. (8)	Cheer people up. *Hang around doing nothing.* (4)
Spanish Caribbean	Push myself very hard to succeed. *Dislike myself.* (22)	Nearly always have a ready answer when talking to people. Am skilled in handling social situations. (10)
Western nations		
El Norte	Dislike routine. Admire a really clever scam. (22)	Can't be bothered with other's needs. Love dangerous situations. (5)
Far West	Am interested in science. Love flowers. (13)	Rarely worry. *Am easily disturbed.* (5)
Left Coast	*Respect authority.* Believe in the importance of art. (93)	Believe in the importance of art. *Avoid difficult reading material.* (27)

(table continues)

Table 2 (continued)

Items most characteristic of individual American nations

Nation	Characteristic items	Uniquely characteristic items
Northeastern and Midwestern nations		
Yankeedom	*Love to think up new ways of doing things.* *Am an extraordinary person*. (30)	Have difficulty starting tasks. *Face danger confidently.* (11)
Midlands	Mess things up. Panic easily. (8)	Panic easily. *Enjoy hurting people I love.* (3)
New Netherland	*Return extra change when a cashier makes a mistake.* Cheat to get ahead. (72)	Am out for my own personal gain. *Rarely feel depressed.* (26)
Small nations		
New France	Would never go hang gliding or bungee jumping. *When my temper rises I find it difficult to control.* (4)	Would never go hang gliding or bungee jumping. Feel that others misunderstand me (2)
Federal Entity	*Am attached to conventional ways.* Tend to vote for liberal political candidates. (20)	*Am attached to conventional ways.* *Don' t like to draw attention to myself*. (13)
American Polynesia	Love flowers. *When my temper rises I find it difficult to control.* (9)	*Rarely enjoy being with people.* Engage in discussions (2)

Notes: Numbers in parentheses indicate the number of items with mean scores |z/s.e.| > 3.0. Uniquely characteristic items are those which are associated with only the particular nation and no other at this threshold. Italicized items indicate negative relationships. Descriptive statistics for each (item X nation) are included as Supplementary Table 2.

We extracted 32 of the items which best characterized the *Deep South*, including items which were both characteristic and uniquely characteristic of the nation, as described in Table 2, then inspected item-cluster solutions (Revelle, 2021). A three-cluster solution suggested broad themes of *Pride* and *Conservatism*, as well as a narrower cluster of items indicating *Distrust*. More detailed analyses suggested that the Pride cluster included homogeneous facets which we labeled *Confidence, Honor, Subtle defensiveness, and Defiant autonomy*. Similarly, we partitioned *Conservatism* into facets of *Order, Tough-mindedness,* and *Faith.* Representative items are shown in Table 3; the full set of items is included in Supplementary Table 3.

The higher-order structure of regional differences

We used canonical discriminant analysis to examine differences between American nations in a multivariate framework (Friendly & Fox, 2021). In this analysis, we used the seven broadband characteristics of our initial analysis, i.e., the Big Five plus Honesty-Humility and Ideology. Scores on all seven of these broad measures were available for just over half (50.1%, N = 37,923) of the cases, and the first three discriminant functions accounted for 68%, 12%, and 11% of the common variance, respectively.

The means for the nations and projections of the individual measures onto these three dimensions are depicted in bivariate plots in the three panels of Figure 4 and are presented in numerical form in Supplementary Table 4.[4] To better understand the nature of the three dimensions, we computed correlations with the 696 items (see Table 4). This, together with the pattern of scale loadings, led us to label the dimensions as *Authoritarian conventionalism, Cognitive resilience, and Competitiveness*.

Table 3

Distinguishing characteristics of the *Deep South*: Cluster analysis

Broad cluster	Facet	Sample items
Pride	Confidence	Just know that I will be a success. *Feel a sense of worthlessness or hopelessness.*
	Honor	Am able to stand up for myself. *Am a physical coward.*
	Defiant autonomy	*Try to impress others.* *Act like different people in different situations.*
	Subtle defensiveness	*Have some bad habits.* *Make a fool of myself.*
Conservatism	Order	Respect authority. *Break rules.*
	Tough-mindedness	Know that anyone who tries can get a job. *Tend to vote for liberal political candidates.*
	Faith	Believe in one true religion. *Don't consider myself religious.*
Distrust	Distrust	Feel that most people can't be trusted. *Trust others.*

Notes: Italicized items indicate negative relationships. A list of the 32 items and a summary of the item cluster analyses in included as Supplementary Table 3.

