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Personality of place: Regional psychosocial characteristics of economic activity

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ABSTRACT

Increasingly, social scientists are recognizing the limitations of traditional measures (e.g., geographic, demographic, economic) when trying to explain differing regional prosperity outcomes. This research seeks to understand how regions' differing personalities can help describe economic variance. We test this by employing least squares linear regression on an exploratory battery of 16 psychosocial variables (the "Big 5" personality profiles, plus other General Social Survey items) and four dependent variables of economic output: per capita income, employment rates, income mobility, and rates of entrepreneurship. All items, aggregated at the county level across the US, exhibited a unique constellation of relationships, emphasizing the great need for more work on the economic impact of what we coin the *personality of place*.

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How might the unique distribution of personality traits among a local population – and related psychosocial variables – influence its distinct economic footprint? This study represents an exploratory contribution toward a working model of conceptualizing how a regional *personality of place* may be associated with features of local wealth generation.

Improved regional standards of living tend to be associated with diverse forms of economic activity, which are likely to be mediated by a number of factors such as the level of education in the region, the quality of healthcare, and infrastructure (Brennan & Lancashire, 1978; Montgomery et al., 2000; Stern, 1983). When seeking to understand the distinctive character of a region's personality or culture, we are really looking at how groups of individuals perceive the world as well as the values and norms that affect how interact with one another. What this means is that the role of personality and culture affect many facets of daily life for individuals in a region, including how they approach economic activity and social change.

In recent years, a growing demand for better measures of how to assess societies and economies has emerged at both national (Stiglitz et al., 2009) and global levels (Diener & Tay, 2015). Traditional measures alone, ignoring the socio-cultural and psychological components of a population, leave substantial blind spots in the ability to understand, let alone predict, economic and political outcomes. This push for alternative measures of economic activity is also increasingly in demand at regional and metropolitan levels, using items as diverse as wellbeing (Morrison, 2014; Organisation for Economic Co-operation and Development [OECD], 2014; Tomaney, 2015) and human values (Morrison & Weckroth, 2018).

Exactly how best to measure fuzzy metrics like wellbeing are under negotiation (e.g., Dolan & Metcalfe, 2012; Fisher, 2014; Jordan, 2008); nevertheless, there is a mounting case for the value of bringing alternative psychosocial measures into a range of traditionally measured domains, such as

using personality variables to predict classroom performance (Heckman & Kautz, 2012); or as one study shows, aspects of personality can predict retention in marriages as well as in military special operations teams (Eskreis-Winkler et al., 2014). The search for which psychosocial variables pertain most closely to economic phenomena continues on multiple fronts. In this paper we will contribute to this growing body of work with a focus on the regional associations between psychosocial variables on four specific measures of regional economic output: earnings, unemployment, entrepreneurship, and income mobility.

Psychosocial variables on economic outcomes

The popularity and ubiquity of the Big 5 personality traits (openness, conscientiousness, extraversion, agreeableness, and neuroticism), or five-factor model, among social scientists in a range of topical areas is hard to overstate. Several recent studies have employed it to examine predictors of entrepreneurship (e.g., Baek, 2018; Carbonara et al., 2017; Fritsch et al., 2017; Obschonka et al., 2015; Osiri et al., 2019; Stuetzer et al., 2018). Scholarly work around the entrepreneurial “personality” only appears to be growing. Other studies have employed the Big 5 to predict earnings or income differences (e.g., Fletcher, 2013; Heinieck & Anger, 2010; Maczulskij & Viinikainen, 2018; Nyhus & Pons, 2005). Smaller bodies of literature have also used the Big 5 to explore the links between personality and unemployment (e.g., Uysal & Pohlmeier, 2011; Viinikainen & Kokko, 2012) as well as personality and upward mobility (e.g., Boudreau & Boswell, 2001; Laud & Johnson, 2012). In short, the four dependent economic variables we chose are not without precedent for application in this way.

Other psycho-social variables beyond wellbeing and the Big 5 personality traits that have links to economic outcomes include, but are not limited to: grit (Duckworth, 2016), moral foundations (Haidt, 2012), optimism (Seligman, 2006), stress (Shanks & Robinson, 2013), and values (Morrison & Weckroth, 2018).

In this paper, we stress the importance of expanding the unit of analysis from both the macro level of nations (where much of the wellbeing literature is focused) and the micro level of individuals (where much of the social psychological literature is focused), to examine more closely the meso level of region and city. Fewer studies examine the relationships between psychosocial variables and economic outputs at the meso level, though there are some excellent exceptions (e.g., Fritsch et al., 2017; Obschonka et al., 2016; Stuetzer et al., 2018); as well as a small body of work looking at regional entrepreneurial cultures (Audretsch et al., 2017; Stuetzer et al., 2018). Second, in this paper we offer an exploratory analysis, including but also going beyond the Big 5, to demonstrate why more work is needed to search through a host of potential psychosocial variables for their possible utility as associated variables with various economic development outcomes.

Our research question is: What is the association between personality or culture variables and economic activity at the regional level? To address this question, we conducted statistical analyses that test hypotheses about the relationships between psychosocial characteristics and indicators of economic activity.

