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Open science: a growth opportunity for geographical psychology

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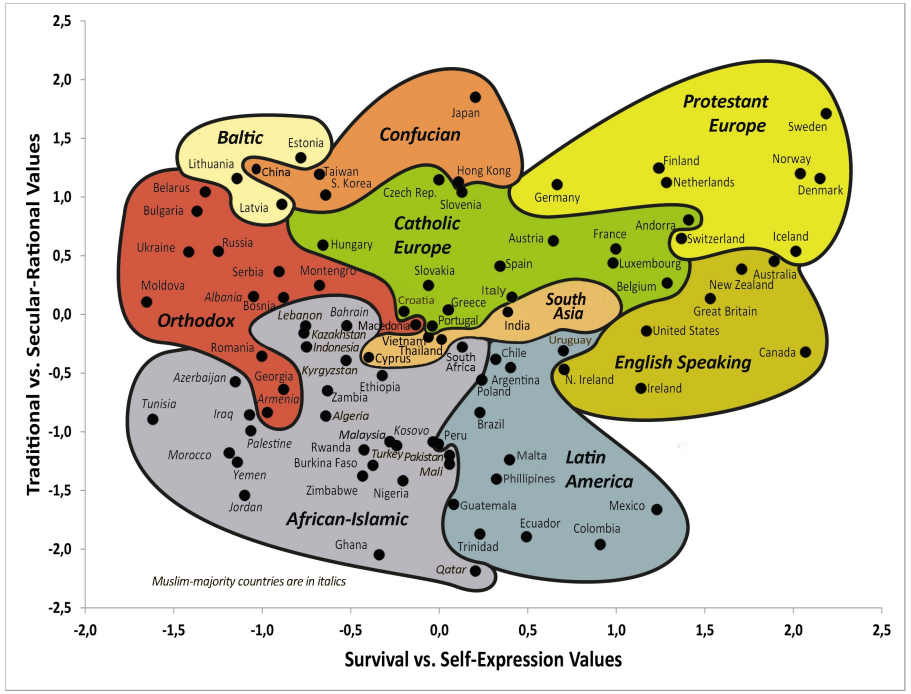
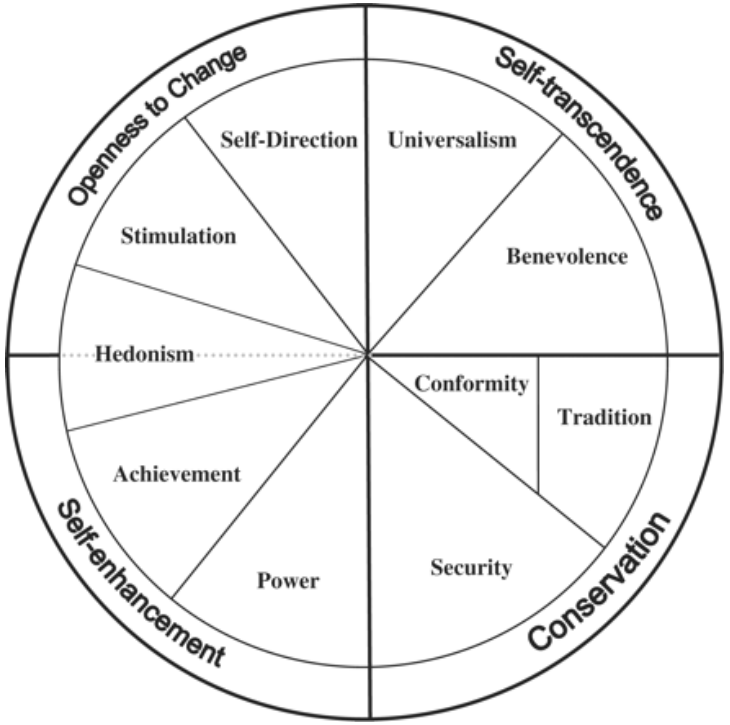
Introduction

- The modern „roots” of geographical psychology:
  - Cultural variations between countries: cross-cultural psychology
    - Variations within-country are smaller than variations between countries (Welzel, 2013);





Introduction

- Country-level differences in psychological characteristics:
  - Basic psychological characteristics, such as personality traits are similar and can be measured across countries (McCrae et al., 2005a; Schmitt et al., 2007);
    - Similar factor structure; similar age differences; similar pattern of associations.
  - Aggregated scores can be used as descriptors for the psychological profile of a certain country (McCrae et al., 2005b);
    - Culture does not alter the factor structure; convergence of different regions; correlates with other cultural characteristics.
    - Some psychological characteristics (e.g., personality traits) seem to be clustered.
  - These characteristics are related to important indicators of country level functioning (psychological, economical and societal; PESH; Rentfrow, 2020).

Journal of Personality and Social Psychology
2005, Vol. 89, No. 3, 407–425

In the public domain
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Personality Profiles of Cultures: Aggregate Personality Traits

Robert R. McCrae and Antonio Terracciano
National Institute on Aging, National Institutes of Health, Department of Health and Human Services

79 Members of the Personality Profiles of Cultures Project

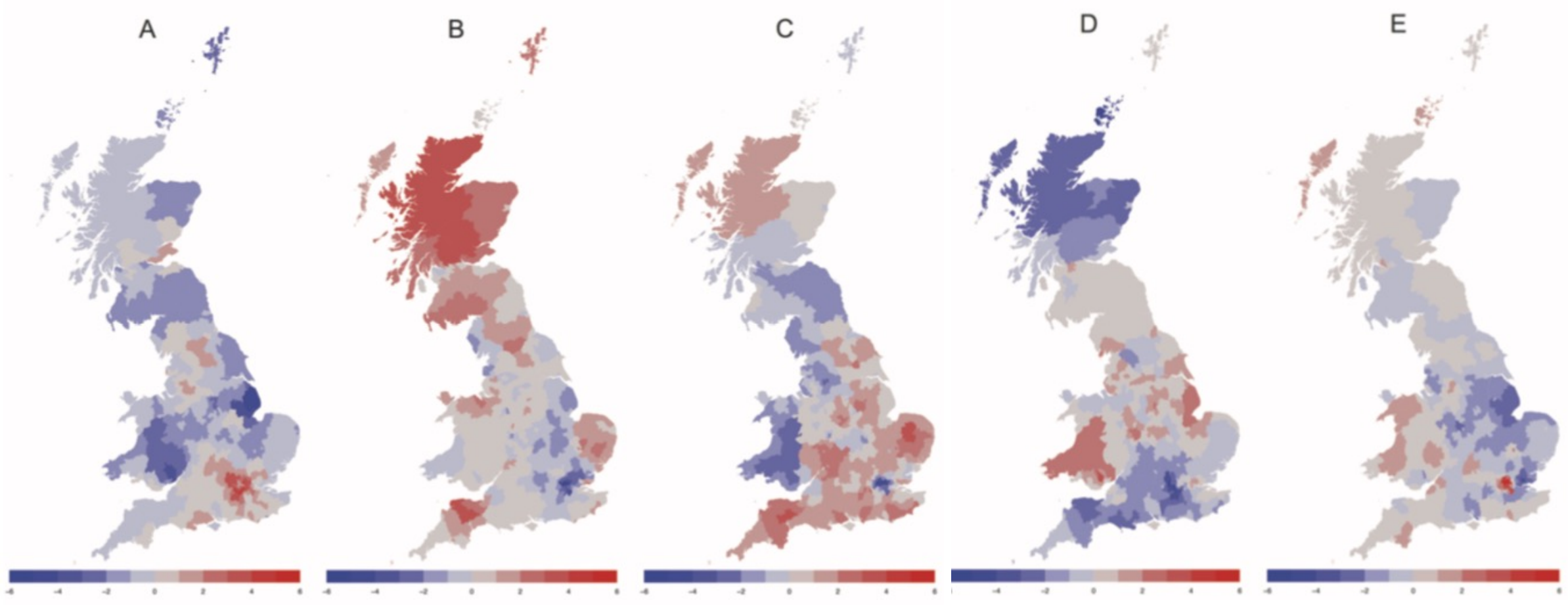
Table 3
Culture-Level Correlates of NEO-PI-R Form R Factors

Criterion	Factor				
	N	E	O	A	C
Organizational attitudes (N = 34; Smith, Dugan, & Trompenaars, 1996)					
Conservatism vs. egalitarian commitment	−.02	.46[b]**	.34*	.26	−.21
Loyal involvement vs. utilitarian involvement	−.01	.00	−.17	−.31	.03
Subjective well-being (N = 35; Diener, Diener, & Diener, 1995)	.01	.63[b,c]***	.35*	.48**	−.02
Economic indicators					
Gross domestic product per capita (N = 51)	.04	.44[b]***	.47[b]***	.46***	.02
Gini Index (N = 40)	−.02	−.08	−.25	−.26	.11
Human Development Index (N = 48)	.02	.54[b,c]***	.34[b]*	.40**	.25[c]

Geographical psychology

- *Geographical psychology* is an emerging subarea of research concerned with the spatial organization of psychological phenomena and how individual characteristics, social entities, and physical features of the environment contribute to their organization (Rentfrow & Jokela, 2016).
  - A complex interaction between physical (and biological), social, economic and psychological characteristics;
  - Multiple possible casual pathways on a large historical time-frame (e.g., Chiao & Blizinsky, 2010);
  - Not restricted to country-level analysis.