Figure 4

Multivariate differences between nations: Canonical discriminant analysis

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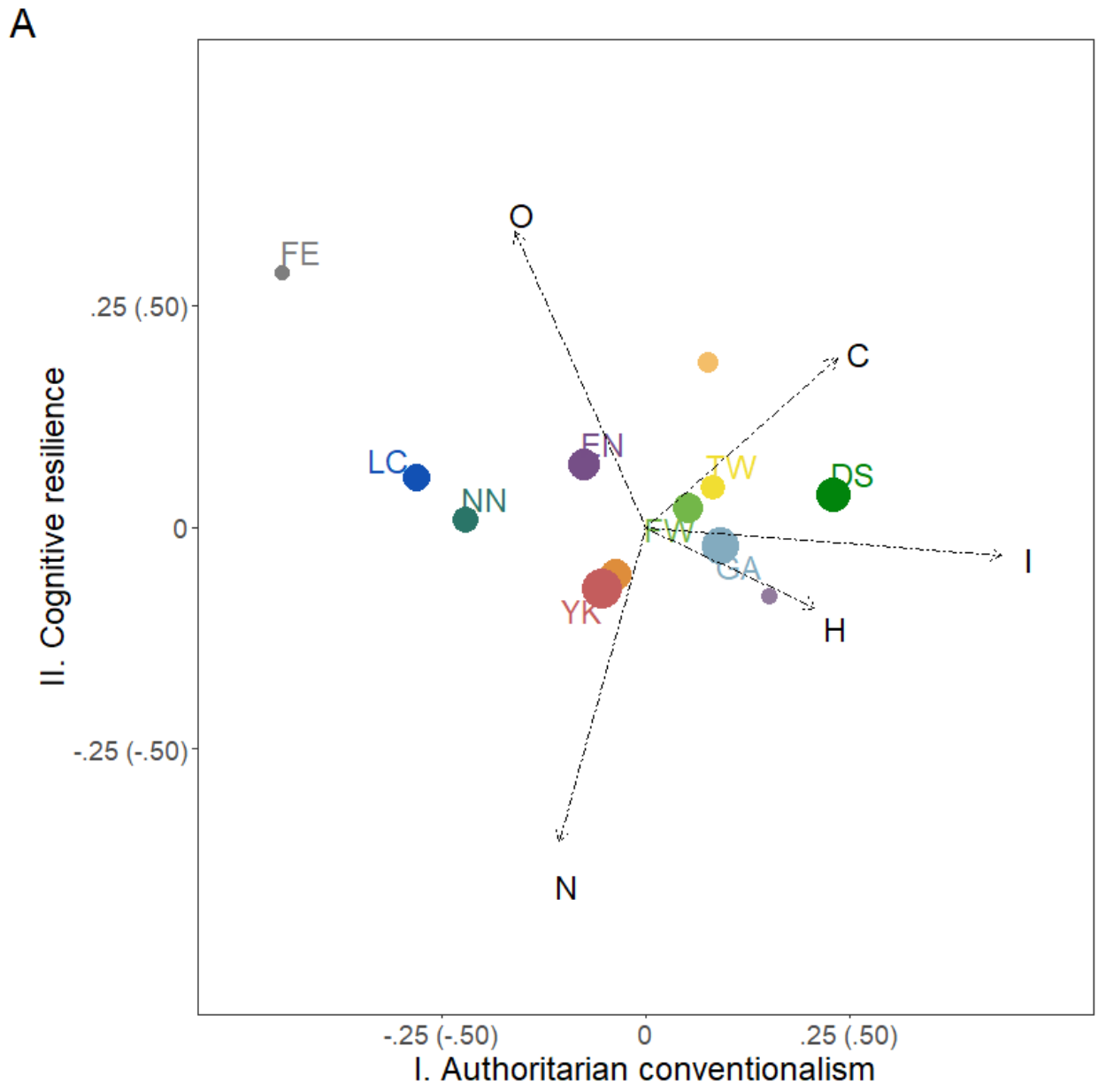
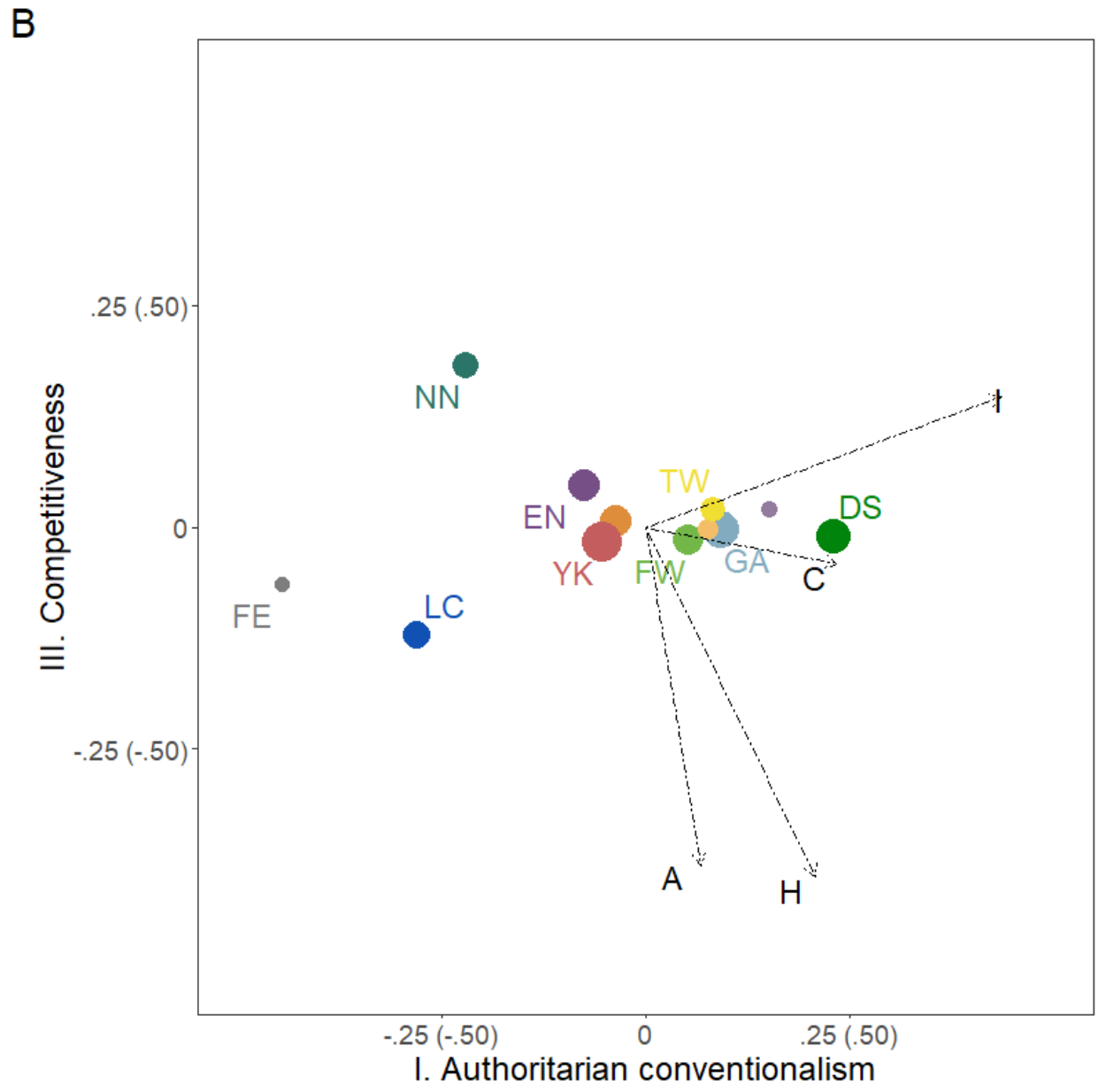
(Figure caption)

