


Fear, Populism, and the Geopolitical Landscape: The “Sleeper Effect” of Neurotic Personality Traits on Regional Voting Behavior in the 2016 Brexit and Trump Elections

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Abstract

Two recent electoral results—Donald Trump’s election as U.S. president and the UK’s Brexit vote—have reignited debate on the psychological factors underlying voting behavior. Both campaigns promoted themes of fear, lost pride, and loss aversion, which are relevant to the personality dimension of neuroticism, a construct previously not associated with voting behavior. To that end, we investigate whether regional prevalence of neurotic personality traits (neuroticism, anxiety, and depression) predicted voting behavior in the United States ($N = 3,167,041$) and the United Kingdom ($N = 417,217$), comparing these effects with previous models, which have emphasized the roles of openness and conscientiousness. Neurotic traits positively predicted share of Brexit and Trump votes, and Trump gains from Romney. Many of these effects persisted in additional robustness tests controlling for regional industrial heritage, political attitude, and socioeconomic features, particularly in the United States. The “sleeper effect” of neurotic traits may profoundly impact the geopolitical landscape.

Keywords

political psychology, Neuroticism, regional personality, voting behavior, Big Five, Trump, Brexit

In 2016, the United Kingdom (UK) voted to leave the European Union (EU; a decision known as “Brexit”) and Donald J. Trump was elected as President of the United States. The widespread media coverage of the Brexit and Trump campaigns characterized them as being quite unlike other recent campaigns, particularly in their use of so-called populist themes (Inglehart & Norris, 2016; Pettigrew, 2017).

The Brexit and Trump campaigns were different in many ways, but one thing they had in common, according to one popular media narrative, was their focus on stoking fears in the electorate. In Britain, the Vote Leave campaign and the UK Independence Party (UKIP), for example, stoked citizens’ worries about immigration and terrorism; the UKIP campaigned to “Take Back Control” from the EU by establishing firm borders to reduce the threats of multiculturalism on economic independence and freedom. In the United States, Donald Trump’s campaign to “Make America Great Again” followed populist themes and was based on appeals to fear (Nai & Maier, 2018); specifically, the campaign appealed to a belief that an influx of immigrants has weakened the nation’s values, economy, and security (The Atlantic, 2016). The fact that such rhetoric resonated with so many voters surprised many people,

including political analysts, right up to the moment when the final results were announced.

Even sophisticated forecasting models that used historical voting records and demographic data predicted victories for the Vote Remain and Clinton campaigns (e.g., see Millward,

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2016). Evidently, the models traditionally used for predicting and explaining political behavior did not capture an essential factor that influenced people's voting decisions in 2016. So how are we to understand the changing geopolitical landscape? What factors might account for the surprising receptivity to this recent emergence of populist campaigns?

Research has long highlighted the role of psychological factors in influencing political ideology and political behavior, including voting behavior in major elections (Avery, Lester, & Yang, 2015; Barbaranelli, Caprara, Vecchione, & Fraley, 2007; Choma & Hanoch, 2017; Jost, Glaser, Kruglanski, & Sulloway, 2003; Pesta & McDaniel, 2014). In the domain of personality, political orientation (typically defined in terms a liberal vs. conservative continuum) has been linked to the dimensions of the Big Five model (John & Srivastava, 1999); in particular, studies point to a moderate to large association between political conservatism and low openness and a small but reliable association between conservatism and high conscientiousness (Carney, Jost, Gosling, & Potter, 2008; Jost, 2006; McCrae, 1996; Sibley, Osborne, & Duckitt, 2012). Similar findings were revealed by studies undertaken at the regional level (Rentfrow et al., 2013; Rentfrow, Jost, Gosling, & Potter, 2009).

However, the recent populist campaigns, which have played upon voters' fears, point to the possible role of another personality dimension—the one most closely tied to anxiety, anger, and fear, namely, neuroticism (Barlow, Ellard, Sauer-Zavala, Bullis, & Carl, 2014; Digman, 1990; Eysenck, 1947). In personality research, neuroticism is usually defined as emotional instability characterized by more extreme and maladaptive responses to stressors and a higher likelihood of negative emotions (e.g., anxiety, anger, and fear). One integrative summary of various conceptions of the Big Five dimensions characterizes neuroticism in terms of a reactivity to negative events or stressors and to environmental and social threats (Denissen & Penke, 2008). This conception of neuroticism as a lowered threshold for detecting and responding to stimuli as threatening or dangerous suggests that individuals high on this trait will be more receptive to campaigns, such as populism, which specifically prey on fears of looming threats and dangers. Research shows that once these fears have been activated, they can affect decisions of all kinds, including voting behavior (Alesina & Passarelli, 2015). As a result, regions higher in neuroticism should show particularly big swings in the populist directions. As such, we propose that neuroticism might be responsible for a kind of “*sleeper effect*,” such that, under normal conditions, it has no influence, but in certain circumstances (e.g., the rise of populism), it can play a significant role in determining consequential outcomes.

Here, we test potential “*sleeper effects*” of neuroticism by investigating the links between regional levels of neurotic traits and votes for Brexit and Trump in the 2016 elections. In particular, we test the hypothesis that regions with high scores on neurotic traits, namely, trait neuroticism and two subfacets, trait anxiety and trait depression (Soto & John, 2009), are associated with support for Brexit and Trump. We compare the

effects of these neurotic traits with those of openness and conscientiousness, which are the known regional personality correlates of political orientation and voting behavior. We also control for alternative explanations, namely, historical industrial decline (lost pride), political attitude (liberal), education, race, and current economic hardship.

Method

Here, we summarize the key elements of the design (for details of the samples, selection procedures, representativeness, challenges to validity, focal variables, and control variables, see Online Supplementary Materials).

Regional Level

We conduct our analysis at the county level in the United States. In the United Kingdom, we analyze the local authority district (LAD) level; there we focus only on regions in Scotland, England, and Wales because the control variables are not available for Northern Ireland.

Personality Data

The UK personality data ($N = 417,217$) come from a large Internet-based survey designed and administered between 2009 and 2011 in collaboration with the British Broadcasting Corporation (BBC UK Lab project; see Rentfrow, Jokela, & Lamb, 2015); participants were spread across 379 LADs with at least 100 participants in each. The U.S. personality data ($N = 3,167,041$) come from the Gosling–Potter Internet project, collected between 2003 and 2015 and divided into 2,082 counties, with at least 100 participants in each.

Personality data were collected using the 44-item Big Five Inventory (BFI; John & Srivastava, 1999). We focus on neurotic traits: neuroticism as a broad Big Five trait and anxiety and depression as established subfacets of neuroticism. We aggregated the individual-level scores based on the LAD/county where the participants lived. We compare the neurotic traits to the role of openness and conscientiousness, the established regional personality correlates of voting behavior.