Fig 1. Heat maps of the geographical distribution of personality in Great Britain by LAD. (A) Regional differences in Extraversion. (B) Regional differences in Agreeableness. (C) Regional differences in Conscientiousness. (D) Regional differences in Neuroticism. (E) Regional differences in Openness. For each personality trait, the areas in blue are comparatively low and the areas in red are comparatively high.



Rentfrow, Jokela, & Lamb (2015). PLOSOne

Table 4. Associations between Personality and Demographic, Political, Economic, Social, and Health indicators at the LAD.

	Extraversion		Agreeableness		Conscientiousness		Neuroticism		Openness	
Geographical indicators	*r*	*pr*	*r*	*pr*	*r*	*pr*	*r*	*pr*	*r*	*pr*
Demographic										
Age	**-.20**		**.47**		**.60**		**-.22**		**-.31**	
Female	-.05		**.27**		.19		-.01		-.16	
Caucasian	**-.28**	-.14	**.46**	.14	**.50**	.05	-.07	.10	**-.42**	-.16
Political[a]										
Conservative 2005	.13	.14	.03	**-.21**	**.51**	**.24**	**-.30**	-.07	-.16	-.08
Conservative 2010	.11	.12	.03	**-.20**	**.51**	**.28**	**-.27**	-.04	-.18	-.11
Labour 2005	-.16	**-.21**	-.08	.16	**-.45**	-.12	**.42**	**.29**	-.07	**-.23**
Labour 2010	-.09	-.16	-.12	.17	**-.54**	**-.23**	**.40**	**.25**	.07	-.11
Liberal Democrat 2005	.13	.16	-.04	-.14	.08	-.12	**-.25**	**-.25**	**.28**	**.39**
Liberal Democrat 2010	.10	.14	-.05	-.19	.11	-.13	**-.24**	**-.23**	**.24**	**.37**
Economic										
Median annual income in 2011[b]	**.35**		**-.48**		**-.26**		-.14		**.42**	
Proportion of residents with higher degree	**.55**	**.41**	**-.34**	-.14	-.10	.02	**-.41**	**-.41**	**.65**	**.53**
Managerial and professional occupations	**.61**	**.48**	**-.36**	-.18	-.01	.12	**-.41**	**-.37**	**.53**	**.40**
Service and administrative occupations	**-.33**	**-.22**	**.23**	**.20**	-.08	.06	**.35**	**.24**	**-.51**	**-.49**
Trade occupations	**-.62**	**-.51**	**.36**	.13	.05	-.18	**.35**	**.36**	**-.43**	**-.27**
Social										
Foreign-born residents	**.38**	**.21**	**-.52**	-.19	**-.47**	-.05	-.02	-.18	**.56**	**.29**
Married residents	-.18	-.05	**.49**	.15	**.72**	**.29**	**-.29**	-.06	**-.52**	**-.29**
Same-sex partnerships	**.35**	.18	**-.56**	**-.31**	**-.43**	-.19	.06	.02	**.62**	**.42**
Violent crime[c]	.07	-.10	**-.45**	-.11	**-.53**	-.16	**.21**	.14	**.35**	.09
Health										
Male Life expectancy[d]	**.26**	**.25**	.00	-.15	**.46**	**.34**	**-.41**	**-.26**	.03	.10
Female Life expectancy[d]	**.32**	**.30**	-.06	-.19	**.37**	**.28**	**-.40**	**-.28**	.14	**.20**
Long-term health problems	**-.36**	**-.25**	.17	.09	**-.20**	**-.31**	**.42**	**.36**	**-.20**	-.08
Stroke mortality[e]	**-.24**	-.15	-.02	-.08	-.15	**-.20**	**.26**	.17	-.08	-.02
Cancer mortality[e]	**-.25**	**-.26**	-.06	.10	**-.44**	**-.26**	**.48**	**.37**	-.11	**-.23**
Heart disease mortality[e]	**-.24**	**-.24**	-.03	.11	**-.40**	**-.25**	**.43**	**.31**	-.11	-.19

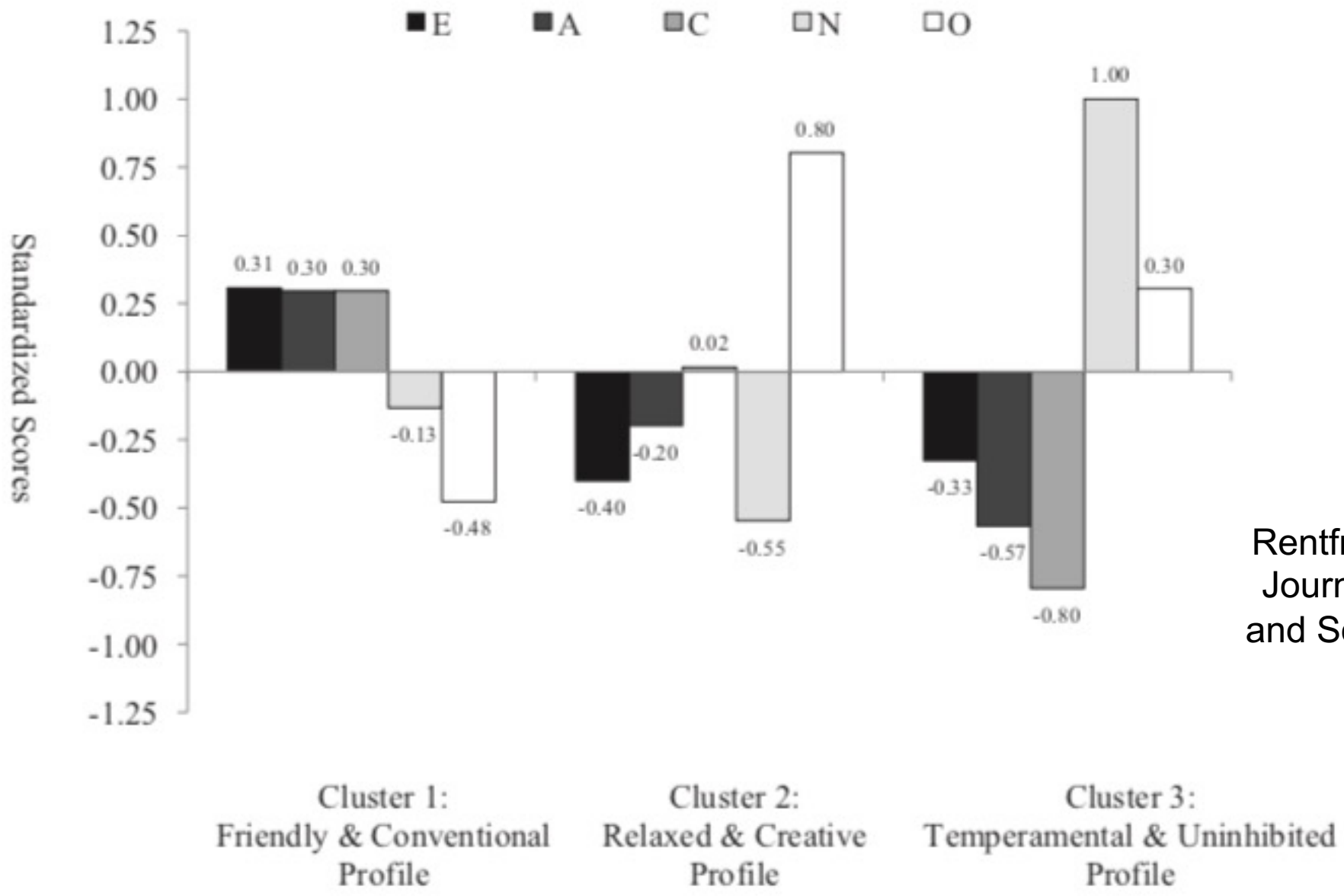
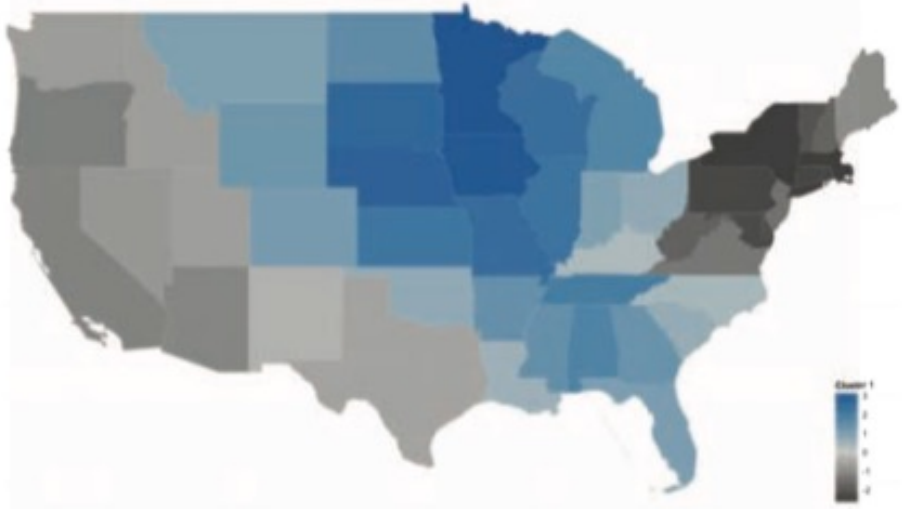


