National Personality Traits and Regime Type: A Cross-National Study of 47 Countries

Joan Barceló

Abstract
Domestic theories of democratization emphasize the role of values, interests, and mobilization/opportunities as determinants of regime change. This article takes a step back and develops a model of national personality and democratization to ascertain the indirect effect of national personality traits on worldwide variation of regime type. In particular, I theorize that personality traits influence a country’s regime type by shaping citizens’ traditional and self-expression values, which, in turn, influence the establishment and consolidation of democratic institutions. Data from McCrae and Terracciano’s assessment of the five-factor model from 47 countries allow me to assess this hypothesis empirically. Results reveal that countries whose societies are high in Openness to experience tend to have more democratic institutions, even after adjusting for relevant confounders: economic inequalities, economic development, technological advancement, disease stress, climate demands, and methodological characteristics of the national sample. Although the effect of Extraversion on a country’s democratic institutions is also significantly positive, the inclusion of confounders weakens the reliability of this association. In an exploration of the mechanisms of these associations, a mediation analysis shows that the relationship between national Openness and democratic institutions is channeled through secular and especially self-expression national values. The same analysis with the effect of Extraversion on democracy indicates that the association between this trait and democracy is only channeled through national self-expression values but not national secular values. In short, this article constitutes a first step toward a more complete understanding of the cross-cultural psychological roots of political institutions.

Keywords
cultural psychology, group processes, national development, personality, values, attitudes, beliefs

Scholars consider culture and institutions to be fundamental domestic determinants of democratization, albeit from different perspectives. On one hand, culturalists approach values and political culture as exogenous theoretical constructs, not determined by anything except for path-dependent national histories. On the other hand, institutionalists model values and culture as endogenous factors and regard the distribution of incentives among actors within institutions as

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the driving force for political change. Thus, values and culture are regarded as epiphenomenal, a variable with minimal unique effects and largely endogenously determined by a nation’s institutional environment. Similarly, those scholars who highlight the role of mobilization mechanisms theorize homogeneous effects of mobilization factors, mainly unconditional on the particular society under study. In summary, most accounts conceptualize populations with fixed characteristics equivalent to all nations.

The combination of two strands of literature challenges the view that a country’s population possesses unique characteristics. First, personality psychologists and political scientists have accumulated much evidence suggesting that individuals possess dispositional personality traits fundamental to the formation of social and political attitudes and behavior (Gerber, Huber, Doherty, & Dowling, 2011). Second, cross-cultural psychologists have found a similar structure of personality at the individual and at the aggregate level, commonly known as the Big Five (McCrae & Terracciano, 2005a, 2005b; Schmitt, Allik, McCrae, & Benet-Martínez, 2007). This article brings together research on democratization and national personality traits to examine whether cross-national variation in nationally aggregated personality traits has influenced countries’ level of democracy and the acquisition of democratic institutions over time. Furthermore, it explores a mechanism that may connect national personality traits and the acquisition of democratic institutions.¹

As variation in the variable of interest is a necessary condition for any empirical endeavor, we should begin by asking whether national personality mean scores vary across different geographical units. And, if so, why this is the case. An occasional observer could easily discern a non-random distribution of individuals’ characteristics around the world. For instance, people of all nationalities readily attribute psychological characteristics to national groups (Peabody, 1985). However, social scientists have been reluctant to use psychological constructs to characterize aggregate national, ethnic, racial, or social units. Some have rejected the existence of cross-cultural differences in attributes for the potential misuse of findings (Pinker, 2002). In addition to moral barriers, exploring the universality of psychological constructs used to be an expensive endeavor. In recent years, multicultural psychologists have made a step forward toward a modern cross-cultural assessment of core psychological aspects. Most frequently encountered psychological assessment instruments developed in English have been translated into numerous languages made with the implicit or explicit assumption that they capture psychological characteristics that transcend specific language and cultural settings (Fayyad et al., 2007; Schmitt & Allik, 2005).