Election Data

We focus on two kinds of dependent variables (DVs). The first is the simple vote share for Brexit and Trump, testing the idea that regions high on neuroticism were particularly likely to be swayed by populist campaigns. This DV mirrors those used in previous analyses and allows us to test whether the 2016 elections differed from previous ones in now showing associations with regional neuroticism where previous votes had been associated only with regional openness and conscientiousness.

The second kind of DV, which we can measure only in the U.S. analyses, focuses on that part of Trump's vote that is not merely due to him being the Republican candidate. In other words, we examine the *shift* to Trump, over and above the region's historical tendency to vote for Republican candidates.

We thus aim at capturing the specific impact (and success) of Trump's populist campaign, with its clearer focus on fears and (potential) losses than seen in previous campaigns (Inglehart & Norris, 2016). It has been suggested that it was these particular shifts to Trump (e.g., in battlefield states) that lead to his victory (The Washington Post, 2016).

Data on the Brexit results are available at the LAD level from the UK Electoral Commission (2016). The DV was the share of votes for Brexit among the valid votes ($M = 53.17\%$, $SD = 10.42$).

The U.S. election data come from open data sources (Github, 2017; OpenDataSoft, 2016). For the first DV, we use the share of Trump vote which is calculated as the two-party vote share for the Republicans in 2016 (henceforth Trump votes; $M = 63.4$, $SD = 15.65$).

To examine the shift to Trump over and above the existing tendency to vote Republican, we compute the change of the Republican two-party vote from 2012 to 2016. For example, if Trump as the Republican candidate in 2016 had a 50% two-party vote share and Romney as the 2012 candidate had a 40% two-party vote share, the gain would be 10%. This gain in the two-party vote share (henceforth Trump gains) is our second DV for the U.S. analysis ($M = 5.22$, $SD = 5.28$). Naturally, such a gain equals the corresponding loss of the Democratic candidate.

Control Variables

We control for an array of variables which could potentially explain voting behavior.

First, we control for population density because voters in regions with higher population density (e.g., larger cities) tend not to vote for conservative candidates. In the UK analysis, we also included country dummies for Scotland and Wales. Scotland and Wales are special cases because of simmering independence movements and local culture. For example, there are strong economic motives in Scotland to remain in the EU even after a potential independence from the UK because a small country, like Scotland, disproportionately gains from free trade in the EU (Schiff, 1997).

Second, we consider the regions' industrial heritage. Recent studies and popular narratives suggest that voters in the industrialized heartlands of the United Kingdom and United States were particularly likely to vote for Brexit and Donald Trump. One reason could be that the industrialized areas (e.g., the Rust Belt in the United States) are in a long phase of decline (Autor, Dorn, & Hanson, 2013; Autor, Dorn, Hanson, & Majlesi, 2017). One major promise of the Trump campaign was a policy shift away from free trade to protect jobs in the industrialized heartland (bringing back the manufacturing). Additionally, popular narratives suggest that the workforce in these industries viewed themselves with a lot of pride and the loss of this pride during the industrial decline might have made them susceptible to populist campaigns (see also Inglehart & Norris, 2016). To capture the effect of the historical industrial decline in the old industrial centers, we include the employment share

in manufacturing and mining in the United States for the year 1970 ($M = 25.3\%$, $SD = 11.76$) and in the United Kingdom for the year 1971 as controls ($M = 34.33\%$, $SD = 12.34$). We chose data from the early 1970s over later time periods because they provide good estimates of the industrial structure before deindustrialization accelerated from the 1980s onward.

Third, we consider political attitudes of the regional populace. Prior research has shown that people who consider themselves as liberal tend to vote for left-wing parties and people who consider themselves as conservatives tend to vote for right-wing parties (e.g., Langer & Cohen, 2005). So here, we examine whether neurotic traits add any incremental predictive validity beyond a simple effect of political attitudes. Specifically, we include a control variable reflecting the liberal political attitude of the regional populace (single item: "I see myself as someone who is politically liberal," ranging from 1 = *strongly disagree* to 5 = *strongly agree*). The individual-level data come from the Gosling–Potter Internet project in both countries and were aggregated to the corresponding regional levels in the United States ($M = 2.74$, $SD = 0.24$) and United Kingdom ($M = 2.97$, $SD = 0.21$).

Fourth, the Trump and Brexit campaigns were reported to stir up racial tensions with regard to migration (e.g., Major, Blodorn, & Blascovich, in press) and racial composition of the population can predict voting behavior (e.g., Rentfrow et al., 2015; Autor et al., 2017). We therefore included the share of White inhabitants (United States: $M = 83.29\%$, $SD = 15.24$; UK $M = 90.39\%$, $SD = 12.28$).

Fifth, we consider current economic hardship in the region. Voters suffering from poor economic conditions can voice their dissent with current economic policy by voting for the opposition (Republicans in the 2016 U.S. election) or the Brexit campaign. We include the unemployment share and earnings in our analysis. In the U.S. case, we use the 2015 unemployment data from the Bureau of Labor Statistics ($M = 5.56\%$, $SD = 1.74$) and the yearly income per capita in the 2010–2014 period from the American Community Survey (ACS; $M = \$24,688$, $SD = 5,829$). In the United Kingdom, we use the unemployment data from the 2011 Census ($M = 6.13\%$, $SD = 2.07$) and the weekly income in 2011 from Annual Survey of Hours and Earnings ($M = £490.83$, $SD = 114.56$).

Finally, we also use the educational attainment of the population as a control variable because education can also predict election results (Rentfrow et al., 2013). We expect educational attainment to be important for two reasons. First, better educated people have profited in the last decades from free trade in terms of better job chances and higher earnings (Autor, 2014). This makes it more likely that they will vote against Trump and Brexit, which have isolationistic tendencies. Second, populist campaigns may offer simplified solutions to complex problems and better educated people might find these simplified solutions unrealistic and thus vote against these campaigns (Seligson, 2007). In the United States, we use the population share with a bachelor degree or higher. The data come from the 2010 ACS 5-year estimates in the United States ($M = 21.92\%$, $SD = 9.56$). In the United Kingdom, we use the

Table 1. Overview of Variables and Data Sources.