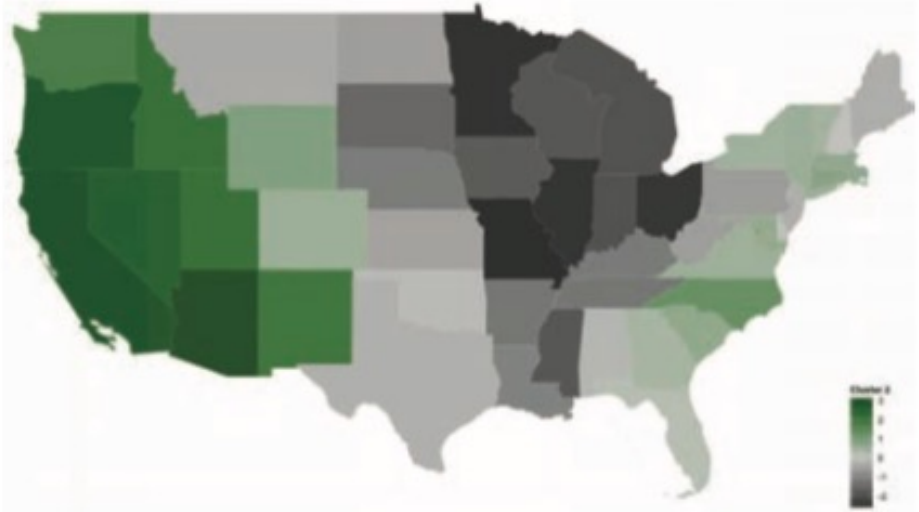
Figure 1. Mean Big Five standardized scores by cluster profile. E = Extraversion; A = Agreeableness; C = Conscientiousness; N = Neuroticism; O = Openness.

Rentfrow et al. (2015). Journal of Personality and Social Psychology

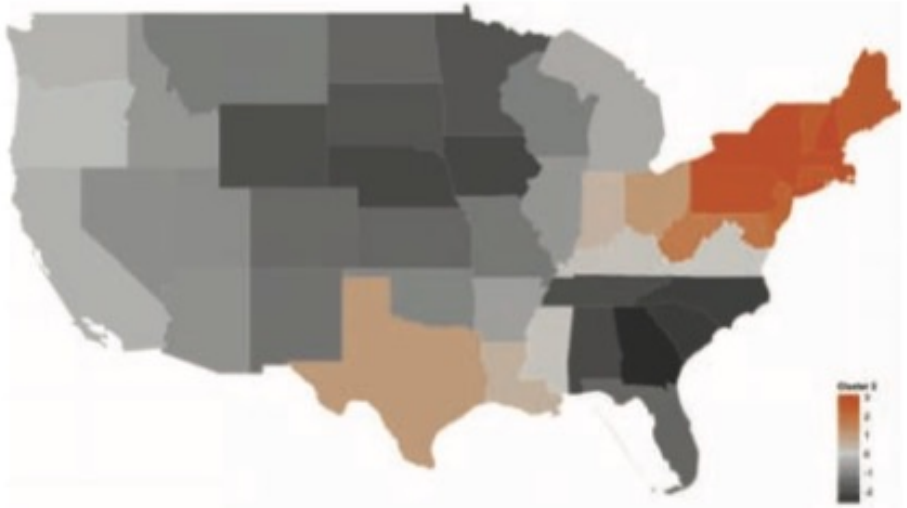
A. Cluster 1: Friendly & Conventional Region



B. Cluster 2: Relaxed & Creative Region



C. Cluster 3: Temperamental & Uninhibited Region



Rentfrow et al. (2015). Journal of Personality and Social Psychology

Figure 2. Maps of multistate personality clusters. Cluster scores were based on the *z*-transformed profile correlations between the state-level personality scores from the combine samples and the cluster centers. The colored areas are hotspots derived from the Getis-Ord G* statistic.

Table 3

Correlations Between State Prototypicality Scores for Three Regional Personality Clusters and State-Level Indicators

State-level indicator	Cluster		
	1: Friendly & Conventional region	2: Relaxed & Creative region	3: Temperamental & Uninhibited region
Demographic			
Women	−.22	−.16	.39*
Non-Whites	−.26†	.52*	−.10
Mdn age	−.18	−.17	.44*
Political/Ideological			
Votes for Republicans	.50*	−.35*	−.42*
Mainline Protestants	.43*	−.49*	−.24*
Economic			
Wealth	−.42*	.35*	.28*
Human capital	−.50*	.47*	.26†
Innovation	−.42*	.45*	.22
Sociological			
Social capital	.34*	−.37*	−.14
Social tolerance	−.38*	.54*	.08
Violent crime	−.17	.24†	.01
Residential mobility	.12	.27†	−.38*
Health			
Well-being	−.23	.47*	−.06
Health behavior	−.46*	.56*	.15

Rentfrow et al. (2015). Journal of Personality and Social Psychology

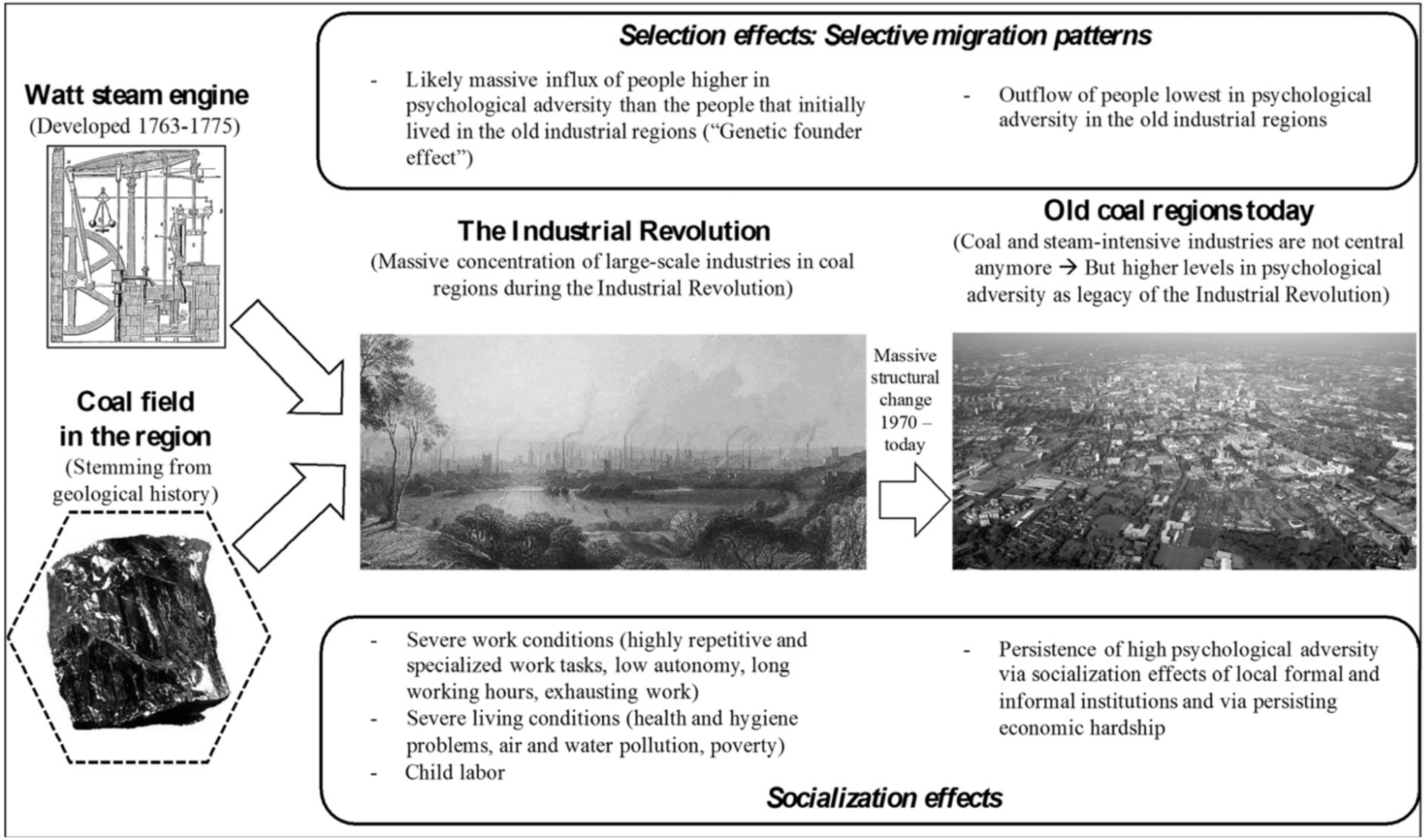
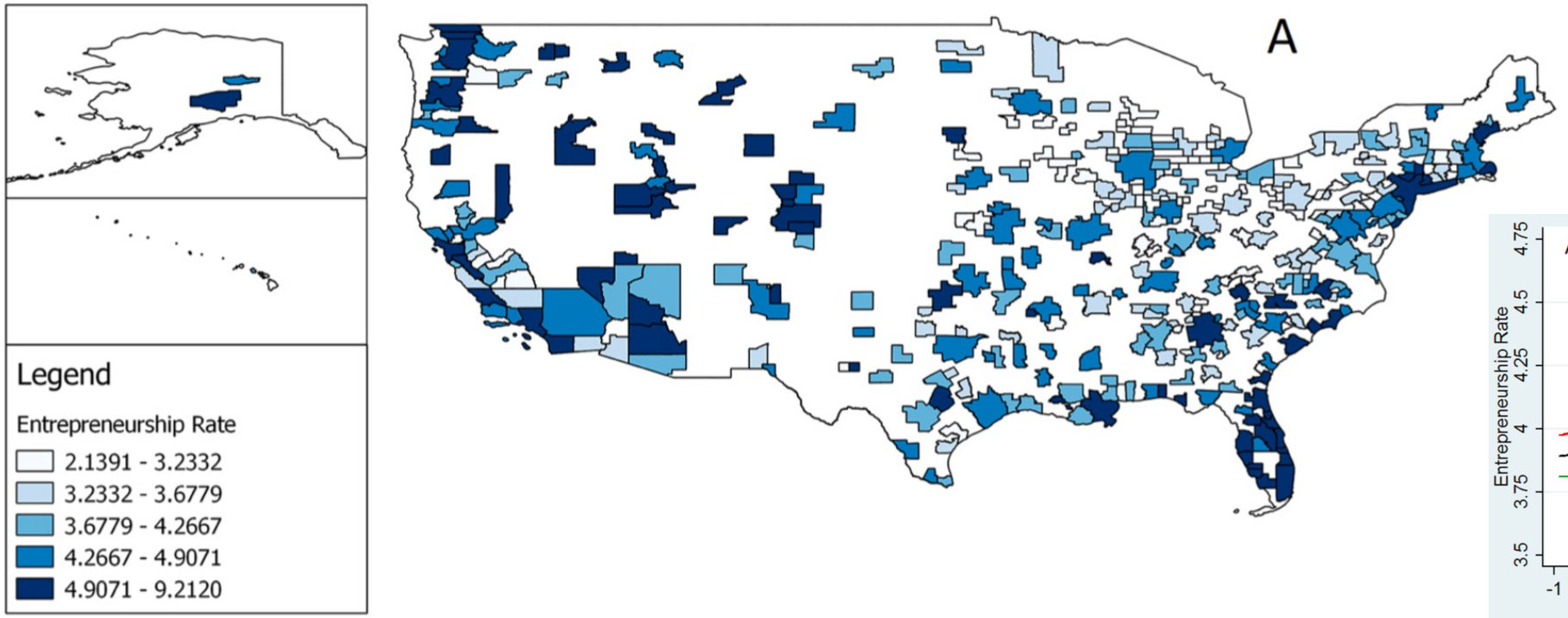
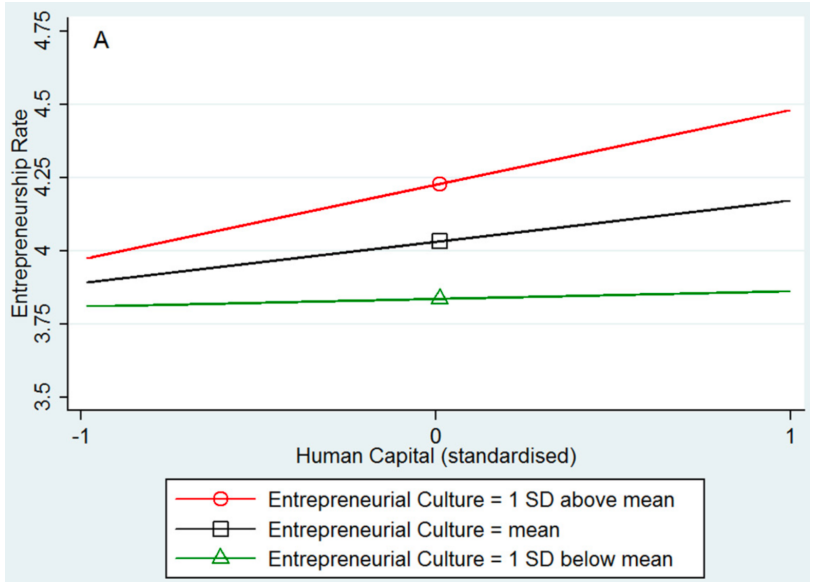