Geographic variation in personality traits could emerge from a variety of factors (Mondak & Canache, 2014; Murray & Schaller, 2010; Rentfrow, Gosling, & Potter, 2008; Schaller & Murray, 2008). First, geographic differences in personality may be due to enculturation, that is, cultural or socioeconomic influences that affect individuals as a function of their geographic proximity, connectedness, or belonging to a common group. An important set of empirical contributions have provided strong evidence for the pathogen-stress model (Murray, 2014; Murray & Schaller, 2010; Murray, Schaller, & Suedfeld, 2013). According to this, the prevalence in the environment of pathogens activates psychological mechanisms of protection that shape individuals’ personality as a function of their geographic location. Similarly, climatoeconomic theorists argue that thermal demands, too little and/or too much heat, may influence a society’s cultural development and the choice of its political institutions (e.g., Kong, 2013; Robbins, 2015; Van de Vliert, 2013b).

A second factor is evolutionary adaptation or genetic drift. The Big Five has been shown to be highly heritable (Jang, Livesley, Angleitner, Riemann, & Vernon, 2002) within a population. Across populations, alleles related to personality may be more common in some populations than others due to differences in ancestries of the populations. In this regard, Schaller and Murray (2008) show evidence that link cross-national personality differences to the prevalence of infectious diseases in the local ecology. As a result of adaptive responses to the environment and inter-generational reproduction, biological differences are eventually grouped together.
Finally, a third factor is selective migration. Either consciously or unconsciously, people may be attracted to living where similar people live, or similar people may be attracted to living in similar environments or in places with particular geographic characteristics. Furthermore, personality has been shown to predict migration patterns, with people high in Openness and Extraversion and low in Agreeableness being more likely to migrate (Jokela, 2009).

In summary, cross-country variation and the availability of aggregate personality scores for a sufficient number of countries from McCrae and Terracciano (2005a, 2005b) enable me to contribute to addressing a long-standing research question in the democratization literature: Do national personality traits influence a country’s democratization? This article begins to shed some light on this question.

The remainder of the article is divided into four primary sections. In the section “Domestic Theories of Democratization,” I present the main theories in the democratization literature and explore how nationally aggregated personality traits are interpreted in each research perspective of this literature. The section “Culture-Level Personality Traits and Democratization: The Macro–Micro Linkage” outlines the rationale for exploring a relationship between national personality traits and democratization, my expectations regarding the particular role of Openness and Extraversion over other traits, and the mechanism that links them to changes in political institutions. In the section “Method,” I discuss my empirical strategy, the data, and the measurement of the concepts. Next, I present the empirical link between national personality traits and democratic institutions, discuss alternative explanations for my findings, show results on the impact of national personality on the timing of countries’ democratization, show how values are the connectors between the two variables, and assess a two-way process of causation. The last section “Discussion and Conclusion” discusses the limitations and the empirical implications, and concludes the article.

**Domestic Theories of Democratization**

The democratization literature has been largely clustered along two major lines of research to understand regime change: a domestic and an international approach. Unlike the international approach, which focuses on an external influence on a country’s institutions and is outside the scope of this article, the domestic approach looks at forces developing within a country, the main force being modernization. These so-called modernization theories can further be divided into three different kinds of mechanisms: culture, interests, and mobilization (Brancati, 2014). In the culture-based approach, the earliest studies about why regime change occurs stressed the role of modernization through its effect on social norms that individuals internalize. These social norms eventually shape people’s desire for democracy. According to Lipset’s (1959) seminal work, high income and education led to more tolerant and moderated political views, which are considered as prerequisites for people’s democratic values, regimes’ democratization, and democratic consolidation. Thus, income and education have been proposed as key correlates of a democratic culture and democratic institutions (Almond & Verba, 1963; Hadenius, 1992; Lipset, 1959; Przeworski, Alvarez, Cheibub, & Limongi, 2000).