Variables	United States	United Kingdom
Voting	Trump votes: 2016 Republican two-party vote share Trump gains: Gain in the Republican two-party vote share from 2012 to 2016 Source 2012 data: OpenDataSoft (2016) Source 2016 data: Gifithub (2017)	Share voting leave Source: UK Electoral commission (2016)
Trait neuroticism	Gosling–Potter Internet project	BBC UK Lab data set Item scales ranging from 1 = <i>disagree strongly</i> to 5 = <i>agree strongly</i>
Trait anxiety	Gosling–Potter Internet project	BBC UK Lab data set Items scales ranging from 1 = <i>disagree strongly</i> to 5 = <i>agree strongly</i>
Trait depression	Gosling–Potter Internet project	BBC UK Lab data set Item scales ranging from 1 = <i>disagree strongly</i> to 5 = <i>agree strongly</i>
Population density	Population per square mile Source: 2010 U.S. Census	Population per square km Source: 2011 Census of England and Wales Source: 2011 Census of Scotland
Scotland	–	Dummy: 1 = <i>Scottish county</i>
Wales	–	Dummy: 1 = <i>Welsh county</i>
Historical industry structure	Employment share in mining and manufacturing in 1970 Source: 1970 Census of Population and Housing (ICPSR 7507) http://www.icpsr.umich.edu/icpsrweb/ICPSR/studies/24722	Employment share in mining and manufacturing in 1971 Source: Source: Census of England and Wales SAS28, Downloaded from http://casweb.ukdataservice.ac.uk/step0.cfm Source: Census of Scotland SAS28, Downloaded from http://casweb.ukdataservice.ac.uk/step0.cfm
Liberal	Regional average of the variable: “I see myself as someone who is politically liberal” ranging from 1 = <i>strongly disagree</i> to 5 = <i>strongly agree</i> Source: Gosling–Potter Internet project	Regional average of the variable: “I see myself as someone who is politically liberal” ranging from 1 = <i>strongly disagree</i> to 5 = <i>strongly agree</i> Source: Gosling–Potter Internet project
White	Population share White 2010–2014 Source: 2010 ACS 5-year estimates	Population share White 2011 Source: Census of England and Wales, KS201EW Source: Census of Scotland DC210ISC
Unemployment	Unemployment rate 2015 Source: U.S. Bureau of Labor Statistics	Unemployment rate 2011 Source: Census of England and Wales KS601EW to KS603EW Source: Census of Scotland QS601SC_CA
Earnings	Yearly income per capita in \$, 2010–2014 Source: 2010 ACS 5-year estimates	Weekly income 2011 in £, 2011 Source: Annual Survey of Hours and Earnings
High education	Population share (25 years or above) with bachelor degree or higher, 2010–2014 Source: 2010 ACS 5-year estimates	Population share (16 years or above) with Level-4 qualifications or above, 2011 Source: 2011 Census of England and Wales KS501EW Source 2011 Census of Scotland KS501SC

Note. BBC = British Broadcasting Corporation; ICPSR = Inter-university Consortium for Political and Social Research.

population share with NVQ Level-4 qualification or above, roughly equivalent to degree level. The data come from the 2011 Census ($M = 26.91\%$, $SD = 7.67$).

All variables and their sources are reported in Table 1.

Results

Tables 2 and 3 report correlations between the variables of interest in the United Kingdom and the United States. In the UK case, there were moderate correlations between Brexit

Table 2. Correlations in UK.

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Brexit Vote: Leave	53.17	10.42	1.00													
2 Neuroticism ^a	2.97	0.05	0.26	1.00												
3 Anxiety ^a	2.96	0.05	0.36	0.92	1.00											
4 Depression ^a	2.87	0.07	0.11	0.84	0.59	1.00										
5 Openness ^a	3.66	0.07	-0.67	-0.14	-0.36	0.13	1.00									
6 Conscientiousness ^a	3.66	0.06	0.31	-0.43	-0.22	0.62	-0.43	1.00								
7 Population density	1,491.85	2,248.11	-0.42	0.11	-0.10	0.38	0.60	-0.55	1.00							
8 Scotland	0.08	0.28	-0.41	-0.07	-0.04	-0.09	0.00	-0.06	-0.14	1.00						
9 Wales	0.06	0.23	0.00	0.11	0.04	0.20	0.01	-0.16	-0.12	-0.08	1.00					
10 Historical industry structure	34.33	12.34	0.34	0.39	0.38	0.36	-0.34	-0.17	-0.03	-0.05	0.00	1.00				
11 Liberal ^a	2.97	0.21	-0.65	-0.14	-0.25	-0.01	0.62	-0.24	0.49	-0.07	-0.05	-0.35	1.00			
12 White	90.39	12.28	0.35	-0.07	0.10	-0.31	-0.46	0.50	-0.77	0.17	0.13	-0.08	-0.39	1.00		
13 Unemployment	6.13	2.07	0.08	0.49	0.34	0.67	0.09	-0.59	0.44	0.11	0.10	0.44	-0.10	-0.41	1.00	
14 Earnings	490.83	114.56	-0.51	-0.31	-0.36	-0.20	0.41	-0.04	0.38	-0.09	-0.16	-0.28	0.51	-0.31	-0.31	1.00
15 High education	26.91	7.67	-0.77	-0.42	-0.48	-0.29	0.64	-0.09	0.39	-0.06	-0.09	-0.46	0.70	-0.35	-0.42	0.80
																1.00

Note. Correlations above |0.1| are significant at the 5% level.

^aRanging from 1 = low to 5 = high.

Table 3. Correlations in United States.

Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Trump votes	63.40	15.65	1.00													
2 Trump gains	5.22	5.28	0.43	1.00												
3 Neuroticism ^a	2.93	0.09	0.37	0.44	1.00											
4 Anxiety ^a	2.91	0.09	0.38	0.45	0.94	1.00										
5 Depression ^a	2.83	0.1	0.22	0.29	0.85	0.65	1.00									
6 Openness ^a	3.61	0.09	-0.48	-0.08	-0.20	-0.33	0.09	1.00								
7 Conscientiousness ^a	3.59	0.08	-0.05	-0.08	-0.38	-0.34	-0.35	-0.06	1.00							
8 Population density	381.93	2150.78	-0.30	-0.18	-0.03	-0.05	0.02	0.24	-0.04	1.00						
9 Historical industry structure	25.36	11.73	0.21	0.25	0.26	0.28	0.19	-0.17	0.08	-0.04	1.00					
10 Liberal ^a	2.74	0.24	-0.76	-0.30	-0.16	-0.20	-0.03	0.60	-0.15	0.30	-0.17	1.00				
11 White	83.33	15.24	0.55	0.43	0.38	0.40	0.25	-0.23	-0.36	-0.21	0.09	-0.14	1.00			
12 Unemployment	5.55	1.74	-0.07	0.08	0.08	0.05	0.13	0.00	0.20	-0.03	0.17	-0.09	-0.34	1.00		
13 Earnings	24,666.21	5815.75	-0.35	-0.38	-0.19	-0.20	-0.12	0.35	-0.21	0.26	-0.20	0.46	0.11	-0.49	1.00	
14 High education	21.92	9.56	-0.55	-0.62	-0.36	-0.35	-0.26	0.49	-0.12	0.24	-0.32	0.62	-0.06	-0.44	0.80	1.00

Note. Correlations above |0.1| are significant at the 5% level.

^aRanging from 1 = low to 5 = high.