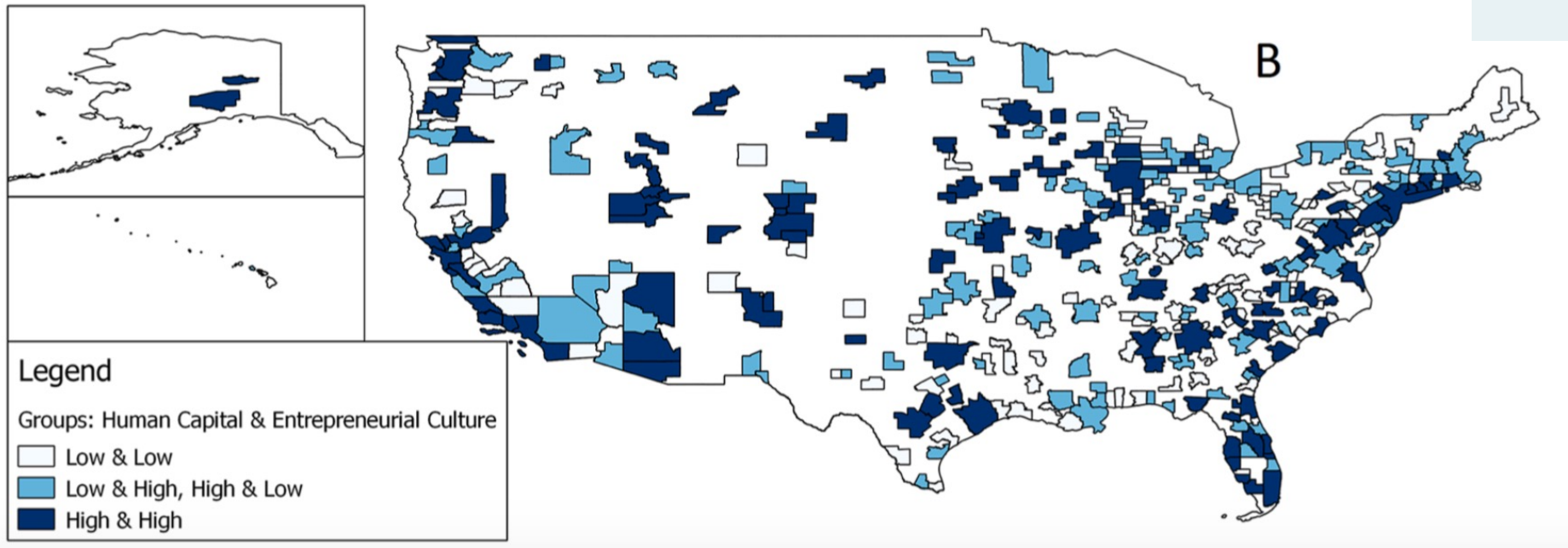
Figure 1: Mechanisms through which natural coal resources have left a sustainable psychological imprint in the old industrial regions: Temporally unfolding processes of a) selective migration patterns and b) socialization effects.

Note. Picture in the middle: "Cottonopolis" Manchester during the Industrial Revolution. Picture in the right side: Aerial view of Manchester city center in 2008 without steam-

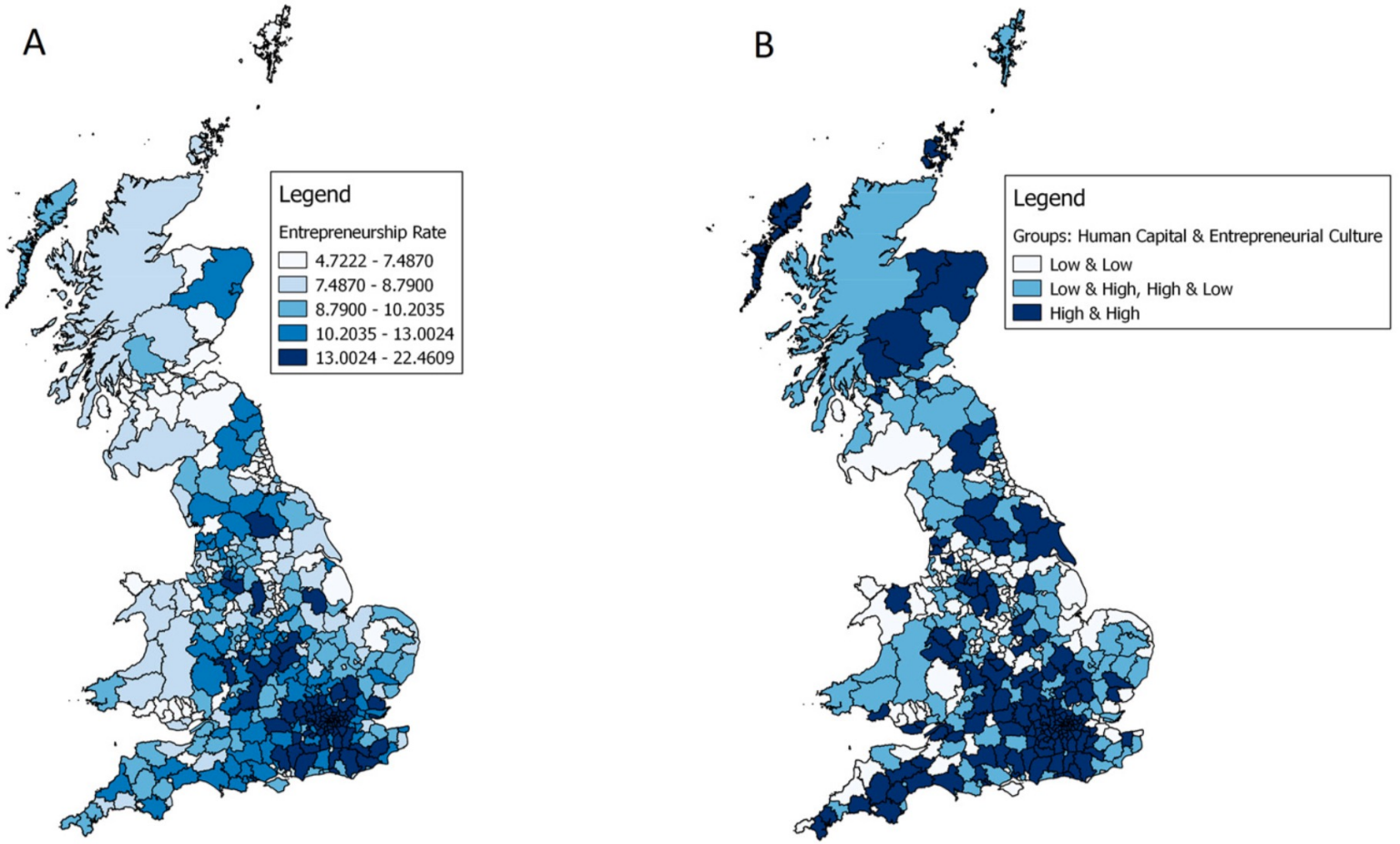
Obschonka et al. (2018). Journal of Personality and Social Psychology