Method

Data

The independent psychosocial variables in this study were constructed from data available in two nationwide surveys. First is the Gosling-Potter Internet Project (Gozlab) from the University of Texas (Rentfrow et al., 2018), where we gathered Big 5 personality trait data. The Gozlab survey is continuously administered online and solicits responses on a Likert scale to assess agreement with 44 statements that can then be combined to form the “Big Five” personality traits: openness, conscientiousness, extroversion, agreeableness, and neuroticism. Second, is the General Social Surveys (GSS)

from the University of Chicago (Smith et al., 2018), where we constructed two other sets of variables around beliefs (worldview items) and social dynamics (unique cultural characteristics). This is a 90-minute survey which has been administered in-person by the National Opinion Research Center to a nationally-representative annual cross-section of households since 1972. Data are available for several hundred individual characteristics across a wide variety of topics. We used participant responses for individuals disclosing the geographic location of their residence.

Data for our four dependent variables (income, employment, income mobility, and entrepreneurship) were obtained at the county level and were available for all fifty US states and the District of Columbia. Income was measured as individual income per capita in US dollars. Employment was measured as the percentage of individuals who have full or partial employment. Income mobility was measured as the percentage increase in income at age 26 for spending one additional year of childhood in a given county. Entrepreneurship was measured as the number of establishment births divided by the number of total establishments, giving a proportion of regional firms that are startups. Income, employment, and entrepreneurship data were obtained from the US Census Bureau; and income mobility data were obtained from the Equality of Opportunity Project.

Analysis

The Gozlab survey was designed in part to collect responses to survey questions pre-organized into domains of the Big 5 personality traits: conscientiousness, collectivism, extraversion, neuroticism, and openness. Each trait was ascribed eight to ten survey questions, and all survey responses were organized on a five-point Likert scale.

The GSS provided data for responses to several hundred survey questions pertaining to a widely varying set of psychosocial predispositions. The suitability of individual GSS survey questions for contribution to relevant latent constructs was determined by our panel of social scientists through careful consideration of relevant causal mechanisms, in tandem with previously described mechanisms for combination of observed data into latent constructs (Burns & Clemen, 1993). These constructs were organized into two broad categories of beliefs and social dynamics. Beliefs included six latent constructs: belief in science, gender equity, hopefulness, religiosity, selflessness, and tolerance. Social dynamics included five latent constructs: collectivism, conflict awareness, empathy, risk taking, and work importance. On average, data for four survey questions were used to construct each independent variable derived from GSS data (Appendix A, B, and C). These three sets of variables (The Big 5, Beliefs, Social Dynamics) make up the 16-item battery of psychosocial variables we used in our model to examine unique association to our four dependent variables (income, employment, income mobility, and entrepreneurship; Figure 1). For all independent variables, a table of descriptive statistics (Appendix D) and a matrix of Pearson's correlation coefficients (Appendix E) were produced.

Prior to combination into latent variables, data for each survey question were aggregated to the county level. Specifically, the mean value for each county's survey response was computed. Response data for each question were then recoded, if needed, so that higher values would indicate higher amounts of the latent construct. Feature scaling was then used to standardize the scaling of responses for individual survey questions (Chapelle et al., 2002), incorporating a method whereby every county was given a score denoted as a percentage of the county with the highest mean response. Independent constructs were then computed by multiplying together values for their constituent survey questions. Feature scaling was then applied to these constructs so as to standardize the interpretation of beta coefficients within each regression model. To maximize sample size for regression modeling, multiple imputation using Breiman's random forest algorithm was leveraged to ascertain a value for counties with data for the dependent variable but no data for an independent variable (Breiman, 2001).

Multivariable linear regression modeling was conducted to analyze the relationship between county-level psychosocial characteristics and measures of economic activity. Fit statistics were determined using least squares. Four regression models were produced, with one for each dependent

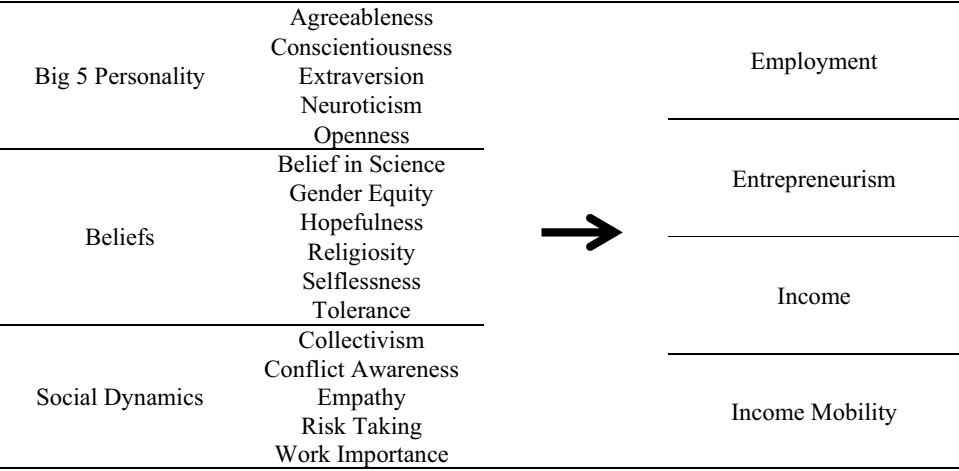


Figure 1. Psychosocial independent variables on economic dependent variables.

variable. For each regression model, the same set of sixteen independent variables was used. All analyses were conducted using R version 3.5.0. Geospatial visualizations were produced using kriging interpolation in ArcGIS 10.6.