More recently, some scholars have provided a more complex perspective on the matter. Among the most notorious developments in the classic cultural approach is the association of social capital with democratic values, democratization, and democratic consolidation (Boix & Posner, 1998; Granato, Inglehart, & Leblang, 1996; Putnam, Leonardi, & Nanetti, 1993). Adding to this culture-based research line, other scholars also stress the importance of postmodern values that promote an individual sense of self-expression (as opposed to survival) as well as a culture of secular and rational (as opposed to traditional) orientation toward authority (Inglehart, 1997, 2003; Welzel, 2013; Welzel & Inglehart, 2008).²

From another perspective, cross-cultural psychologists have argued over the existence of exogenous and deeply rooted factors that may influence societal and institutional features. On
one hand, there is the pathogen-stress model. According to this model, the prevalence of pathogens in the environment causes the activation of psychological and cultural mechanisms of protection from external agents, which may explain the cross-national variability in political institutions (Murray & Schaller, 2010; Schaller & Murray, 2008).

On the other hand, another major explanation in the field is a country-specific level of too little and/or too much heat radiation from the space. Thermal demands are argued to influence societal values, trust, and even the democraticness of political institutions (Kong, 2013; Robbins, 2015; Van de Vliert, 2007, 2013a, 2013b; Van de Vliert & Postmes, 2014), contingent on a country’s economic wealth. For instance, Kong (2013) reports that thermal climate and national wealth have no main effects on trust but influence each other’s effects. Similarly, Van de Vliert and Postmes (2014) report no main effect of cold demands on democracy but a negative main effect of heat demands on democracy. As for climate-economic interactions, they show that democracy is highest in rich countries with cold winters and cool summers, and lowest in poor countries with cold winters irrespective of how hot the summers are.

A second strand of literature on the role of domestic factors views the occurrence of regime change as the convergence of interests among relevant social groups. Recent work by Boix (2003) and Acemoglu and Robinson (2005) has centered on the role of distributive conflict between social classes to explain regime transitions to and from democracy. Redistributive models of democracy stem from the same rationalist logic of citizens’ preferences over institutions. In their models, an authoritarian rule is conceptualized as a government dominated by an elite group. Building on the median voter theorem (Downs, 1957; Meltzer & Richard, 1981), this elite group implements their preferred tax rate, which minimizes redistribution. By contrast, the disenfranchised, the poor, and the lower class that have no say under an authoritarian rule would prefer a greater redistribution policy, which would be implemented under a democratic regime.

Given two antagonistic groups (the upper and the lower class), a distributive conflict, and an initial setting of an authoritarian regime, the question that remains is why those who monopolize political power would ever decide to put their interests at risk by extending political rights to anyone else (Przeworski, 2009). According to Boix (2003) and Acemoglu and Robinson (2005), those who hold power under an authoritarian rule evaluate the cost of repressing the opposition as compared with the expected cost of tolerating oppositional groups to take power and transition toward a democratic regime. Similarly, costs of transferring power to poor are greater when economic inequality and asset specificity is high (e.g., oil-dependent economies). To sum up, three factors determine countries’ likelihood to democratize: economic inequality, asset specificity, and costs of repression (Boix, 2003).

According to a third group of scholars, mobilization resources have been historically seen as fundamental in translating will into action in classic models of collective action (McCarthy & Zald, 1977; Tilly, 1978). In the democratization literature, scholars have mainly focused on two aspects: the structure of time through the emergence of political opportunities and the appearance of technological advancements used as coordination devices for protest. On one hand, most research in this area highlights the role of fraudulent elections as coordination events around which to organize protests (Beaulieu, 2014; Tucker, 2007). On the other hand, the ever-increasing availability of technology such as radio, TV, satellite TV, mobile phones, and the Internet lowers the cost to the citizenry of coordination of organizing political protest (Farrell, 2012; Lee, 2014; Tufekci & Wilson, 2012).

In each of these different approaches to democratization, culture-level personality traits may enrich our theoretical understanding of transitional processes. A common denominator in most strands of literature is the outstanding role of ordinary people—or non-elites. Citizens are commonly seen as central actors in the implementation of democratic reforms, and the establishment and consolidation of democratic institutions. Most fundamentally, the appealing idea that values
flourish from distinctive collective personalities, which subsequently influence cross-national institutional configurations, underlies the culturalist approach in the democratization literature.