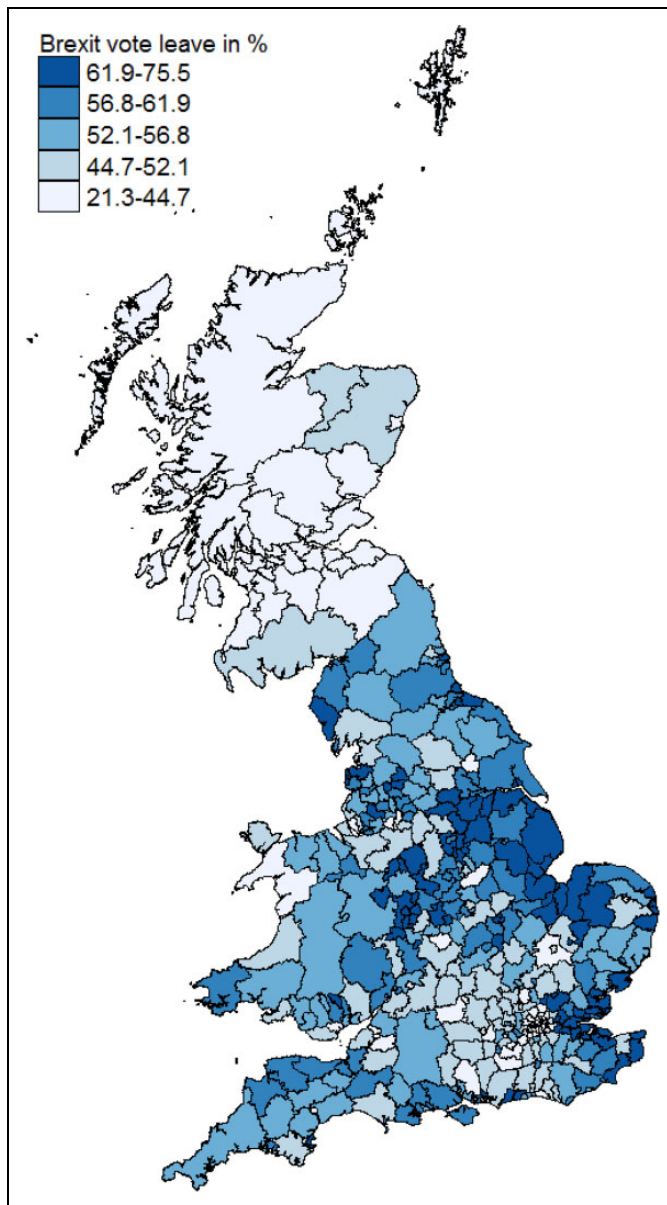


Figure 1. Brexit votes (leave) across UK local authority districts.

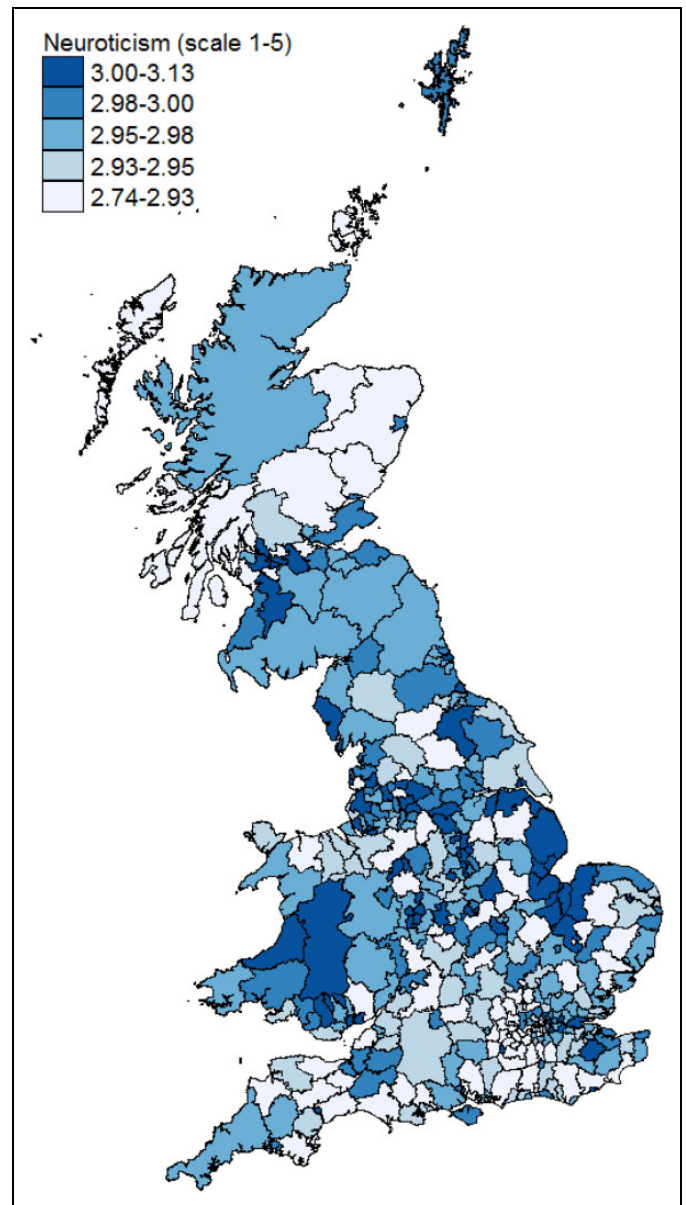


Figure 2. Regional distribution of Neuroticism across UK local authority districts.

votes and the neurotic traits (neuroticism: $r = .26, p < .05$; anxiety: $r = .36, p < .05$; depression: $r = .11, p < .05$). The correlations between Trump shares and the neurotic traits were also moderate in size (neuroticism: $r = .37, p < .05$; anxiety: $r = .38, p < .05$; depression: $r = .22, p < .05$), whereas the correlations between Trump gains and the neurotic traits were slightly larger (neuroticism: $r = .44, p < .05$; anxiety: $r = .45, p < .05$; depression: $r = .29, p < .05$). The main correlation between neuroticism and Brexit votes is illustrated in Figures 1 and 2, which map the regional distribution of both variables for the United Kingdom. Visual inspection of the maps suggests that rural areas in the East of England and the industrialized centers have higher neurotic traits and higher Brexit votes. Likewise, the corresponding U.S. maps (Figures 3 and 4) illustrate the observed correlation between

neuroticism and election results for Trump. We use the map for Trump gains (and not for absolute Trump votes) in Figure 3 because we believe that these gains are a better indicator for the specific receptivity to campaigns addressing fears, as explained above. Those Trump gains, which are widely believed to be decisive in the 2016 presidential election (The Washington Post, 2016), and higher neurotic traits indeed overlap in the maps. Both are found predominantly in the North East and around the Great Lakes where many battlefield states such as Pennsylvania, Wisconsin, and Ohio went from Democratic in 2012 to Republican in 2016. The old industrial center of the United States, the “Rust Belt” also shows a concentration of both neuroticism and Trump gains.