Results

For psychosocial characteristic scores, counties ranged from an average score of 61.92 for conflict awareness to an average score of 87.01 for extraversion (Appendix D). County-level scores were influenced largely by the top-scoring county, as part of the computation for scores included distance from the top scorer. A correlation matrix was produced which showed Pearson’s correlation coefficients between independent covariates (Appendix E). Out of 120 pairwise comparisons, no coefficient value was greater than 0.7 or less than −0.7, and only one correlation coefficient was greater than 0.5 with no coefficient less than −0.5.

Income per capita

The set of sixteen independent psychosocial characteristics was significantly associated with county-level income per capita ($p < .0001$; $R^2 = 0.35$; Table 1). While adjusting for other covariates, income was significantly positively associated with the following independent variables at the $\alpha = 0.05$ level: openness, belief in science, gender equity, hopefulness, extraversion, empathy, and collectivism. At the same level of statistical significance, the following variables exhibited a negative relationship: risk taking, religiosity, neuroticism, and agreeableness.

Employment rate

The set of sixteen independent psychosocial characteristics was significantly associated with county-level employment rate ($p < .0001$; $R^2 = 0.24$; Table 2). While adjusting for other covariates, employment was significantly positively associated with the following independent variables at the $\alpha = 0.05$ level: belief in science, gender equity, empathy, extraversion, hopefulness, work importance, and conflict awareness. At the same level of statistical significance, the following variables exhibited a negative relationship: tolerance, risk taking, collectivism, religiosity, neuroticism, and agreeableness.

Table 1. Income.

Covariate	Regression coefficient	Standard error	<i>t</i>	<i>p</i>
INTERCEPT	\$31,179.77	8281.07	3.77	<.0001
Openness*	\$267.22	42.25	6.32	<.0001
Belief in Science [†]	\$253.80	13.83	18.35	<.0001
Extraversion*	\$219.83	36.19	6.07	<.0001
Gender Equality [†]	\$112.29	18.54	6.06	<.0001
Hopefulness [†]	\$48.07	4.85	9.91	<.0001
Conflict Awareness [†]	\$34.42	4.82	7.15	<.0001
Work Ethic [†]	\$8.97	14.39	0.62	.5332
Selflessness [†]	\$3.88	15.23	0.26	.7987
Empathy [†]	\$0.63	6.39	0.10	.9212
Risk-Taking [†]	(\$23.93)	7.28	-3.29	.0010
Tolerance [†]	(\$28.09)	14.94	-1.88	.0602
Collectivism [†]	(\$37.84)	14.44	-2.62	.0088
Conscientiousness*	(\$124.78)	47.55	-2.62	<.0001
Agreeableness*	(\$160.73)	48.57	-3.31	<.0001
Religiosity [†]	(\$279.75)	13.32	-21.00	<.0001
Neuroticism*	(\$342.32)	35.95	-9.52	.0087

Multiple linear regression model for individual income per capita according to sixteen psychosocial characteristics (n = 3093 counties; $R^2 = 0.47$; $p < 0.0001$).

*Source: Gosling-Potter Internet Project, University of Texas

[†]Source: General Social Surveys, University of Chicago

Table 2. Employment rate.

Covariate	Regression coefficient	Standard error	<i>t</i>	<i>p</i>
INTERCEPT	101.93%	3.215	31.7	<.0001
Gender Equality [†]	0.07%	0.007	10.08	<.0001
Extraversion*	0.07%	0.013	5.38	<.0001
Belief in Science [†]	0.03%	0.005	6.26	<.0001
Hopefulness [†]	0.02%	0.003	6.41	<.0001
Conflict Awareness [†]	0.02%	0.003	7.39	<.0001
Tolerance [†]	0.01%	0.006	1.39	.1638
Conscientiousness*	0.01%	0.017	0.42	.6750
Risk-Taking [†]	0.00%	0.003	0.71	.4761
Selflessness [†]	0.00%	0.007	-0.12	.9062
Work Ethic [†]	-0.01%	0.006	-1.23	.2188
Empathy [†]	-0.04%	0.004	9.33	<.0001
Neuroticism*	-0.05%	0.013	-3.89	.0001
Collectivism [†]	-0.06%	0.005	-10.65	<.0001
Religiosity [†]	-0.08%	0.005	-15.13	<.0001
Openness*	-0.08%	0.015	-5.10	<.0001
Agreeableness*	-0.09%	0.018	-5.12	<.0001

Multiple linear regression model for employment rate according to sixteen psychosocial characteristics (n = 3093 counties; $R^2 = 0.30$; $p < 0.0001$).