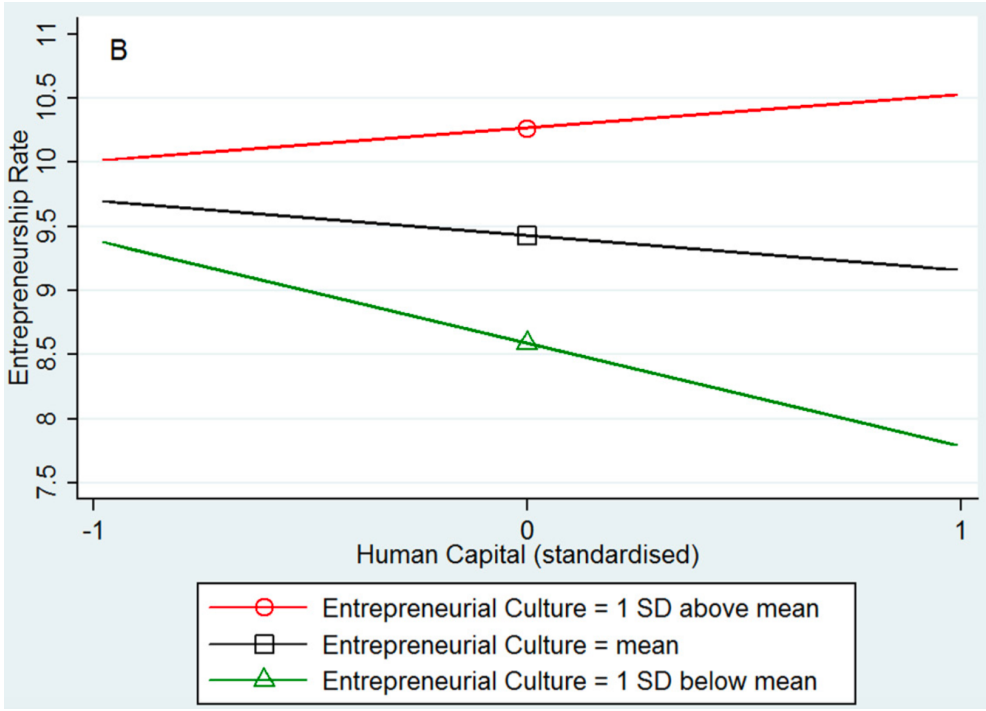






Obschonka et al. (2015).



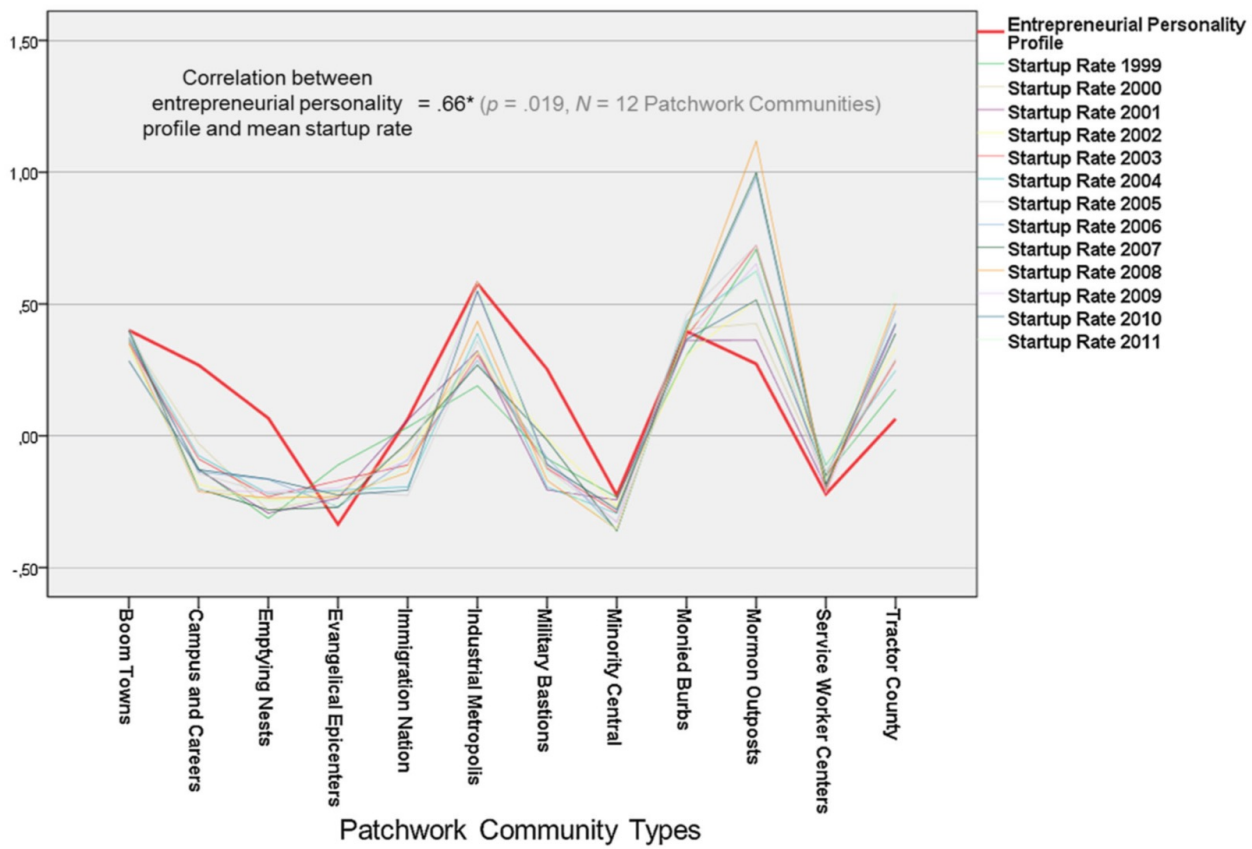


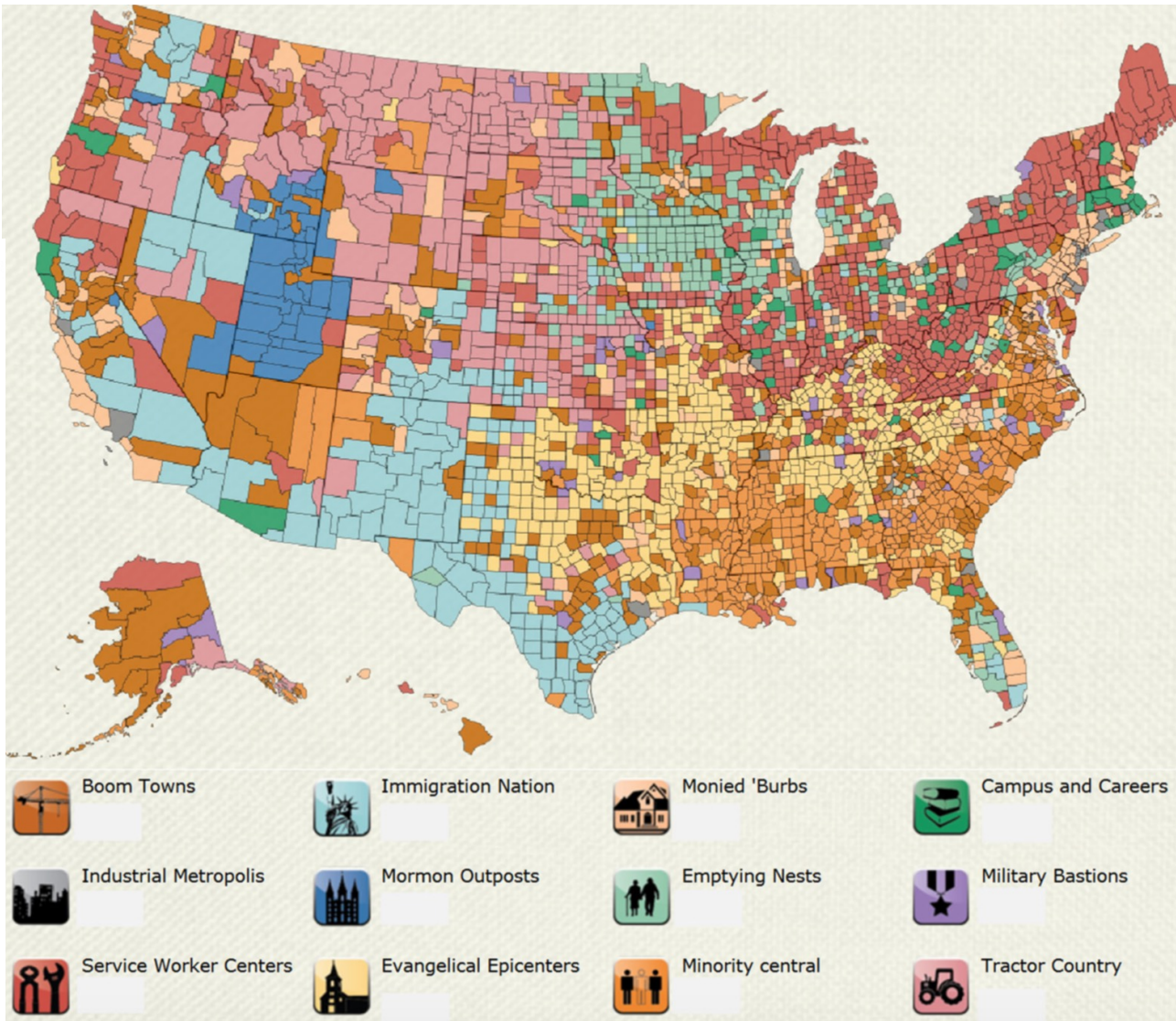
Obschonka et al. (2015)