However, a heterogeneous understanding of societies can also provide new insights into the rational choice tradition. In this, elites’ costs of repressing or tolerating the opposition are understood to be a function of citizens’ mobilization potential. Therefore, it is reasonable that societies have different propensities of mobilization and revolt depending on their nationally intrinsic characteristics (e.g., personality, values, etc.) given an equal level of income, economic inequalities, or political repression by the elites. Similarly, national personality may also be an important exogenous factor in mobilization theories. National personality traits are a reliable indicator of the extent, the form, and the direction in which resources are eventually used. All in all, national personality traits integrate well within the rationalist and mobilization approaches to democratization and, in particular, it is fundamental in explaining the cross-country variation of democratic institutions and values that underlie the culturalist approach.

**Culture-Level Personality Traits and Democratization: The Macro–Micro Linkage**

One of the major advancements in research on individual psychological traits is the accumulation of much evidence, along with a growing consensus among scholars, of a personality model encompassing five broad dimensions. In brief, *Openness to experience* (O) characterizes individuals by their curiosity, attraction for the unknown, and willingness to explore new experiences, which includes facets like imagination and artistic interests. *Extraversion* (E) is linked to facets such as gregariousness, activity, and emotion-seeking, and people high in this trait have an energetic, optimistic, and active way of looking at the world. *Agreeableness* (A) assesses facets related to sincerity, altruism, and modesty. *Neuroticism* (N), or emotional stability, defines individuals with tendency toward anxiety, self-consciousness, and angry hostility. Finally, *Conscientiousness* (C) includes dispositions to impulse control prone to functionally oriented behavior and facets such as orderliness, self-discipline, and achievement striving. Most personality characteristics are subsumed within one of the above dimensions (Goldberg, 1990; John, Naumann, & Soto, 2008).

The Big Five have historically intended to measure and conceptualize individual-level, as opposed to collective, attributes. However, cross-cultural psychologists have challenged this idea. An outstanding contribution in this line has been made with the assessment of the Big Five personality traits Five-Factor Model (FFM) in a large number of countries. Despite differences in cultural features (languages, history, religion, etc.), the hypothesis that the FFM is generalizable across cultures has been mainly supported from cross-cultural personality traits assessment (Schmitt et al., 2007), observer-rating scales (McCrae & Terracciano, 2005a, 2005b), and national character personality scores (Paunonen et al., 1996). Most commonly, personality scores are obtained from aggregating individual scores in survey responses, which have been tested to produce reliable estimates of population-level personality traits (McCrae & Terracciano, 2005a, 2005b; Schmitt et al., 2007).

Whatever is the driving factor of the geographic variation of personality around the world, the fact is that there are national-level differences of personality means across geographic units that may be relevant to explain cultural and institutional cross-country variation. Some scholars have found population differences in personality traits to be correlated with a number of social and economic covariates. They emerge as significant predictors of subjective well-being (Minkov, 2009), life satisfaction, happiness (P. Steel & Ones, 2002), national intelligence (Stolarski, Zajenkowski, & Meisenberg, 2014), consumer tendencies (Herstein et al., 2012), national environmental engagement (Milfont & Sibley, 2012), environmental sustainability (Hirsh, 2014),
cross-national GDP (McCrae & Terracciano, 2005a, 2005b), global competitiveness (McCrae & Terracciano, 2005a, 2005b), and human development index (McCrae & Terracciano, 2005a, 2005b). Most relevant for political science, national personality has been found to correlate with perceived corruption (Connelly & Ones, 2008), state-level presidential voting (Avery, Lester, & Yang, 2015; Rentfrow, Jost, Gosling, & Potter, 2009), state-level ideology (Mondak & Canache, 2014), and political and civic culture in the American States (Mondak & Canache, 2014).

Nevertheless, the literature on national personality and macro-level political processes in a cross-national perspective is underdeveloped. This article opens an avenue to examine the implications of national personality and a fundamental macro-political process such as democratization. The role of ordinary people in a country’s democratization is a fundamental piece of the equation by researchers from all theoretical paradigms. The likelihood to support democracy may vary across societies according to some population characteristics, which would still be in line with the rationalist and mobilization theory. However, this research can most profoundly contribute to the culturalist paradigm where an individual’s attitudes are at the heart of the model (Almond & Verba, 1963; Boix & Posner, 1998; Granato et al., 1996; Inglehart, 2003; Inglehart & Welzel, 2005; Lipset, 1959; Putnam et al., 1993; Welzel, 2013; Welzel & Inglehart, 2008).