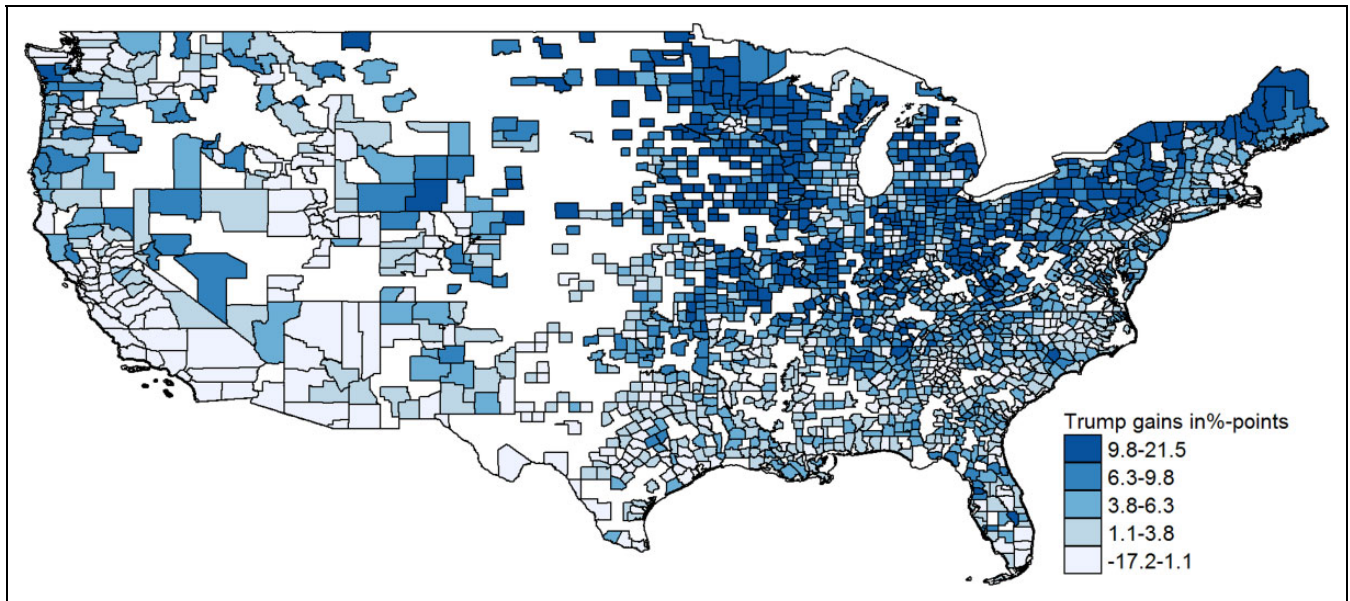


Figure 3. Trump gains (= Gain in Republican two-party vote share between the 2012 and the 2016 election) across U.S. counties. White areas are counties that were dropped because of too few observations in the personality data set.

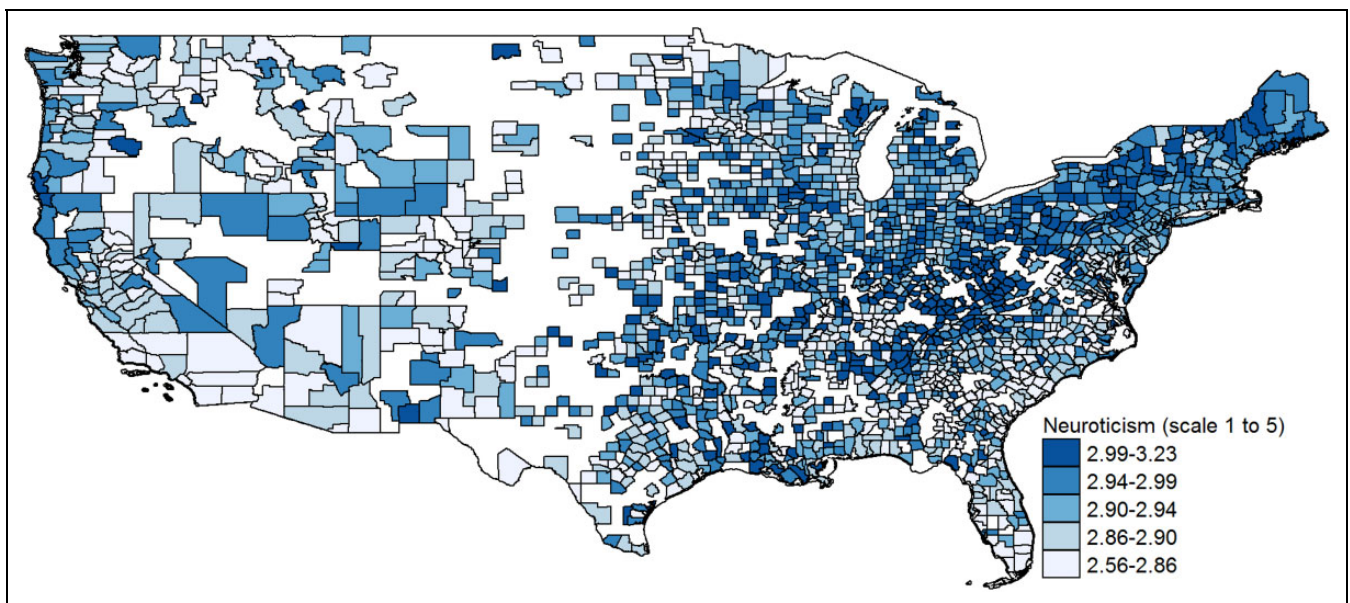


Figure 4. Regional distribution of neuroticism across U.S. counties. White areas are counties that were dropped because of too few observations in the personality data set.

Next, we present ordinary least squares (OLS) regression results for both countries. All variables were z -standardized to ease interpretation of the coefficients. We tested the neuroticism (or its subfacets) model against the openness and conscientiousness model and also included different sets of control variables (e.g., to consider potential overlap between economic hardship and education levels, which might lead to multicollinearity). We tested six models in each country: The first model included the effects of neuroticism and of basic controls. The second model included the effects of openness and

conscientiousness (but not neuroticism) and the basic controls. The third model included neuroticism and also openness and conscientiousness plus the basic controls. The fourth model added the historical industrial decline (historical industry structure) to control for the “lost pride” effect. The fifth model added political attitudes, race, and current economic hardship. The sixth model replaced economic hardship with education. We also regressed models including economic hardship and education at the same time, but the correlation of these control variables was very high, which led to unstable regression

results due to multicollinearity. Thus, we do not present a model including all control variables at one time.

All the models throughout the article were tested using OLS as the regression technique. Note that in most models, the Breusch–Pagan test reveals heteroscedasticity, which biases the t statistics and leads to erroneous conclusions about statistical significance. To avoid this problem, we use heteroscedasticity robust standard errors.