Small Bus Econ (2017) 48:681–697
DOI 10.1007/s11187-016-9787-9

A new perspective on entrepreneurial regions: linking cultural identity with latent and manifest entrepreneurship

David B. Audretsch · Martin Obschonka · Samuel D. Gosling · Jeff Potter





PNAS

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SEE COMMENTARY

Geographically varying associations between personality and life satisfaction in the London metropolitan area

Markus Jokela[a,b,1], Wiebke Bleidorn[c,d], Michael E. Lamb[b], Samuel D. Gosling[e], and Peter J. Rentfrow[b]

[a]Institute of Behavioural Sciences, University of Helsinki, 00014 Helsinki, Finland; [b]Department of Psychology, University of Cambridge, Cambridge CB2 3RQ, United Kingdom; [c]Department of Developmental Psychology, Tilburg University, 5000 LE Tilburg, The Netherlands; [d]Department of Psychology, University of California, Davis, CA 95616; and [e]Department of Psychology, University of Texas, Austin, TX 78712-1043

Table 2. Selected sociodemographic and personality correlates of regression slopes of personality scores predicting life satisfaction in different postcode districts

	E	S	A	C	O
Population structure					
% Older people (65+)	—	—	—	−23	−27
% Couple households with children	—	—	24	—	−35
Fertility rate	—	—	24	—	—
Population density	—	—	—	—	33
% White ethnic background	—	—	−17	−14	−22
Physical environment and housing					
Mean house price	—	—	−22	−17	19
% Domestic gardens	—	—	14	—	−21
% Nondomestic buildings	—	—	—	—	27
% Greenspaces	—	—	—	—	−22
Social indicators					
Turnout borough election	—	—	—	−22	−17
Income rank	—	—	—	−22	−17
Psychological variables					
Extraversion	—	—	−16	−18	20
Emotional stability	—	—	—	—	—
Agreeableness	—	—	—	—	−13
Conscientiousness	—	—	—	−19	−16
Openness to experience	—	—	−18	—	47
Life satisfaction	—	—	−27	−30	—

Correlations are reported as $r \times 100$. All correlations with absolute value $\geq$ 14 are statistically significant ($n = 216$ postcode districts) and only these are shown. The full correlation table is shown in *SI Appendix*, Table S2. A, agreeableness; C, conscientiousness; E, extraversion; O, openness to experience; S, emotional stability (low neuroticism).

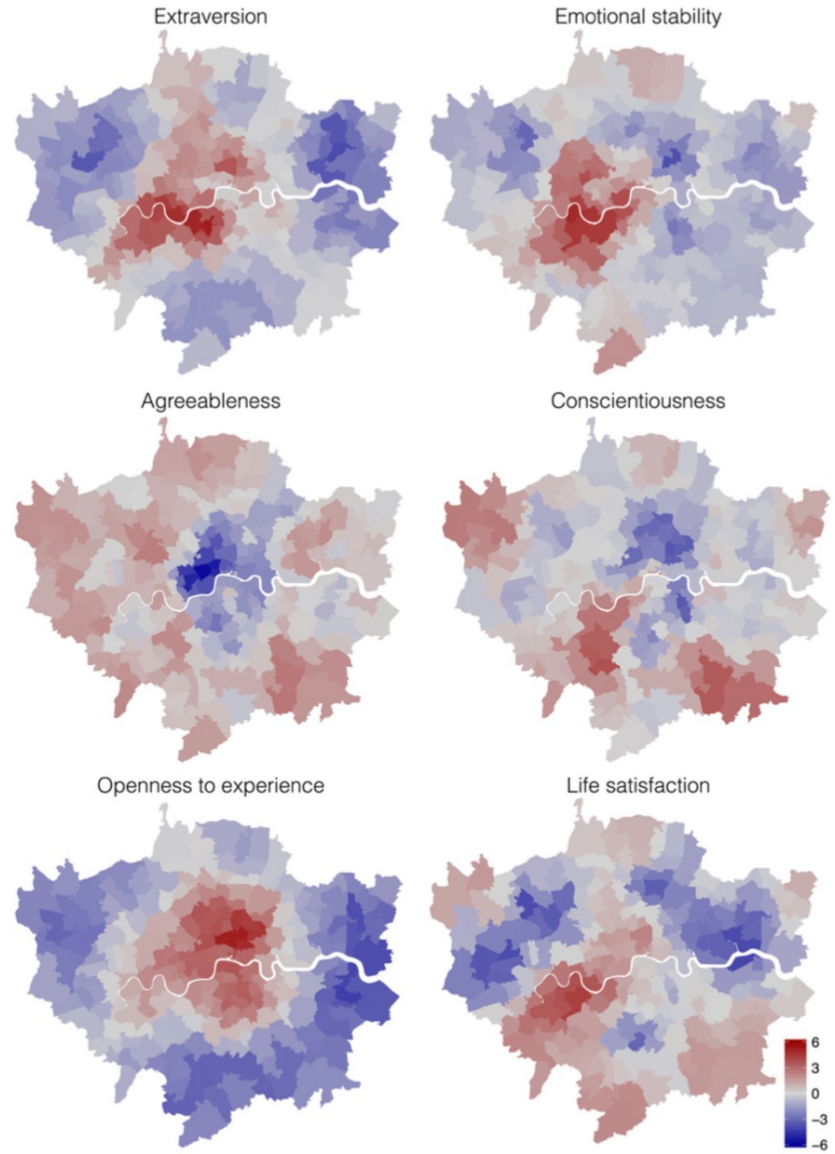


Fig. 1. Clustering of high (red) and low (blue) values of personality traits and life satisfaction. Values are Getis-Ord G* estimates with values above 1.96 and below −1.96 indicating statistically significant clustering. The outline of the Thames River running through London is shown in white.

Cambridge Journal of Regions, Economy and Society 2018, **11,** 165–175
doi:10.1093/cjres/rsx031
Advance Access publication 5 February, 2018

Brexit and the relevance of regional personality traits: more psychological Openness could have swung the regional vote

Harry Garretsen[a], Janka I. Stoker[a], Dimitrios Soudis[a], Ron L. Martin[b] and Peter Jason Rentfrow[c]

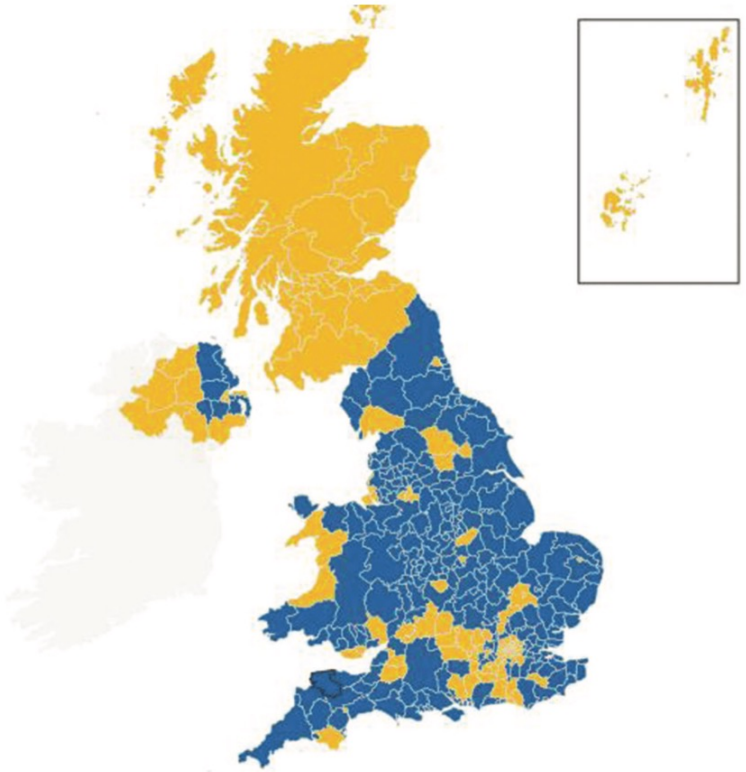


Figure 1. *The Brexit vote across the UK local authority districts (LADs).*
Note: Blue (dark) = LAD districts with Leave majority; orange (light) = LAD districts with Remain majority.
Source: http://www.bbc.com/news/uk-politics-36616028.