Adding to this literature, this article proposes that national personality traits causally influence and antecede values, which, in turn, influence democratic institutions. Societal values are the mechanism that link national personality traits and political institutions. In particular, I hypothesize that secular and self-expressive/emancipative values intermediate the relationship between national personality traits and the democraticness of a country’s political institutions. The model with the research hypotheses is depicted in Figure 1. From the personality traits in the Big Five Model, I expect Openness and Extraversion to be particularly salient in this process.

First, individuals scoring high in Openness have been described as imaginative, creative, and original, able to create and think about new ideas that challenge the status quo. In contrast, those scoring low in this trait have been found to feel comfortable with the familiar and traditions and lack the incentive to try new things (McCrae, 1987; McCrae & Costa, 1997). Furthermore, Openness correlates with the support for democratic values, internal efficacy (Vecchione & Caprara, 2009), and several indicators of political engagement (Mondak, Hibbing, Canache, Seligson, & Anderson, 2010). At the macro level, previous research finds Openness score to be related to several indicators of national innovation and creativity (D. Steel, Rinne, & Fairweather, 2012). As a consequence, I expect that societies whose national mean score of Openness is high will be more exposed to and eager to adopt new, innovative, and tradition-challenging ideas such as democracy. This would lead these countries to hold more secular/rational (as opposed to traditional values) and self-expression (as opposed to survival values) and, eventually, increase their likelihood to democratize earlier and more profoundly.

Second, individuals scoring high in Extraversion are consistently more likely to participate in group-based political participation (Gerber, Huber, Doherty, Dowling, et al., 2011; Mondak et al. 2010). Thus, extraverted individuals are more likely to attend campaign events and rallies,
express their views in petitions, discuss about politics, and show higher levels of internal political
efficacy (Vecchione & Caprara, 2009). They also tend to engage more in any kind of social inter-
action and, as a consequence, in politically based social interaction. Therefore, I expect that a
country whose society has a higher Extraversion mean score will be more likely to have demo-
cratic institutions given its higher mobilization potential. However, as I do not have strong rea-
sons to claim its indirect effect through values, I expect national Extraversion to affect a country’s
democratic institutions mostly in a direct manner.

Accepting that a country’s mean tendency of personality may affect the institutions a country
has does not undermine a process that might also occur simultaneously, that is, the importance of
the sort of political institutions in a country in citizens’ psychological processes. Individuals who
live in authoritarian regimes may become more introverted due to the limitations imposed by the
regime on basic freedoms, especially those related to personal interactions in the public sphere.
Similarly, citizens in non-democratic countries might be less open to new and tradition-challeng-
ing ideas. Therefore, a correlation between national personality traits and levels of democracy
might plausibly derive from the existence of mutual influences between the two variables. In any
case, the existence of one directional process does not undermine the other, yet they both stand
as the empirical hypotheses of the article.

**Method**

**Empirical Strategy**

Even though I am not in a position to fully validate this model, what I can do is to provide evi-
dence consistent with this interpretation. For this, the empirical strategy is designed in three
stages. In the first stage, I analyze the bivariate and multivariate correlates of societal personality
traits and a country’s level of democracy. In the second stage, I briefly review the literature on
domestic factors and democratization and check the robustness of the personality traits correlated
after adjusting for relevant confounders (e.g., income, growth, inequalities, technology, cultural
variables). Finally, I test the explanatory power of the theoretical and empirical model to check
the causal mechanism. Thus, the relationship between personality and nationally aggregated tra-
ditional and self-expression values is empirically tested. Finally, the two-way causation is
explored to see whether national personality influences institutions, institutions influence per-
sonality, or both.