Three dimensions of differences between nations. Values on axes represent coordinates for nations and, in parentheses, scale weights for personality constructs. In each panel, small (variable weights less than .2) and statistically marginal effects (nation means less three standard errors from the mean on both dimensions), are not labeled or depicted.

Abbreviations for nations are shown in Table 3. Abbreviations for constructs: N = Negative emotionality, O = Openness, I = conservative Ideology, C = Conscientiousness, H = Honesty-Humility, A = Agreeableness). N = 37,923. Statistics for the canonical discriminant analysis are included in Supplementary Table 4.


A
O
FE
.25 (.50)
C
LC
EN
TW
DS
NN
0
FW
I
GA
YK
H
N
II. Cognitive resilience
-.25 (-.50)
-.25 (-.50)
0
.25 (.50)
I. Authoritarian conventionalism


B
.25 (.50)
0
-.25 (-.50)
III. Competitiveness
NN
EN
TW
DS
YK
FW
GA
C
FE
LC
I
A
H
-.25 (-.50)
0
.25 (.50)
I. Authoritarian conventionalism

C

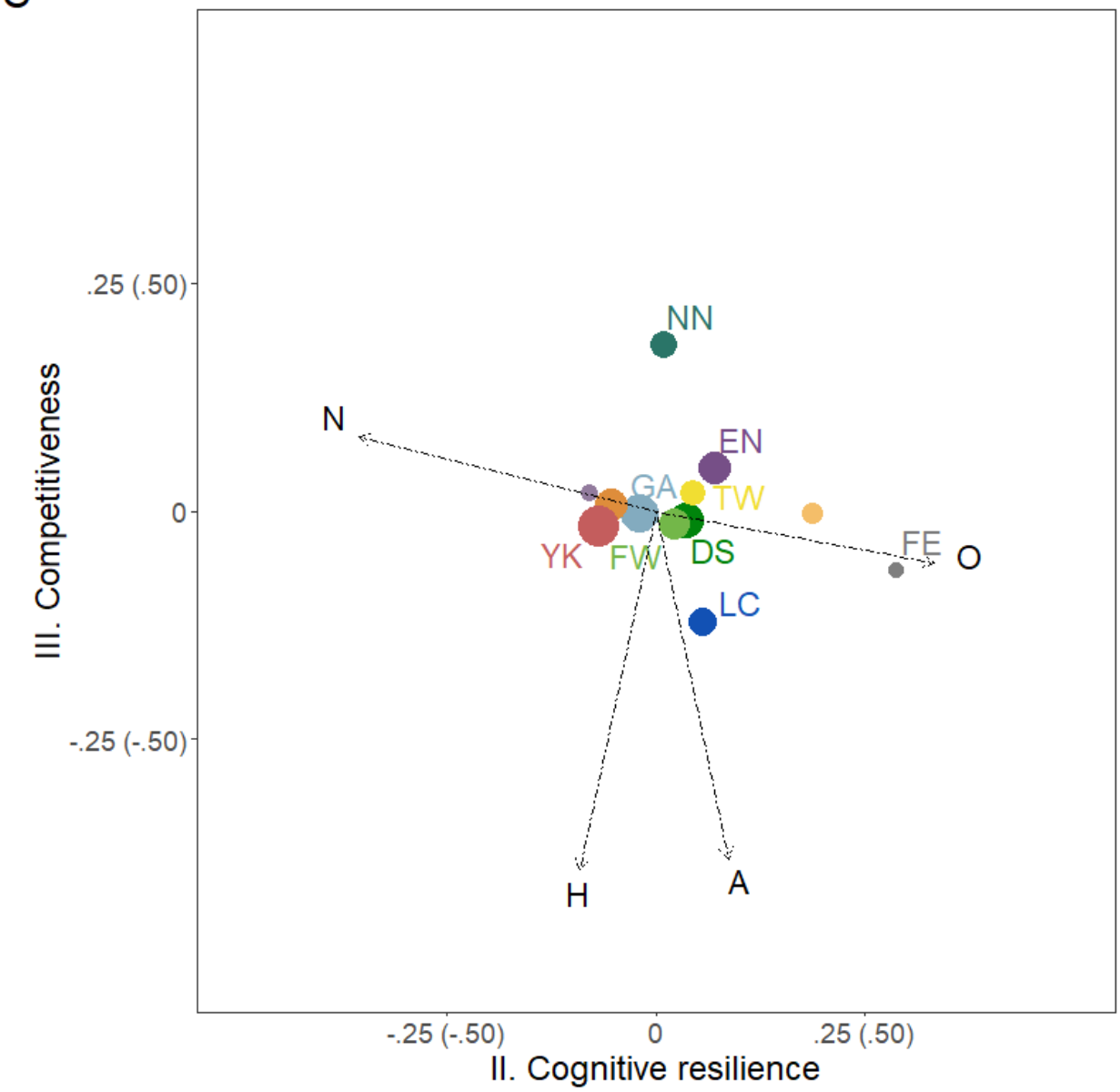

.25 (.50)
0
-.25 (-.50)
III. Competitiveness
NN
N
EN
GA
TW
YK
FW
DS
FE
O
LC
H
A
-.25 (-.50)
0
.25 (.50)
II. Cognitive resilience

Table 4

Items associated with canonical discriminant functions

Dimension / Item	r
I. Authoritarian conventionalism	
Believe in one true religion.	0.77
Tend to vote for liberal political candidates.	-0.74
Like to stand during the national anthem.	0.73
Believe laws should be strictly enforced.	0.72
Believe that there is no absolute right and wrong.	-0.71
Tend to vote for conservative political candidates.	0.70
Believe that we should be tough on crime.	0.69
Believe that criminals should receive help rather than punishment.	-0.68
Don't consider myself religious.	-0.65
Believe in the importance of art.	-0.59
II. Cognitive resilience	
Panic easily.	-0.59
Get stressed out easily.	-0.57
Remain calm under pressure.	0.57
Begin to panic when there is danger.	-0.53
Am easily intimidated.	-0.53
Love to read challenging material.	0.52
Am afraid of many things.	-0.51
Am calm even in tense situations.	0.51
Can handle complex problems.	0.51
Am easily discouraged.	-0.50