Table 1. *The Remain vote share explained for the UK local authority districts.*

	Dependent variable		
	Remain vote (% of total district vote)		
	(1)	(2)	(3)
Extraversion		−16.701*	−2.682
		(9.174)	(5.099)
Agreeableness		49.183***	31.696***
		(13.564)	(7.658)
Neuroticism		−38.104***	4.938
		(10.512)	(5.583)
Openness		87.654***	30.848***
		(6.177)	(4.126)
Conscientiousness		−34.634***	−15.596***
		(10.702)	(5.990)
Population (× 1.000)	0.005**		0.005**
	(0.002)		(0.002)
Manufacturing (% of total employment)	−0.259***		−0.198***
	(0.083)		(0.068)
Unemployment (% of active population)	0.587**		0.383
	(0.265)		(0.257)
Age (median)	−0.477***		−0.453***
	(0.085)		(0.077)
Higher Education (% of population)	1.199***		0.933***
	(0.095)		(0.090)
# Educational Qualifications (% population)	0.152		−0.122
	(0.146)		(0.143)
Immigration (% of population)	−0.149***		−0.166***
	(0.045)		(0.037)
Scotland dummy	15.732***		15.596***
	(0.995)		(1.096)
Constant	28.784***		−138.279***
	(5.509)		(52.759)
Observations	380	380	380
Adjusted R^2	0.866	0.643	0.891

Note: *$p < 0.1$, ** $p < 0.05$, *** $p < 0.01$, with standard errors between brackets.
Source: Big Five data based on Rentfrow et al. (2015), other dependent variables, except Scotland dummy, https://www.ons.gov.uk/ for 2011; vote: http://www.electoralcommission.org.uk/our-work/our-research/electoral-data.

Problems & opportunities

- Casual mechanism are little explored (and probably difficult to);
  - We need both data, but also theory; complex interactions are largely unexplored.
- A new way in which psychological science could inform policy making.
- We need large & representative data-sets, that are standardized (including geographical location), easily available, at country- and regional level resolution.
- WVS & Open-Source Psychometrics Project are great examples from cross-cultural and personality psychology;
  - Some are not representative or are missing location information (we need more than just country, for many research questions).

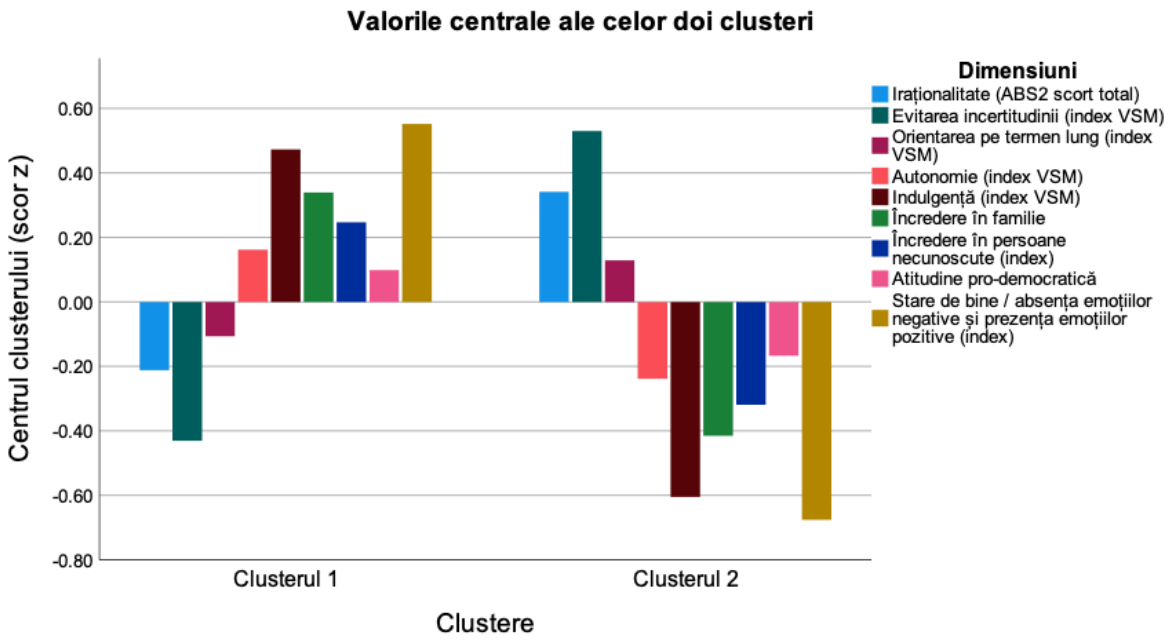
Open Science

- Always make your dataset available, as detailed as possible, including location information.
  - Wasteful science: large representative samples that have unavailable data.
- Not just psychological measures, but also, biological, social, economic, historical and geographical information.
- Integration it is verry difficult and challenging: share the integrated data set; make your data available to the public and policy makers in a way that they can use it.

The ROPSY project & dataset

- The project “Understanding and modeling time-space patterns of psychology-related inequalities and polarization” (PI: Prof. D. David): http://ropsy.granturi.ubbcluj.ro/
  - Psychological & cultural (CAPI; national representative sample but not regional):
    - 1st wave: N = 3025; 2nd wave: N = 1950 (longitudinal design; wave 2 not yet integrated)
    - Psychological: Hofstede’s cultural dimensions; rational & irrational beliefs; positive and negative emotions; negative life events; life satisfaction; democratic attitudes;
  - Sustainable developmental goals (e.g., mobility and accessibility related to road infrastructure), spatial and economic inequality (e.g., GINI based on night lights); up to 90 indicators;
  - Economic indicators: local GDP and GINI-like measures (based on taxation reports).

Clustering of traits



Percentage in each cluster

(NUTS 2)

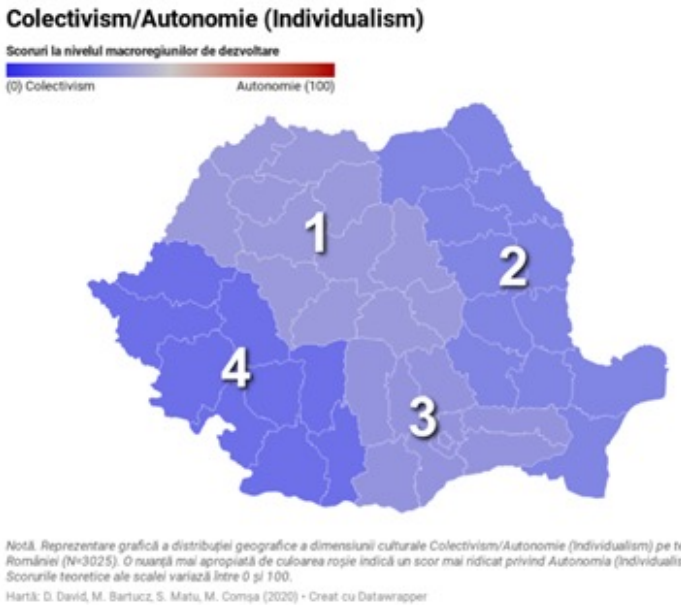
Regions	Cluster 1	Cluster 2
Nord-Vest	64.80%	35.20%
Centru	59.50%	40.50%
Nord-Est	56.10%	43.90%
Sud-Est	54.50%	45.50%
Sud-Muntenia	53.60%	46.40%
București-Ilfov	58.90%	41.10%
Sud-Vest Oltenia	52.90%	47.10%
Vest	61.90%	38.10%

$N = 2583$

Psychological maps

Notă. Reprezentare grafică a distribuției geografice a dimensiunii culturale Colectivism/Autonomie (Individualism) pe teritoriul României (N=3025). O nuanță mai apropiată de culoarea roșie indică un scor mai ridicat privind Autonomia (Individualismul). Scorurile teoretice ale scalei variază între 0 și 100.