**National Personality Data**

Nationally aggregated personality profiles are obtained from the Personality Profiles of Cultures
project (McCrae & Terracciano, 2005a, 2005b). This data set reports the mean trait level of a
number of 51 nations. It has been used for previous research to account for cross-country cultural
and institutional variation (Connelly & Ones, 2008; Hirsh, 2014; McCrae & Terracciano, 2005a,
2005b; Milfont & Sibley, 2012). A number of 12,122 individuals rated an individual from their
country whom they know well under four randomly assigned conditions—college-age men, col-
lege-age women, adult men, and adult women. National personality means are obtained from the
Revised NEO Personality Inventory (NEO-PI-R). This instrument is based on 240 items with 30
eight-facet scales and is among the most well-known and reliable personality instruments that
capture the FFM (Costa & McCrae, 1992). Observer-rated personality reduces the impact of
social desirability responses and highly correlates with self-reported personality scores (McCrae
& Terracciano, 2005a, 2005b). The aggregate results extracted are the result of 51 college student
samples around the world with basic demographics matched with the entire country’s population.
Because of the uniform approach in the data collection, results are more likely to be comparable
across countries (Schwartz, 1992). Furthermore, scores have proven to be valid, reliable, and
generalizable across men and women and college-age and adult subsamples as well as interrater
reliability of the aggregate scores (McCrae & Terracciano, 2005a, 2005b). The majority of the
personality data was assessed between 2002 and 2004.³

Measuring Democracy

There is not a fully satisfactory measure of democracy (Munck & Verkuilen, 2002). Therefore,
choosing the right measure means considering the trade-off of different characteristics: closeness
to the theoretical concept, comprehensiveness (spatial and temporal coverage), and so on. For the
main analysis in this article, I take Vanhanen’s index of democracy in 2000 (Vanhanen, 2000).
Vanhanen (2003) defines democracy as “a political system in which ideologically and socially
different groups are legally entitled to compete for political power and in which institutional
power holders are elected by the people and are responsible to the people” (p. 49). Like Dahl’s
(1991) definition of democracy, Vanhanen’s index measures democracy as a combination of con-
testation and participation.

In the democratization literature, there are two main alternatives to Vanhanen’s index of
democracy. On one hand, the most widely used measurement is the Polity IV composite democ-
racy score. This conceives democracy as a combination of three interdependent components: the
existence of institutions and procedures by which citizens can freely express their preferences,
the presence of institutionalized constraints on the executive, and, finally, protection of citizens’
basic civil liberties (Marshall, Jaggers, & Gurr, 2015). On the other hand, the best measure for a
maximalist conception of democracy is provided by the Freedom House (2014) index, which
conceptualizes political rights and civil liberties as part of a basic definition of democracy. The
reference year for both indices is 2005. The advantages of Vanhanen’s index are that it is concep-
tualized as halfway between the broadness of the Freedom House index and the narrowness of
the polity score.

Results

National Personality Traits and Democratic Institutions

All analyses are conducted on the subsample of 47 countries for which there are national mean
personality traits reported in McCrae and Terracciano (2005a, 2005b) as well as standard democ-
racy scores available. As the dependent variable is continuous, the standard approach is to esti-
mate the coefficients through ordinary least squares (OLS). However, OLS requires distributional
assumptions (such as normally distributed errors) when the sample size is small. As the number
of countries that have available personality scores and a value in the democracy index is limited
to 47 countries, I choose to implement bootstrap regression models. Bootstrap estimates will
enable me to provide more accurate inferences (Fox, 2015). This will become the standard mod-
eling technique for all the analyses in this article.

To begin with, simple bootstrapped regressions are run between each trait and the democracy
score. From these, I find that a country’s central tendency of Openness (β₀ = 2.70, p < .01),
Extraversion (βₑ = 2.22, p < .01), and Agreeableness (βₐ = 2.72, p < .01) is positively associated
with a country’s level of democracy. By contrast, the relationships between nationally aggregated
Neuroticism and democracy (βₙ = 2.72, p < .01), and Conscientiousness and democracy are not
(βᶜ = 1.24, p < .01).⁴

To test whether they are unique predictors of democracy levels, Table 1 reports the results
from the multivariate bootstrapped regression. Column 1 shows that the effects of Extraversion
and Openness are positively associated with a country’s index of democracy. These are the traits
### Table 1. National Personality Traits and Democracy Levels After Adjusting for Relevant Confounders.