*Source: Gosling-Potter Internet Project, University of Texas

[†]Source: General Social Surveys, University of Chicago

Income mobility

The set of sixteen independent psychosocial characteristics was significantly associated with county-level income mobility ($p < .0001$; $R^2 = 0.40$; [Table 3](#)). While adjusting for other covariates, income mobility was significantly positively associated with the following independent variables at the $\alpha = 0.05$ level: extraversion, belief in science, work importance, and selflessness. At the same level of statistical significance, the following variables exhibited a negative relationship: collectivism, tolerance, empathy, risk taking, neuroticism, religiosity, conflict awareness, openness, conscientiousness, and agreeableness.

Entrepreneurship

The set of sixteen independent psychosocial characteristics was significantly associated with county-level entrepreneurship ($p < .0001$; $R^2 = 0.23$; [Table 4](#)). While adjusting for other covariates, income

Table 3. Income mobility.

Covariate	Regression coefficient	Standard error	<i>t</i>	<i>p</i>
INTERCEPT	12.52%	0.963	13.00	<.0001
Belief In Science [†]	0.02%	0.002	11.20	<.0001
Extraversion*	0.02%	0.004	3.66	.0003
Work Ethic [†]	0.01%	0.001	10.61	<.0001
Selflessness [†]	0.00%	0.002	2.61	.0091
Risk-Taking [†]	0.00%	0.001	−1.24	.2159
Empathy [†]	0.00%	0.001	−1.20	.2316
Religiosity [†]	0.00%	0.001	−2.85	.0044
Collectivism [†]	0.00%	0.001	−2.88	.0040
Hopefulness [†]	−0.01%	0.001	−7.56	<.0001
Neuroticism*	−0.01%	0.004	−2.42	.0158
Conflict Awareness [†]	−0.01%	0.001	−12.11	<.0001
Tolerance [†]	−0.01%	0.002	−8.56	<.0001
Gender Equality [†]	−0.01%	0.002	−7.33	<.0001
Conscientiousness*	−0.02%	0.005	−4.49	<.0001
Openness*	−0.05%	0.005	−11.33	<.0001
Agreeableness*	−0.07%	0.006	−11.77	<.0001

Multiple linear regression model for income mobility according to sixteen psychosocial characteristics (n = 2825 counties; $R^2 = 0.43$; $p < 0.0001$).

*Source: Gosling-Potter Internet Project, University of Texas

[†]Source: General Social Surveys, University of Chicago

Table 4. Entrepreneurship.

Covariate	Regression coefficient	Standard error	<i>t</i>	<i>p</i>
INTERCEPT	−3.84%	5.064	−0.76	.4482
Openness*	0.25%	0.027	9.10	<.0001
Belief in Science [†]	0.07%	0.010	7.34	<.0001
Hopefulness [†]	0.06%	0.005	10.71	<.0001
Conscientiousness*	0.05%	0.030	1.51	.1316
Selflessness [†]	0.04%	0.011	3.84	.0001
Tolerance [†]	0.04%	0.009	4.34	<.0001
Conflict Awareness [†]	0.03%	0.005	4.71	<.0001
Risk-Taking [†]	0.02%	0.005	4.92	<.0001
Empathy [†]	0.02%	0.007	2.59	.0097
Religiosity [†]	0.00%	0.009	−0.39	.6953
Agreeableness*	−0.01%	0.031	−0.38	.7027
Work Ethic [†]	−0.04%	0.010	−3.93	<.0001
Extraversion*	−0.05%	0.023	−2.15	.0313
Gender Equality [†]	−0.08%	0.012	−6.15	<.0001
Collectivism [†]	−0.09%	0.010	−8.70	<.0001
Neuroticism*	−0.12%	0.023	−5.25	<.0001

Multiple linear regression model for entrepreneurship according to sixteen psychosocial characteristics (n = 3089 counties; $R^2 = 0.22$; $p < 0.0001$).

*Source: Gosling-Potter Internet Project, University of Texas

[†]Source: General Social Surveys, University of Chicago

mobility was significantly positively associated with the following independent variables at the $\alpha = 0.05$ level: openness, empathy, religiosity, hopefulness, and belief in science. At the same level of statistical significance, the following variables exhibited a negative relationship: tolerance, conflict awareness, extraversion, gender equity, and neuroticism.

Discussion

We observed that a set of sixteen personality and culture metrics exhibited unique constellations of relationships with each of the four measures of economic activity. While prior studies have provided assessments relating psychosocial characteristics with individual economic measures, no prior study has considered how varying economic outcomes differ in terms of the differences in regional

psychosocial traits that may most encourage/discourage their development. Indeed, without addressing this question, positive associations between behavioral factors and individual measures of economic activity may be unwisely extrapolated to entire sets of economic indicators. Contrarily, over-enthusiastic attachment to the nuances of individual economic indicators may position some to believe that no psychosocial perspective can be equally beneficial/detrimental to multiple economic indicators. Our findings indicate that it is appropriate to exercise a specific degree of caution when generalizing the economic benefits of specific behavioral predispositions.