Models 1–3 were conducted to evaluate the extent to which regional differences in neuroticism, openness, and conscientiousness contributed to Brexit and Trump votes. As can be seen in Tables 4 (Brexit), 5 (Trump votes), and 6 (Trump gains), the results from Model 1 revealed that neuroticism positively predicted Brexit votes (leave; Table 4: $\beta = .30$, $SE = 0.04$, $p < .001$), Trump votes (Table 5: $\beta = .36$, $SE = 0.02$, $p < .001$), and Trump gains (Table 6: $\beta = .43$, $SE = 0.02$, $p < .001$). The addition of neuroticism (Model 3) to the model that included only openness and conscientiousness (Model 2) led to an increase in explained variance of 3% in the prediction of Brexit votes, 7% in the prediction of Trump votes, and 11% in the prediction of Trump gains. Higher population density was negatively related to Brexit votes (Table 4: $\beta = -.53$, $SE = 0.04$, $p < .001$), Trump votes (Table 5: $\beta = -.29$, $SE = 0.02$, $p < .01$), and Trump gains (Table 6: $\beta = -.16$, $SE = 0.02$, $p < .01$). Additionally, Brexit votes were lower in Scottish LADs (Table 4: $\beta = -.47$, $SE = 0.03$, $p < .001$) and Welsh LADs (Table 4: $\beta = -.13$, $SE = 0.03$, $p < .001$). The results for Model 2 indicated that openness negatively predicted Brexit votes (Table 4: $\beta = -.61$, $SE = 0.04$, $p < .001$), Trump votes (Table 5: $\beta = -.43$, $SE = 0.02$, $p < .001$), and Trump gains (Table 6: $\beta = -.47$, $SE = 0.02$, $p < .001$). Conscientiousness showed no effect on Brexit votes (Table 4) but had a small and negative effect on Trump votes (Table 5: $\beta = -.08$, $SE = 0.02$, $p < .001$) and Trump gains (Table 6: $\beta = -.11$, $SE = 0.02$, $p < .001$). In Model 3, which tested neuroticism, openness, and conscientiousness together, the results revealed similar effects for the traits with the exception that the negative effect of conscientiousness became slightly positive and nonsignificant in both countries.

Models 4–6 represent relatively conservative tests because we not only consider political attitudes (liberal attitudes) but also those regional socioeconomic conditions (e.g., historical industry patterns and current economic hardship and education levels) that might be interrelated and may actually “codevelop” over time, with regional neuroticism (Obschonka, Stuetzer, Rentfrow, Shaw-Taylor, et al., 2017). The positive correlations between regional neuroticism and such control variables (Tables 2 and 3) are in line with such an assumption.

The results for Model 4 indicated that historical industrial structure had a positive effect on Brexit votes (Table 4: $\beta = .10$, $SE = 0.04$, $p < .01$), Trump votes (Table 5: $\beta = .06$, $SE = 0.02$, $p < .001$), and Trump gains (Table 6: $\beta = .09$, $SE = 0.02$, $p < .001$).

Models 5 and 6 include the socioeconomic controls capturing race, recent economic hardship, political attitudes, and

education levels. In Model 5, the liberal political attitude of the regional populace negatively predicted Brexit votes (Table 4: $\beta = -.37$, $SE = 0.04$, $p < .001$) and Trump votes (Table 5: $\beta = -.69$, $SE = 0.01$, $p < .001$), but positively predicted Trump gains (Table 6: $\beta = .13$, $SE = 0.02$, $p < .001$). The differing result of liberal political attitude on Trump votes and gains needs a short explanation. The raw correlation of liberalism and Trump gains is $-.3$, so the Trump gains were smaller in liberal regions, but the additional control for openness reversed this relationship, so that Trump gains were larger in liberal areas. Among the other control variables in these models, the share of White people positively predicted Brexit votes (Table 4: $\beta = .14$, $SE = 0.05$, $p < .01$), Trump votes (Table 5: $\beta = .44$, $SE = 0.01$, $p < .001$), and Trump gains (Table 6: $\beta = .36$, $SE = 0.02$, $p < .001$) in Model 5. This effect was no longer significant in Model 6 in the UK analysis. Model 5 also revealed that unemployment positively predicted Brexit votes (Table 4: $\beta = .22$, $SE = 0.04$, $p < .001$), negatively predicts Trump votes (Table 5: $\beta = -.05$, $SE = 0.02$, $p < .001$), and did not predict Trump gains (Table 6: $\beta = .04$, $SE = 0.03$, $p > .05$). Earnings, in turn, negatively predicted Brexit votes (Table 4: $\beta = -.15$, $SE = 0.05$, $p < .01$), Trump votes (Table 5: $\beta = -.11$, $SE = 0.01$, $p < .001$), and Trump gains (Table 6: $\beta = -.29$, $SE = 0.02$, $p < .001$).

Finally, Model 6 shows that high education had a negative effect on Brexit votes (Table 4: $\beta = -.60$, $SE = 0.04$, $p < .001$), Trump votes (Table 5: $\beta = -.14$, $SE = 0.02$, $p < .001$), and Trump gains (Table 6: $\beta = -.63$, $SE = 0.02$, $p < .001$). We observed that the relationship between the Big Five traits in these models on the one side, and Brexit votes, Trump votes, and Trump gains on the other got weaker when successively including more control variables (except for the effect of conscientiousness).

Taken together, the results support the assumption that neuroticism was positively related to voting behavior in both the Brexit referendum and Trump election. This effect was robust when tested against openness and conscientiousness (with only openness showing a robust effect). The effect of neuroticism on Brexit votes diminished when socioeconomic control variables were included in the analysis, but the effect on support for Trump persisted albeit with smaller effect sizes (β ranging from $.07$ to $.20$ depending on model and DV). We observed similar results when looking at the subfacets of neuroticism (anxiety and depression; see Table A1 for Brexit votes, A2 for Trump votes, and A3 for Trump gains). We also found indications that historical industrial decline as well as race, liberal attitudes, recent economic hardship, and education levels were related to Brexit votes and Trump votes and gains.

As a robustness check, we tested whether the results changed when the other Big Five traits, agreeableness and extroversion, were added to the regressions. These models are shown in Online Appendix Table A4 for Brexit votes and in Table A5 for Trump votes and Trump gains. In general, the effects of neuroticism and openness as identified in our main analysis did not change. We also conducted a robustness check regarding the representativeness of the regional samples by weighting the

Table 4. Effects of Neuroticism on 2016 Brexit Votes (Leave).