(Table continues)

Table 4 (continued)

Items associated with canonical discriminant functions

III. Competitiveness	
Hold a grudge.	0.59
Use others for my own ends.	0.56
Get back at others.	0.56
Believe that I am better than others.	0.54
Get even with others.	0.54
Have a sharp tongue.	0.54
Insult people.	0.54
Pretend to be concerned for others.	0.54
Look down on others.	0.54
Cheat to get ahead.	0.53

Note: Ten items most strongly associated with scores on each of three canonical discriminant functions.

Ns = 4220 – 10587. Italicized items indicate negative relationships.

Optimizing national boundaries

To test if a new boundary proposal is better than Woodard's original boundaries, we defined well-formedness as the mean of each nation's 'category coherence' (Regier et al., 2007). Category coherence maximizes within-category similarity while minimizing between-category similarity, more specifically, it is calculated in the community-level data as the difference between a) the average similarity between each in-nation county composite and all county composites not in the nation, and b) the average similarity between all in-nation county composites. Similarity was calculated as the inverse of the Euclidean distance between the county composites over all of the personality scales. In our formulation, a high well-formedness score indicates that all regions within each nation are simultaneously very similar to each other while being as different as possible from all regions not in the nation.

We then iterated through all county-composites which were adjacent to a nation boundary and tested whether the overall well-formedness score improved if the county-composite in question belonged to the nation on the other side of the boundary. To prevent the creation of any new noncontiguous 'islands', we calculated the number of connected components in the adjacency matrix of the county composite's first and second-order neighbors.[5] Where flipping a county composite would result in a change in the number of connected components – thus creating a non-contiguous island – said flip was rejected.

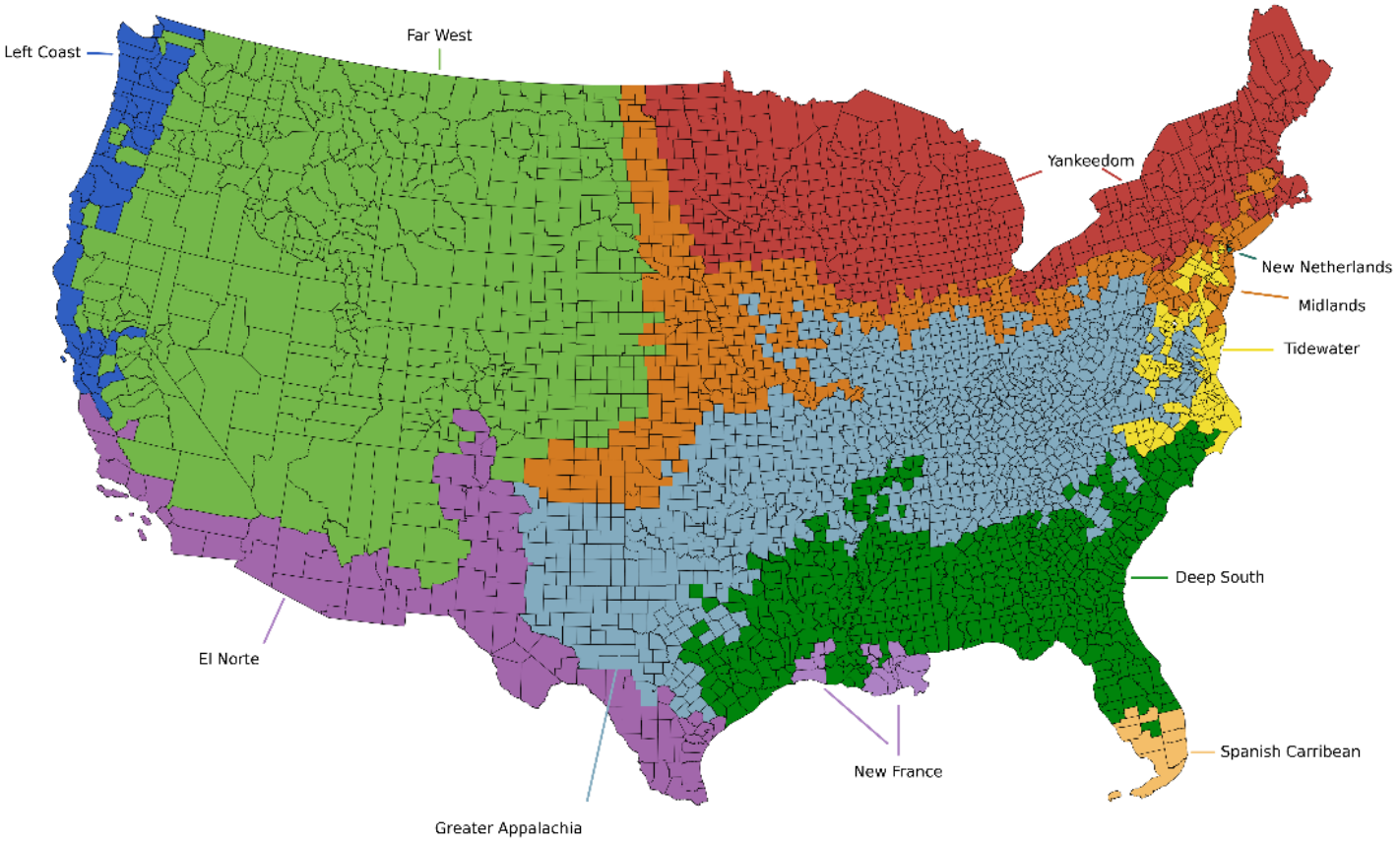
Initially, the well-formedness score of Woodard's model was .28. After 25 rounds of iteration this improved to .48. Quantitatively, the largest changes were in the *Midlands* (48 county-composite reassignments), *Tidewater* (24 reassignments), and *New Netherland* (21 reassignments). Visually, however, the most drastic change was in *New Netherland*, which shrinks to just two counties. The redrawn map is shown in Figure 5.