Underlying the interpretation of our statistical output is the consideration that a beta coefficient indicates the influence of that covariate on the dependent measure of economic activity, and that beta coefficients can be compared between covariates. With regard to the former assumption, we note the least sum of squares approach utilized by our regression modeling is a standard methodology to determine the mathematical association between a covariate and its dependent variable while adjusting for the influence of other covariates (Meyer, 1975). From a non-quantitative perspective, we point to several prior articles indicating the existence of a causal relationship between personality/culture on macroeconomic indicators (Brandstätter, 2011; Leutner et al., 2014; Marmot & Wilkinson, 2001; Obschonka et al., 2015).

With regard to the comparison of covariate beta coefficients, we have made several efforts to preserve the validity of this approach. First, we applied feature scaling twice: on individual questions and then on latent constructs. Our application of feature scaling forces every county measure to be proportional to the county scoring highest on the question or construct. This allows for every measure to exist as a numerical distance from a non-theoretical, observed maximum. It also allows for a comparable scale between different constructs, whereby beta coefficients relay the difference in the dependent variable derived from one percentage point difference from the maximum for each behavioral metric. Second, we applied multiple imputation in order to conserve all observations while preserving the relationship between dependent variables and independent variables without biasing models toward any particular psychosocial metric. Third, each independent variable was constructed from about six survey questions, with little variation in the number of questions used to construct each latent variable. Fourth, efforts were made to construct latent variables primarily from five-point Likert scales, with few exceptions. Fifth, the same set of sixteen variables were included for each regression model, with approximately the same set of 2900 counties (representing over 90% of all US counties in each model).

In each statistical model, we observe that approximately half of the independent variables are positively associated with the economic indicator, which may indicate a broad representation of psychosocial characteristics. When comparing the magnitudes of beta coefficients within each model, we observe a generally linear decrease in the strength of relationships when comparing psychosocial characteristics by the rank of their relationship with a given dependent variable.

The exception for this tends to be the relationship of neuroticism with income, employment, and income mobility. Neuroticism exhibits a particularly strong negative influence on each of these economic indicators.

An important finding is that these psychosocial variables are not evenly distributed among populations across the country. Some areas have higher and lower rates of various psychosocial variables. For example, the personality trait “agreeableness” exhibits especially high scores in the Southeastern portion of the contiguous United States (Figure 2). Whatever positive qualities people high in agreeableness may display, it is associated with slightly lower pay, lower income mobility, and lower employment rates.

Only belief in science was significantly positively associated with all economic indicators (Figure 3), and only neuroticism was significantly negatively associated with all economic indicators (Figure 4). Counties exhibiting higher scores for belief in science are also regions with higher levels of urbanization (Figure 3).

Counties exhibiting higher scores for neuroticism tended to be those in Appalachia and parts of the rural Midwest (Figure 4).

We observe that dependent variables which could be considered more closely related to individual standards of living – income, employment, income mobility – exhibit a set of relationships that

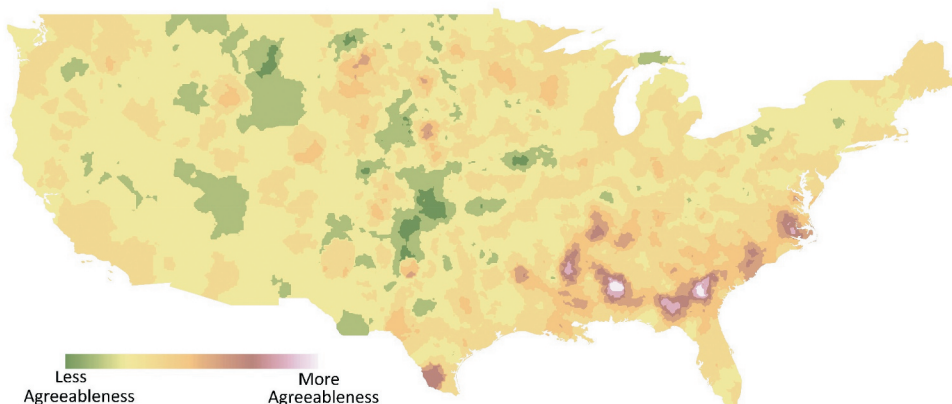


Figure 2. Agreeableness.

Map of the United States depicting county-level agreeableness, with color gradient computed using kriging interpolation

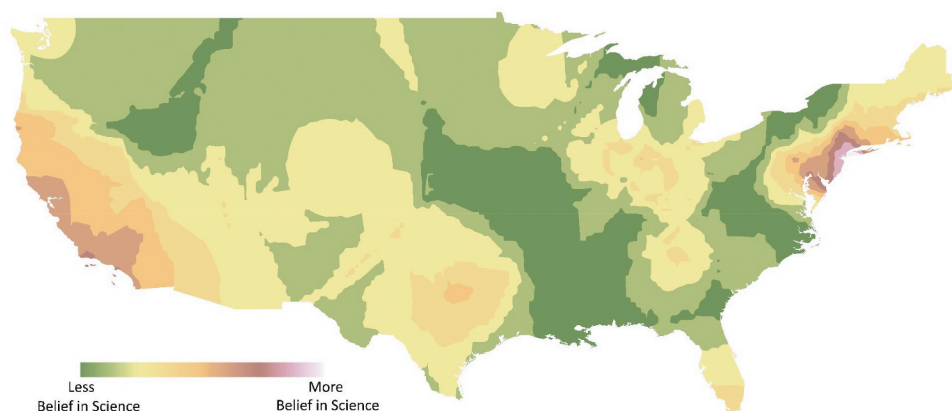


Figure 3. Belief in science.