Variables	(1)		(2)		(3)		(4)		(5)		(6)	
	β (t)	95% CI	β (t)	95% CI	β (t)	95% CI	β (t)	95% CI	β (t)	95% CI	β (t)	95% CI
Neuroticism	0.30*** (0.04)	[0.22, 0.38]			0.21*** (0.04)	[0.12, 0.29]	0.19*** (0.04)	[0.10, 0.27]	0.08* (0.03)	[0.02, 0.15]	0.01 (0.03)	[-0.05, 0.06]
Openness			-0.61*** (0.04)	[-0.69, -0.52]	-0.52*** (0.04)	[-0.61, -0.43]	-0.48*** (0.05)	[-0.57, -0.39]	-0.29*** (0.04)	[-0.37, -0.21]	-0.13*** (0.03)	[-0.18, -0.07]
Conscientiousness			-0.07 (0.04)	[-0.15, 0.01]	0.05 (0.04)	[-0.03, 0.14]	0.08 (0.04)	[-0.00, 0.16]	0.13*** (0.04)	[0.05, 0.20]	0.08* (0.03)	[0.02, 0.14]
Population density	-0.53*** (0.04)	[-0.60, -0.46]	-0.16*** (0.04)	[-0.25, -0.07]	-0.16*** (0.04)	[-0.25, -0.08]	-0.17*** (0.04)	[-0.25, -0.08]	-0.05 (0.05)	[-0.15, 0.05]	-0.04 (0.04)	[-0.12, 0.04]
Scotland	-0.47*** (0.03)	[-0.53, -0.41]	-0.44*** (0.03)	[-0.50, -0.37]	-0.42*** (0.03)	[-0.48, -0.35]	-0.41*** (0.04)	[-0.48, -0.34]	-0.49*** (0.03)	[-0.55, -0.44]	-0.47*** (0.02)	[-0.52, -0.42]
Wales	-0.13*** (0.03)	[-0.18, -0.07]	-0.06* (0.03)	[-0.11, -0.00]	-0.06* (0.03)	[-0.11, -0.01]	-0.05* (0.02)	[-0.10, -0.01]	-0.10*** (0.02)	[-0.14, -0.06]	-0.09*** (0.02)	[-0.13, -0.06]
Historical industry structure							0.10*** (0.03)	[0.03, 0.16]	-0.02 (0.03)	[-0.08, 0.04]	-0.04 (0.02)	[-0.08, 0.01]
Liberal									0.30*** (0.04)	[-0.37, -0.23]	-0.15*** (0.03)	[-0.20, -0.10]
White									0.14*** (0.05)	[0.05, 0.23]	0.04 (0.04)	[-0.03, 0.11]
Unemployment									0.22*** (0.04)	[0.14, 0.31]		
Earnings									-0.15** (0.05)	[-0.24, -0.06]		
High education											-0.60*** (0.04)	[-0.68, -0.52]
Constant	0.00 (0.04)	[-0.07, 0.07]	-0.00 (0.03)	[-0.06, 0.06]	-0.00 (0.03)	[-0.06, 0.06]	-0.00 (0.03)	[-0.06, 0.06]	0.00 (0.02)	[-0.04, 0.04]	0.00 (0.02)	[-0.03, 0.03]
Observations	379		379		379		379		379		379	
Adjusted R ²	0.487		0.627		0.656		0.662		0.804		0.882	
F test	108.5		133		108.4		93.54		118.2		156.6	

Note. OLS regressions. Standardized regression coefficients and 95% CI for the standardized regression coefficients are given. Robust standard errors in parentheses are given. Dependent variables in Models 1–6: Share Brexit leave votes. CI = confidence interval. ***p < .001. **p < .01. *p < .05.

Table 5. Effects of Neuroticism on 2016 U.S. Presidential Election (Trump Votes).

Variables	(1)		(2)		(3)		(4)		(5)		(6)	
	β (t)	95% CI	β (t)	95% CI	β (t)	95% CI	β (t)	95% CI	β (t)	95% CI	β (t)	95% CI
Neuroticism	0.36*** (0.02)	[0.32, 0.40]			0.30*** (0.02)	[0.26, 0.34]	0.28*** (0.02)	[0.24, 0.32]	0.10*** (0.01)	[0.07, 0.13]	0.07*** (0.01)	[0.04, 0.10]
Openness			-0.43*** (0.02)	[-0.48, -0.39]	-0.37*** (0.02)	[-0.41, -0.33]	-0.36*** (0.02)	[-0.40, -0.32]	0.10*** (0.01)	[0.07, 0.13]	0.10*** (0.01)	[0.08, 0.13]
Conscientiousness			-0.08*** (0.02)	[-0.13, -0.04]	0.03 (0.02)	[-0.01, 0.08]	0.02 (0.02)	[-0.02, 0.07]	0.04** (0.01)	[0.02, 0.07]	0.04** (0.01)	[0.01, 0.06]
Population density	-0.29** (0.09)	[-0.47, -0.10]	-0.20* (0.08)	[-0.36, -0.04]	-0.20** (0.07)	[-0.35, -0.05]	-0.20** (0.07)	[-0.35, -0.05]	0.01 (0.01)	[-0.01, 0.03]	0.01 (0.01)	[-0.01, 0.02]
Historical ind. structure							0.06*** (0.02)	[0.03, 0.10]	0.02* (0.01)	[0.00, 0.05]	0.01 (0.01)	[-0.02, 0.03]
Liberal									-0.69*** (0.01)	[-0.71, -0.66]	-0.66*** (0.02)	[-0.69, -0.62]
White									0.44*** (0.01)	[0.41, 0.47]	0.46*** (0.01)	[0.43, 0.48]
Unemployment									-0.05*** (0.02)	[-0.08, -0.02]	-0.05*** (0.02)	
Earnings									-0.11*** (0.01)	[-0.14, -0.08]	-0.11*** (0.01)	
High education											-0.14*** (0.02)	[-0.17, -0.10]
Constant	-0.00 (0.02)	[-0.04, 0.04]	-0.00 (0.02)	[-0.04, 0.04]	-0.00 (0.02)	[-0.03, 0.03]	-0.00 (0.02)	[-0.03, 0.03]	-0.00 (0.01)	[-0.02, 0.02]	-0.00 (0.01)	[-0.02, 0.02]
Observations	2,082		2,082		2,082		2,082		2,082		2,082	
Adjusted R ²	0.216		0.269		0.343		0.346		0.794		0.796	
F test	189.6		183.8		214		175		966.9		1,210	

Note. OLS regressions. Standardized regression coefficients and 95%CI for the standardized regression coefficients are given. Robust standard errors in parentheses are given. Dependent variables in Models 1-6: Trump votes = 2016 Republican two-party vote share. CI = confidence interval.
***p < .001. **p < .01. *p < .05.

Table 6. Effects of Neuroticism on 2016 U.S. Presidential Election (Trump Gains).