Figure 5

American nations revisited: A redrawing of Woodard's map

(figure caption)

Note: Figure depicts Woodard's model after 25 iterations designed to create more psychologically homogeneous regions. A spreadsheet of county-region assignments is included as Supplementary Table 5.


Left Coast
Far West
Yankeedom
New Netherlands
Midlands
Tidewater
Deep South
El Norte
New France
Spanish Carribean
Greater Appalachia

Discussion

The concept of boundary is fundamental not only to geography but to psychology, particularly the psychology of personality. Boundaries are essential metaphors for representing key constructs such as Openness to Experience, Ego Control, and individual differences in ideology (Block & Block, 1980; Lanning et al., 2021; McCrae, 1993; Van Hiel & Mervielde, 2004). Psychological boundaries exist not merely between 'self' and 'other,' but also within the self. Differentiation of the self-concept can be associated with psychological fragmentation, including a proneness to anxiety (Bleidorn & Ködding, 2013; Lewin, 1936; Witkin, 1965).

Political boundaries can drive anxieties as well. Regional independence movements around the globe, such as those in Scotland, Quebec, and the Tigray region of Ethiopia, are at one level conflicts about boundaries. Domestically in the U.S., tensions around political boundaries are widespread. Voters in seven Oregon counties have supported moving their state boundary to join neighboring Idaho (Zilbermints, 2021) – a change which, however unlikely to occur, would better align state boundaries with those between Woodard's *Left Coast* and *Far West*. The Oregon vote echoes many initiatives to redraw American state boundaries, including over 200 in California alone (Wikipedia, 2021). Culturally drawn boundaries, such as those described by Woodard, could, in principle, be more stable.

Popular movements to redraw boundaries are frequently driven by expressions of personal and geographic identity. Questions of identity frame some of the knottiest geopolitical problems which surround us: The question of whether one primarily identifies as *European*, *British*, or *Scottish* is in part a question of the subjective meaningfulness of nation-states as an aspect of the self-concept. In the United States, regions such as Woodard's *Tidewater* and *Left Coast* certainly appear less relevant to identity than Britain's Scotland or Spain's Catalonia, but they resonate nonetheless.

Differences between nations. We examined the personality characteristics associated with Woodard's nations at several levels of analysis. We found that the most salient broad constructs in understanding differences between nations were Ideology, followed by Conscientiousness, Honesty-Humility, and Openness. A discriminant analysis revealed that these differences could be well represented by three dimensions of *Authoritarian conventionalism,* associated with Ideology and Conscientiousness, *Cognitive resilience*, associated with Openness and Emotionality, and *Competitiveness,* associated with Agreeableness and Honesty-Humility. The first of these factors was the most important, but the remaining two dimensions differentiated the three "Bluest" nations: *Federal Entity* was particularly Resilient, and Competitiveness separated *New Netherland* (high) and the *Left Coast* (low). Of the eleven large nations in Table 1, all but *Midlands* and *Spanish Caribbean* were distinct on one or more of these dimensions.