Map of the United States depicting county-level belief in science, with color gradient computed using kriging interpolation

appear distinct from that of entrepreneurship, which could be considered a more distal economic indicator, whereby the immediate effect increases regional competitiveness with only a long-term potential for influencing living standards. Among the four models tested in this study, entrepreneurship is the only dependent variable exhibiting a significant positive relationship with religiosity; the only dependent variable to exhibit non-significant relationships with collectivism, agreeableness, and risk taking; and the only dependent variable exhibiting a significant negative relationship with extraversion and gender equity. These distinctions may help to explain the perplexing “knowledge paradox” found in numerous highly-developed regions where high research and development inputs coexist with low levels of innovation and new business creation (Audretsch & Keilbach, 2008).

Nevertheless, despite the uniqueness of the model for entrepreneurship, consistencies with prior reports are evident. OLS regression models assembled by Stuetzer et al. (2018) showed positive relationships between entrepreneurship culture (a construct of the Big Five personality traits) and various economic indicators for US metropolitan statistical areas. Obschonka et al. (2015) also used regression modeling of subnational units to find that an entrepreneurial personality profile consisting of greater

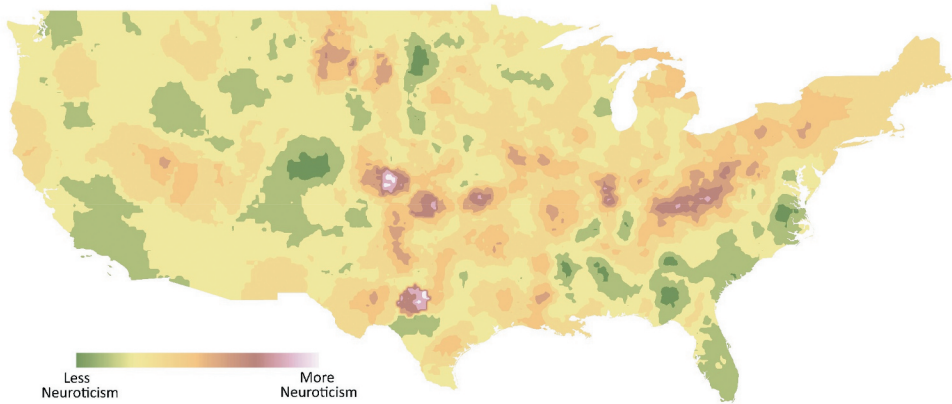


Figure 4. Neuroticism.

Map of the United States depicting county-level neuroticism, with color gradient computed using kriging interpolation

extraversion, greater openness, greater conscientiousness, lower neuroticism, and lower agreeableness was significantly positively associated with US-based rates of entrepreneurship in a sample of 366 US counties. Similarly, our model found that county-level rates of entrepreneurship were significantly positively related to openness, non-significantly positively related to conscientiousness, significantly negatively related to neuroticism, and non-significantly negatively related to agreeableness. Contrarily, our model found a significant negative relationship with extraversion.

Limitations

Our analytical methodology did not account for counties with low sample sizes, which we chose to drop. While a weighting technique could be applied to partly account for discrepancies in sample sizes by county, we felt that the application of this technique would have detracted from the interpretability of analytical findings. In addition, when producing latent constructs from survey data, imputation was not leveraged for counties with missing data for individual survey questions. In this scenario, a county's score for the latent construct would be ascertained only from questions where data were available. This choice may have introduced some unaccounted variability in constructed covariates. Nonetheless, we are confident that the analyses provided are comprehensive and replicable.

In addition, there is the possibility of some endogeneity, where the economic conditions could influence the personality characteristics as much as the other way around. While the literature section carries multiple pieces that would suggest good reason to think that personality of place could be a stronger independent than dependent variable, we acknowledge that dual directionality is possible among some variables and will need continued work to tease out. Our findings point to associations between the variables rather than causal linkages. Finally, we note that findings from ecological data should be considered primarily hypothesis-generating. As such, findings from this study should be replicated among individuals before being considered definitive.

Implications for political and policy outcomes

Not only is the expanded use of psychosocial variables useful for economic understanding, but it also benefits the understanding of political and policy outcomes. For instance, in the few years leading up

to both Arab Spring in Egypt and Brexit in the UK (still pending), while the GDP of both countries remained steady, Gallup World Poll measures revealed precipitous drops in both populations' self-reported sense of wellbeing.¹ A measure of wellbeing shows reveals things about a population that GDP does not. Or in the case of implementing local policy initiatives, Manning et al. (2016) linked measures of life satisfaction to people's willingness to pay for crime reduction programs (Manning et al., 2016). Survey-based research conducted separately in Denmark, the United Kingdom, and the United States has quantified significant relationships between measures of the "Big 5" personality traits (conscientiousness, collectivism, extraversion, neuroticism, and openness) and personal economic ideology on a liberal-conservative spectrum (Bakker, 2017). Haidt (2012) has also linked an understanding of moral foundations to liberal and conservative inclinations.