Hartă: D. David, M. Bartucz, S. Matu, M. Comșa (2020) - Creat cu Datawrapper



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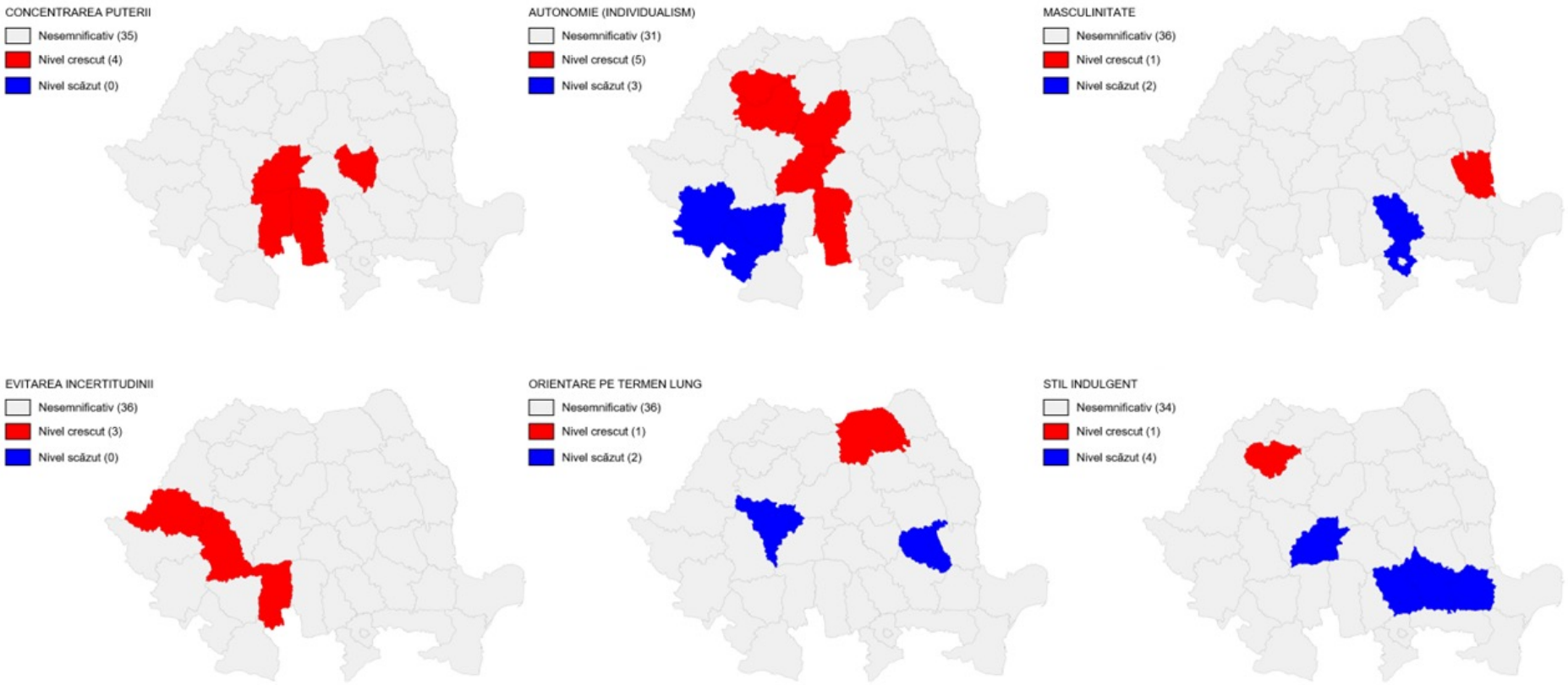
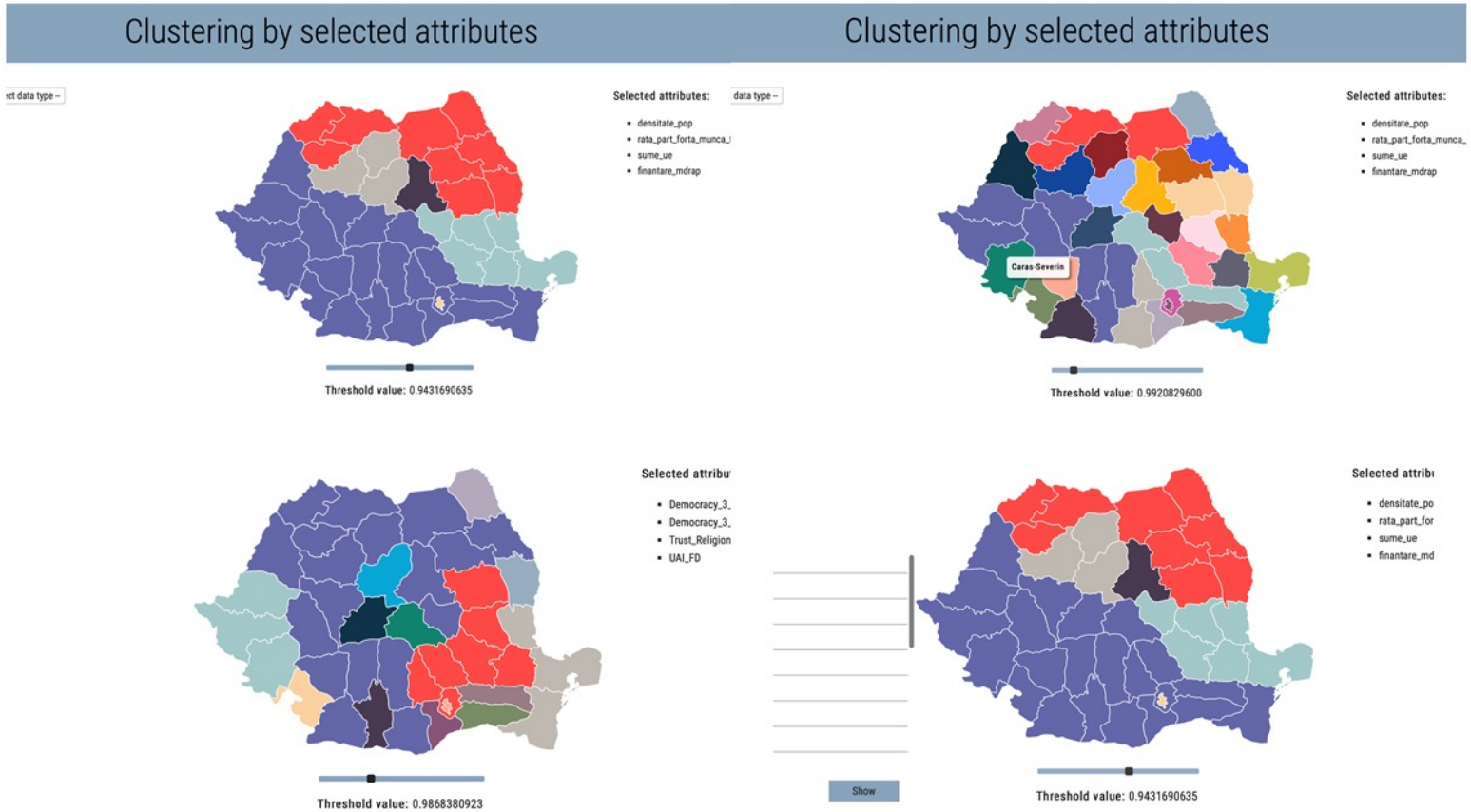
Hartă: D. David, M. Bartucz, S. Matu, M. Comșa (2020) - Creat cu Datawrapper

Psychological maps



Psychological maps



Psychological maps

Data types: Psychological & Psychological

Select x-axis attributes: (Attribute name, Gini index, Weight)	Select y-axis attributes: (Attribute name, Gini index, Weight)
☑ IVR_FD, 0.2665, 1	☐ IVR_FD, 0.2665, 1
☑ IVR_DEMO, 0.2325, 1	☐ IVR_DEMO, 0.2325, 1
☑ IND_FD, 0.1939, 1	☐ IND_FD, 0.1939, 1
☑ MAS_DEMO, 0.1677, 1	☐ MAS_DEMO, 0.1677, 1
☐ Democracy_3_FD, 0.1648, 1	☑ Democracy_3_FD, 0.1648, 1
☐ IND_DEMO, 0.1637, 1	☑ IND_DEMO, 0.1637, 1
☐ MAS_FD, 0.162, 1	☑ MAS_FD, 0.162, 1
☐ Democracy_3_DEMO, 0.1612, 1	☑ Democracy_3_DEMO, 0.1612, 1
☐ LTO_DEMO, 0.1397, 1	☑ LTO_DEMO, 0.1397, 1

*** Select different attributes on the two axes!**

Show

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The Protective Effect of Culture on Depression During Covid-19 Pandemic: A Romanian National Study

Abstract

Previous studies indicated that collectivism represents a protective factor against depressive disorders, even among vulnerable populations. The protective effect of collectivism in relation to depressive disorders is often attributed to the social support networks available to individuals in collectivistic societies. The current study aims to investigate the protective effect of collectivism in the relationship between psychological vulnerabilities and depression. Moreover, we examined whether the protective effect of collectivism in relation to depression can be explained through the mechanism of social support. We measured individualism-collectivism for 42 Romanian counties ($n = 2,882$) before the onset of the COVID-19 pandemic. Data for irrational cognitions, depression, and social support were collected online during the lockdown in Romania ($n = 5,310$). All instruments showed acceptable measurement and scalar invariance across regions. In a multi-level regression model, county-level collectivism was associated with lower levels of depressive symptoms $b = -.032$, 95% CI [−0.045; −0.019], while irrational cognitions were positively associated with depression $b = .474$, 95% CI [0.438; 0.510]. The interaction between irrational beliefs and collectivism had a significant and negative effect on depression, $b = -.004$, 95% CI [−0.008; −0.000]. The indirect effect of collectivism on depression via social support was tested in a two-level SEM model. Explicit and implicit social support were not significant mediators. Collectivism was negatively associated with the perceived availability of explicit social support, $b = -.043$, 95% CI [−0.074; −0.012]. The results support a general protective effect of collectivism on mental health but cast doubt that the mechanism for this effect is related to social support.

The ROPSY project & dataset

- Database: https://atom.ubbcluj.ro/ropsy-data (user: ropsy-user, password: PCCFropsy2016)

- The applets: https://atom.ubbcluj.ro/RoPsyCorr (user: ropsy-app, Password: RoPsy-ubb-2021)

Thank you for your attention!