Characteristics of individual nations. Our results provide considerable support for Woodard's descriptions of the American Nations, as well as for scholarship on the continuing distinctiveness of American South (Hurlbert, 1989; Rice et al., 2002). In our analysis of the items which were characteristic of the *Deep South* we found three broad clusters. The first, Pride, describes an individual difference variable consistent with social psychological research on the "culture of honor" (Cohen et al., 1996). The remaining two clusters, Conservatism and Distrust, are each linked with the core of Electoral support for Republican presidential candidates for over a half of a century (Hofstadter, 1964; Phillips, 1969).

Outside the Deep South, the profiles of individual nations were less distinct but still noteworthy. Among the remaining southern nations, *Greater Appalachia* was characterized by Honesty-Humility, including modesty and fairness, as was *Tidewater*, which was also characterized by greater self-consciousness. The *Spanish Caribbean* was, like the *Deep South*, marked by Conscientiousness in addition to achievement-striving and emotional stability. Unlike the other southern nations, it was not

characterized by conservative ideology. In the West, *El Norte,* the oldest of Woodard's nations, was associated with relatively low averages for Honesty-Humility, conservative Ideology, and Agreeableness, but slightly higher than average Extraversion and Openness scores. The characterization of the *Far West*, the last colonized nation, was consistent with Woodard's description of an individualistic, conservative culture, with higher scores on conservative ideology and anxiety and low sociability. Like the *Left Coast*, the *Far West* was also distinguished by high scores in inquisitiveness. The *Left Coast* was the most distinct of the western nations, particularly in its high Openness and liberal Ideology. In the Northeast and Midwest, all three nations were all characterized by Negative Emotionality. Two of these, *Yankeedom* and *New Netherland,* were also characterized by liberal ideology; the *Midlands* was not. Finally, among the smaller nations, *American Polynesia* was most characterized by its low Stress Reaction, and *New France* by its low excitement seeking. The items characteristic of these nations, as seen in Table 2 and Supplementary Table 2, provide additional, if preliminary, support for many aspects of Woodard's model.

Person and community effects. We examined the personality characteristics associated with Woodard's *Nations* at the level of both person and community (i.e., county-composites). When examined at the level of person, effects were small, with an intra-class correlation greater than .01 only for Ideology. When examined at the community level, effects were substantially larger. For example, the overall effect of nation on Conscientiousness seen in the second panel of Figure 2 was comparable to effects reported for gender on self-esteem and testosterone on aggression (both r = .06, Richard et al., 2003).

Substantively, the increase in effect size for these community level analyses can be seen as a simple byproduct of statistical aggregation. But it also provides an illustration of how it can be that people everywhere are "pretty much the same," but that the character of places, such as the typical

community in the *Deep South* versus one in the *Left Coast*, can differ substantially in subjective ambiance, feeling, or resonance.

Some countervailing forces against regional differentiation. After nearly 250 years as a Nation-state, how different should we expect American regions to be? Network effects of increasing urbanization, homophily-fueled selective migration, and conformist pressures and subtler forms of social influence each can be expected to function as (positive) feedback loops, driving greater regionalization over time. Conversely, industrial and technological advances which can be expected to reduce differences between regions range from the widespread adoption of air conditioning (Arsenault, 1984) to mass-media influences such as the national news on television (Morgan, 1986).

Social phenomena may also fuel diversity within and differences between American regions. Selective migration is not just driven by homophily, or the appeal of living among like-minded others. For example, in gender-imbalanced migrant communities, the minority gender gains power (Secord, 1983). This can be expected to serve as an attractor for the minority gender and as a self-correcting mechanism driving gender balance. Social influences might also reinforce within-region diversity rather than similarity, as was the case for many of the '49ers' who migrated to California during the Gold Rush and arrived as miners but resourcefully found success as entrepreneurs (e.g., Fleischman et al., 2008). In these and other cases, both migration to and adaptation within cultures may favor those who differ, indicating selection for complementarity rather than similarity (Maynard Smith, 1974).

These arguments suggest not just a force which countervails against a 'Big Sort' towards regional distinctiveness (Bishop, 2009), but also support the idea that that person-environment similarity (person-culture match) may be too impoverished to capture the concept of 'fit' (Götz et al., 2018; cf., Bleidorn et al., 2016; Gebauer et al., 2020). At the level of the person, fitness is more than 'fitting in,' that is, psychological health is more than conformity (Loevinger, 1966). At the regional level,

at least one personality inventory is premised on the idea that communities need diverse 'types' of persons in order to thrive (Gough & Bradley, 1996). To the extent that diversity within each of Woodard's *American Nations* is large, differences between them will be subtle.