Conclusion

While traditional measures of a region based on demographic and economic variables will remain important in understanding regional economic growth, the addition of a range of psychosocial or cultural variables lends additional insight. Recent literature shows a rising interest in applying these variables in multiple capacities. While much of that body of work focuses on wellbeing and personality traits, a smaller amount has explored other types of variables. We offer evidence that these variables are not only helpful in explaining economic outcomes, but cluster differently around different types of economic measures. A county or city with higher rates of agreeableness, religiosity, and work importance will have a different set of economic potential and opportunity than a region with, for instance, a higher rate of extroversion, belief in science, and sense of collectivism. While scholars have long explored the importance of personality on individuals, we recommend paying attention to what we are calling the personality of place – the unique constellation of psychosocial factors in a given region. We predict that the continued and expanded use of psychosocial variables will yield promising insights across a host of economic variables, which in turn will enhance our ability to look for opportunities for regional economic development.

Highlights

- This is a contribution to an area of economic study that is greatly in need of more work: blending social psychological variables into the study of regional economics.
- We provide a novel set of findings about what psychosocial characteristics are associated with economic outcomes.
- We believe this research note will prove provocative to some readers and inspire future research.

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¹Reported in a speech by Jon Clifton of Gallup in 2018: https://www.youtube.com/watch?time_continue=116&v=7gYHuCYnnT8.

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Appendix A: The “Big 5” Personality Trait Items

Scored using Likert style 1–5 ranges. See Goz Labs for more specifics: (<https://gosling.psy.utexas.edu/>).

Agreeableness

- I am helpful and unselfish with others.
- I tend to find fault with others.
- I tend to start quarrels with others.
- I have a forgiving nature.
- I am generally trusting.
- I can be cold and isolated.
- I am considerate and kind to almost everyone.
- I am sometimes rude to others.
- I like to cooperate with others.

Conscientiousness

- I can be somewhat careless.
- I carry out my job thoroughly.
- I am a reliable worker.
- I tend to be disorganized.
- I tend to be lazy.
- I persevere until the task is finished.
- I do things efficiently.
- I make plans and follow through with them.
- I am easily distracted.

Extraversion

- I see myself as someone who is reserved.
- I am talkative.
- I am full of energy.
- I am passionate and spirited.

- I tend to be quiet.
- I have an assertive personality.
- I am sometimes shy and inhibited.
- I am outgoing and sociable.

Neuroticism

- I am relaxed and can handle stress well.
- I am depressed and blue.
- I can be tense.
- I worry a lot.
- I am emotionally stable and not easily upset.
- I can be moody.
- I remain calm in tense situations.
- I get nervous easily.

Openness

- I am curious about many things.
- I always come up with new ideas.
- I am a creative and a deep thinker.
- I have an active imagination.
- I am inventive.
- I value artistic experiences.
- I prefer work that is routine.
- I like to reflect and play with ideas.
- I have few artistic interests.
- I am advanced in art, music, or literature.

Appendix B: “Belief” Items from the General Social Survey (GSS)

Scoring styles vary across items. See GSS codebook for more specifics (http://gss.norc.umd.edu/documents/codebook/gss_codebook.pdf)

Belief in Science

- Even if it brings no immediate benefits, scientific research that advances the frontiers of knowledge is necessary and should be supported by the federal government.
- Science and technology are making our lives, healthier, easier, and more comfortable.
- We believe too often in science, and not enough in feelings and faith.

Gender Equity

- Both the husband and the wife should contribute to the household income.
- It is not good if the man stays at home and cares for the children and the woman goes out to work.
- It is more important for a wife to help her husband’s career than to have one herself.
- It is much better for everyone involved if the man is the achiever outside the home, and the woman takes care of the home and family.
- How important is the women’s rights issue to you—would you say it is one of the most important, important, not very important, or not important at all?
- All in all, family life suffers when the woman has a full-time job.

Hopefulness

- I can think of many ways to reach my current goals.
- If I should find myself in a jam, I could think of many ways to get out of it.
- There are lots of ways around any problem that I am facing now.
- I hardly ever expect things to go my way.
- I’m always optimistic about my future.
- If something can go wrong for me, it will.

Religiosity

- I ask for God’s help in the midst of daily activities.
- I desire to be closer to God or in union with Him.
- To me, life is meaningful only because God exists.
- How religious would you describe yourself as ...
- About how often do you pray?
- It’s important to obey church teaching even if I don’t understand them.
- Please look at this card and tell me which statement comes closest to expressing what you believe about God.