	(1)		(2)		(3)		(4)		(5)		(6)	
Variables	β (t)	95% CI	β (t)	95% CI	β (t)	95% CI	β (t)	95% CI	β (t)	95% CI	β (t)	95% CI
	N		O+C		N+O+C		Industrial Heritage		Socioeconomics I		Socioeconomics II	
Neuroticism	0.43*** (0.02)	[0.39, 0.47]			0.37*** (0.02)	[0.33, 0.41]	0.34*** (0.02)	[0.30, 0.39]	0.20*** (0.02)	[0.16, 0.25]	0.09*** (0.02)	[0.05, 0.13]
Openness			-0.47*** (0.02)	[-0.51, -0.43]	-0.39*** (0.02)	[-0.43, -0.35]	-0.38*** (0.02)	[-0.42, -0.34]	-0.33*** (0.02)	[-0.37, -0.28]	-0.26*** (0.02)	[-0.30, -0.23]
Conscientiousness			-0.11*** (0.02)	[-0.14, -0.07]	0.03 (0.02)	[-0.00, 0.07]	0.02 (0.02)	[-0.02, 0.06]	0.06** (0.02)	[0.02, 0.10]	0.04* (0.02)	[0.00, 0.07]
Population density	-0.16** (0.06)	[-0.27, -0.05]	-0.07 (0.04)	[-0.15, 0.01]	-0.07* (0.03)	[-0.14, -0.01]	-0.07* (0.03)	[-0.14, -0.01]	0.02 (0.01)	[-0.00, 0.05]	0.02** (0.01)	[0.01, 0.03]
Historical ind. structure							0.09*** (0.02)	[0.06, 0.13]	0.07*** (0.02)	[0.03, 0.10]	0.00 (0.02)	[-0.03, 0.03]
Liberal									0.13*** (0.02)	[0.08, 0.18]	0.31*** (0.02)	[0.27, 0.35]
White									0.36*** (0.02)	[0.32, 0.41]	0.36*** (0.02)	[0.32, 0.39]
Unemployment									0.04 (0.03)	[-0.01, 0.10]		
Earnings									-0.29*** (0.02)	[-0.33, -0.24]		
High education											-0.63*** (0.02)	[-0.67, -0.58]
Constant	0.00 (0.02)	[-0.04, 0.04]	0.00 (0.02)	[-0.04, 0.04]	0.00 (0.02)	[-0.03, 0.03]	0.00 (0.02)	[-0.03, 0.03]	0.00 (0.02)	[-0.03, 0.03]	0.00 (0.01)	[-0.03, 0.03]
Observations	2,082		2,082		2,082		2,082		2,082		2,082	
Adjusted R ²	0.216		0.245		0.356		0.363		0.480		0.607	
F test	219.7		199.6		217.6		191.5		185.9		357.7	

Note. OLS regressions. Standardized regression coefficients and 95%CI for the standardized regression coefficients are given. Robust standard errors in parentheses are given. Dependent variables in Models 1-6: Trump Gains = Gain in the Republican two-party vote share between 2012 and 2016. CI = confidence interval.

***p < .001. **p < .01. *p < .05.

individual observations in the personality samples by age and gender when computing the regional traits. These results are displayed in Online Appendix Table A6 for both countries. The results do not differ much from our main regression in Tables 1–3, although the size of the regression coefficients of the traits is slightly reduced in some models.

Discussion

The populist political campaigns of 2016 were widely believed to differ from previous campaigns, particularly in their focus on generating fears and stoking nationalist fervor. Theoretically, campaigns that draw on fear should be particularly compelling to people already prone to being anxious. Consequently, regions with high numbers of anxious people should be more likely to vote for populist issues (e.g., Brexit) and candidates (e.g., Trump) than regions with lower numbers of anxious people. This logic would suggest that regional levels of neuroticism—a dimension not previously associated with voting trends—should be associated with the support for populist issues and, as a result, influence the geopolitical landscape.

When comparing the effect of neurotic traits to the effects of other Big Five traits (Models 1–3 in the regressions), our analyses generally supported this “ sleeper effect ” prediction. Neurotic traits positively predicted share of Brexit and Trump votes and Trump gains from Romney when controlling for openness and conscientiousness. Particularly in the U.S. analyses, many of these effects of neurotic traits persisted in additional tests controlling for regional industrial heritage, political attitude, and socioeconomic features. We observed stronger effects of neurotic traits when examining Trump gains (from Romney), compared to the simple share of Brexit and Trump votes, which underscores our initial assumption that it is particularly the *shift* in voting behavior toward such campaigns addressing fears that reflects the interplay between regional neuroticism and the success of these campaigns.

One key question remains whether fear can be harnessed by any political campaign or whether it is better suited to some positions or policies than to others. For example, could the Remain campaign in the United Kingdom or Hillary Clinton in the United States have pursued fear-based populist campaigns as successfully as those pursued by the Leave and Trump campaigns? We do not have any direct evidence to address this question, but recent theory and research provides indirect evidence to suggest that campaigns built on fear and threat are better suited to conservative campaigns than liberal ones. Specifically, theoretical work suggests that existential needs to reduce threat are associated with political conservatism (Jost et al., 2003) and a preponderance of empirical evidence suggests that individuals’ subjective perceptions of threat, as well as objectively threatening circumstances, lead to shifts toward conservatism (Jost, Stern, Rule, & Sterling, 2017). Concomitantly, experimentally increasing individuals’ feelings of physical safety leads to shifts away from conservatism (Napier, Huang, Vonasch, & Bargh, In Press). In short, the

activation of fear in the electorate would seem to be suited more to conservative positions than to liberal positions.

Our study contributes to a wide range of research demonstrating important effects of neuroticism on various socioeconomic outcomes at the individual (Barlow et al., 2014) and regional levels; regional levels of neuroticism predict lower economic resilience at times of major recession (Obschonka et al., 2016), low mental and physical health (Rentfrow et al., 2015), and substantial costs for society (Lahey, 2009). An analysis of the concrete economic costs to society (e.g., health service uptake in primary and secondary mental health care, out-of-pocket costs, production losses) associated with neuroticism concluded that they are “enormous and exceed those of common mental disorders” (Cuijpers et al., 2010, p. 1086).

The established associations between regional neuroticism and so many consequential outcomes raise the question of how the regional differences in neuroticism and other traits get established in the first place and then maintained over time. A number of mechanisms have been proposed (Rentfrow, Gosling, & Potter, 2008), but such research is still scarce. In the case of regional variation in neuroticism, there is evidence that present-day neuroticism may be associated with major historical events, such as the Industrial Revolution (Obschonka, Stuetzer, Rentfrow, Shaw-Taylor, et al., 2017) or mass societal trauma, such as the bombing campaigns of the Second World War (Obschonka, Stuetzer, Rentfrow, Potter, & Gosling, 2017).

Clearly, more work is needed to understand both the causes and consequences of regional differences in neuroticism. Future research could take a closer look, for example, at the potential interplay between the personality structure of candidates (e.g., Obschonka & Fisch, In Press) and regional personality patterns. One key message of the present research is that the consequences of regional neuroticism may remain hidden until certain conditions are met. For example, the regions that are high on neuroticism in 2016 were likely to be high on neuroticism during previous elections and votes too (in fact, our measurement of regional neuroticism rested on this assumption). However, we argue that it was not until the 2016 populist campaigns were launched that the potential effects of regional neuroticism were expressed. This finding raises the possibility that there may be other regional characteristics that have the potential to influence geopolitical events, but the necessary conditions have not yet materialized.

Conclusion

Our analyses provide support for the widespread account of the appeal of the populist messages promoted by the Brexit and Trump campaigns. Consistent with the idea that populist campaigns played on the fears of the voters, those regions high in neuroticism were more likely to vote in the populist direction. The role of regional neuroticism in predicting voting behavior has not been identified before, suggesting that it could have been a latent factor lying dormant until the right conditions—in this case, populist political campaigns—were realized. In

other words, neuroticism seems to exert a “sleeping effect” with the potential to have a profound impact on the geopolitical landscape, especially in light of the rise of populism across the globe.

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Supplemental Material

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