Limitations and future directions

As our data were collected in a single wave, we are unable to address questions about the extent to which migration – especially selective migration – may affect differences between or within American nations. Subsequent research might begin to address this shortcoming by capturing data about participants' migration patterns as well as those of their recent ancestors. Further, our data are a convenience sample. Ideally, the data would have been collected using probability sampling methods; failing this, post-hoc weighting techniques could be used to better match population and demographic characteristics of each American region. Though attractive, these techniques are rarely used in psychology research, and appear to be incompatible with the high level of planned missingness in data collected from SAPA during this time period.

A related issue stems from the geographic distribution of the population in the U.S. The many areas with small samples in these data often reflect the simple fact that much of the U.S. is not well-populated. This is particularly true of the midwestern and central-western nations; that is, the *Far West*, *El Norte*, and *Greater Appalachia*. Subsequent research should make use of sampling strategies that can more effectively characterize these regions. Even better, future work could tailor data collection to meet pre-registered sample size targets so as to avoid the need to merge underrepresented regions as was done here. Subsequent research might also benefit from more specific and efficient sampling of content. The exploratory nature of the current analyses was necessarily broad, but future research may benefit from focused assessment of fewer constructs and/or across a narrower geography (e.g., combining two or more of Woodard's *Nations*).

Other factors affecting imprecision will be more difficult to resolve. For example, to the extent that people respond to self-report measures by comparing themselves to implicit standards in their culture, a reference-group effect exists (Heine et al., 2002). This effect appears particularly important for conscientiousness (Heine et al., 2008) rather than other constructs (Oishi & Roth, 2009). To the extent that this effect is present, it will attenuate results. Regardless, a multi-method approach would better illuminate the character of American regions.

Taken together, the findings and limitations of this work highlight the need for further research in multiple directions. Both sides of the 'equation' implicit in our model, geography and personality, are incompletely specified. With respect to geography, alternate models of American regions could be considered (e.g., Fischer, 1991; Garreau, 1981; Lieske, 1993). An initial redrawing of the boundaries for several nations is possible using data from this work (e.g., Figure 5), and could be improved even further through efforts to sample more strategically from counties that are underrepresented, whether due to small population sizes or inadequate sampling – particularly in areas that are rural, lower socioeconomic status, and with lower levels of internet usage. More detailed specifications of personality would include the use of higher dimensional trait models, such as the 27 factor SAPA Personality Inventory (Condon, 2018), or even more informationally rich data sources such as the modeling of regional language patterns, or online behaviors (Condon & Mõttus, 2021).

Summary

There are differences between the American nations, particularly in aspects of personality associated with political ideology, and particularly when examined on the level of community rather than individual person. But, like most typologies, the model is an oversimplification, one that risks overstating the subtle differences that exist between regions, in much the same way that the *Red* vs. *Blue* dichotomy has contributed to a caricature of American states (Seyle & Newman, 2006; Webster,

2007). America is neither a patchwork quilt of distinctly different regions, nor is it a pureed melting pot of sameness. At every level, the outstanding characteristic of American communities is their diversity.

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Notes

[1] The populations of counties, like that of cities, is approximately distributed following a power law (Baek et al., 2011). For the construction of county-composites, adjacency was calculated on the basis of Queen-contiguity (regions which share a point or border).

[2] Our version of well-formedness differs from that of Regier et al. (2007) in several ways. Most notably, those investigators used a decay function borrowed from psychophysics. Because we are not investigating perceptual similarity, we instead used the simple average of all category coherences. Further, we assessed similarity on the basis of means rather than sums.

[3] We also explored two other approaches to assessing the robustness of our effects, namely (a) a k-fold analysis, retaining items if they had an r>= 0.025 with the dummy variable "$Nation_x$" in *i* >= 6 slices of the data, and (b) a Monte Carlo approach, in which we compared our results with 1000 random reshufflings of persons into nations. Results of the present approach are more conservative and no less arbitrary.

[4] We report here the (non-imputed) person-level data for this analysis. Results for the analysis of county-level data were similar and are also included in Supplementary Table 4.

[5] The number of connected components was calculated by subsetting the adjacency matrix to the particular set of neighbors, then treating the resulting submatrix as a node-and-link graph.

APPENDICES

LanningSupplementaryTable1_scalesbynati

LanningSupplementaryTable2_itemsbynatic

LanningSupplementaryTable3_DSitems.csv

LanningSupplementaryTable4_DiscFunctior

LanningSupplementaryTable5_CountyNatic