Selflessness

- I am usually willing to sacrifice my own wishes to let the one I love achieve his/hers.
- I cannot be happy unless I place the one I love’s happiness before my own.
- I would endure all things for the sake of the one I love.
- I would rather suffer myself than let the one I love suffer.
- Personally assisting people in trouble is very important to me.

Tolerance

- All religious groups in America should have equal rights.
- I accept others even when they do things I think are wrong.
- Would you accept a person from a different religion or with a very different religious view from yours, being a candidate of the political party you prefer?

Appendix C: Social Dynamics” Items from the General Social Survey (GSS)

Scoring styles vary across items. See GSS codebook for more specifics (http://gss.norc.umd.edu/documents/codebook/gss_codebook.pdf)

Collectivism

- Adult children have a duty to look after their elderly parents.
- People who are better off should help friends who are less well off.
- Those in need have to learn to take care of themselves and not depend on others.
- When there are children in the family, parents should stay together even if they don't get along.

Conflict Awareness

In all countries, there are differences or conflicts between different social groups. In your opinion, in America, how much conflict is there between:

- poor people and rich people?
- people at the top of society and people at the bottom?
- young people and older people?
- management and workers?
- the working class and middle class?

Empathy

- I often have tender, concerned feelings for people less fortunate than me.
- Other people's misfortunes do not usually disturb me a great deal.
- When I see someone being taken advantage of, I feel kind of protective towards them.
- When I see someone being treated unfairly, I sometimes don't feel very much pity for them.

Risk Taking

- In order to avoid unemployment, I would be willing to accept a job requires new skills.
- In order to get a job, I would be willing to move to a different country.

Work Importance

- Work is a person's most important activity.
 - A job is just a way of earning money – no more.
 - Which of the following statements best describe your feelings about the job?
 - Would you please look at this card and tell me which one thing on this list you would most prefer in a job? *"Work importance and gives a feeling of accomplishment."
-

Appendix D: Descriptive Statistics for Independent Variables at the County Level

Covariates	Descriptive Statistics (County Level)				
	Mean	Std. Deviation	25th Percentile	Median	75th Percentile
Agreeableness	85.23	2.23	84.20	85.25	86.33
Conscientiousness	83.01	2.22	81.85	83.02	84.12
Extraversion	87.01	2.32	85.93	87.18	88.28
Neuroticism	78.39	2.63	76.81	78.28	79.84
Openness	78.78	1.99	77.63	78.78	79.89
Belief in Science	67.87	8.72	63.47	67.95	73.21
Collectivism	67.66	8.88	62.50	67.80	73.33
Conflict Awareness	61.92	9.07	56.63	62.14	67.50
Empathy	79.83	7.91	76.50	80.24	84.48
Gender Equality	68.73	6.73	64.42	68.87	72.31
Hopefulness	84.34	6.94	80.53	84.59	89.03
Religiosity	70.23	9.30	64.11	68.94	75.58
Risk-Taking	73.13	16.32	60.00	75.00	86.67
Selflessness	76.92	8.77	72.30	76.92	82.85
Tolerance	69.55	9.83	63.77	70.00	76.07
Work Ethic	70.02	8.43	64.95	69.83	74.33

Appendix E: Correlation Matrix for Independent Variables

	Agreeableness	Belief in Science	Collectivism	Conflict Awareness	Conscientiousness	Empathy	Extraversion	Gender Equality	Hopefulness	Neuroticism	Openness	Religiosity	Risk-Taking	Selflessness	Tolerance	Work Ethic
Agreeableness																
Belief in Science	-0.136															
Collectivism	0.072	0.054														
Conflict Awareness	0.062	-0.1	-0.069													
Conscientiousness	0.628	-0.2	0.043	0.137												
Empathy	0.069	0.055	0.262	0.081	0.12											
Extraversion	0.205	-0.14	-0.07	0.002	0.167	0.056										
Gender Equality	0.011	0.02	0.008	0.089	0.002	-0.014	-0.001									
Hopefulness	0.024	0.109	0.02	-0.062	0.026	-0.005	0.105	-0.062								
Neuroticism	-0.415	-0.072	0.006	-0.051	-0.399	-0.008	-0.297	-0.075	-0.206							
Openness	-0.133	0.232	0	0.038	0.017	-0.08	-0.026	0.014	0.164	-0.104						
Religiosity	0.255	-0.261	-0.04	0.022	0.211	0.178	0.074	0.023	-0.076	0.006	-0.301					
Risk-Taking	0.063	0.075	0.109	0.02	0.02	0.036	0.02	-0.08	0.156	-0.126	0.016	-0.21				
Selflessness	0.085	0.093	0.055	-0.05	0.047	0.209	-0.05	-0.101	-0.033	-0.09	-0.016	0.098	0.157			
Tolerance	-0.024	0.196	0.015	-0.035	-0.082	0.102	-0.035	-0.176	0.168	-0.042	0.109	-0.067	0.144	0.303		
Work Ethic	-0.069	0.014	-0.104	0.079	-0.041	0.031	-0.039	0.003	-0.073	0.043	0.013	0.005	-0.026	0.008	-0.013	

Bold values indicate statistically significant pairwise comparison ($p < 0.01$)