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<td>Openness</td>
<td>2.53*** (0.96)</td>
<td>2.53*** (0.96)</td>
<td>1.44* (0.92)</td>
<td>1.56** (0.88)</td>
<td>2.08*** (0.87)</td>
<td>2.07*** (0.86)</td>
<td>1.47** (0.80)</td>
<td>1.65*** (0.78)</td>
<td>1.34* (0.87)</td>
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<td>Extraversion</td>
<td>1.93*** (0.62)</td>
<td>2.00*** (0.61)</td>
<td>0.57 (0.67)</td>
<td>0.76 (0.83)</td>
<td>0.95 (0.65)</td>
<td>1.71*** (0.61)</td>
<td>1.01* (0.72)</td>
<td>1.59*** (0.69)</td>
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<td>Agreeableness</td>
<td>0.48 (1.11)</td>
<td>0.41 (1.17)</td>
<td>−0.07 (0.99)</td>
<td>−0.40 (1.18)</td>
<td>−0.38 (1.00)</td>
<td>−0.36 (1.06)</td>
<td>−0.61 (1.21)</td>
<td>1.19 (1.16)</td>
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<td>Neuroticism</td>
<td>0.93 (1.16)</td>
<td>0.99 (1.18)</td>
<td>0.75 (0.83)</td>
<td>1.35* (0.94)</td>
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<td>Conscientiousness</td>
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<td>Acquiescence rate</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>−0.26*** (0.13)</td>
</tr>
<tr>
<td>Log(GDPc) × Thermal Demands</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.09 (0.24)</td>
</tr>
<tr>
<td>Constant</td>
<td>−280.0*** (67.8)</td>
<td>−283.7*** (67.4)</td>
<td>−172.5*** (56.9)</td>
<td>−182.7*** (67.5)</td>
<td>−204.1*** (62.9)</td>
<td>−239.7*** (64.7)</td>
<td>−136.2*** (79.5)</td>
<td>−128.6 (99.2)</td>
<td>−164.8 (60.5)</td>
</tr>
<tr>
<td>Observations</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
<td>47</td>
</tr>
</tbody>
</table>

Note. Bootstrapped OLS regression models based on 20,000 replications (see replication files for the set seed used in the analysis). Standard errors in parenthesis. GDPc = GDP per capita; OLS = ordinary least squares.

Significance values: *p < .1. **p < .05. ***p < .01 from one-tailed tests.
that are hypothesized to affect democracy levels more strongly. In particular, Openness ($\beta_O = 2.53, p < .01$) and Extraversion ($\beta_E = 1.93, p < .01$) are significant at 99.9% confidence level, even after all other traits are kept constant.\(^5\)

The strength of these findings is not only because of the positive associations that are reported between Openness and Extraversion but also because all relationships between traits with the index of democracy are reported. In other words, this allows me to assess the discriminant validity of my findings, that is, whether variables that are supposed to be related are related, but also whether those that are not supposed to be related are, in fact, unrelated. In this regard, the lack of a relationship between Agreeableness ($\beta_A = 0.48, p > .1$), Neuroticism ($\beta_N = 0.93, p > .1$), and Conscientiousness ($\beta_C = 0.23, p > .1$) lends further credence to the existence of the above hypothesized relationships.

Controlling for Alternative Explanations

While higher levels of national Openness and Extraversion are correlated with a country’s current level of democracy, it is possible that a third variable might account for these relationships. To make sure that the association between nationally aggregated personality traits and a country’s level of democracy is not spurious due to an alternative variable, I re-estimate the full model from Table 1 (column 1) after controlling for several confounders.\(^6\) A dominant strand of the democratization literature views the occurrence of regime change as the consequence of either economic development or low income inequalities or both (Acemoglu & Robinson, 2005; Boix, 2003; Przeworski et al., 2000). To test whether these variables can account for the observed correlations, columns 2 and 3 report the multivariate analysis after controlling for a measure of economic development—GDP per capita—and a measure of economic inequality—Gini coefficient.

In the first place, I use a country’s Gini coefficient in 2005 (or closest) from the World Bank data as a measure of its economic inequality. Column 2 shows that the coefficient of Openness remains significantly positive ($\beta_O = 2.53, p < .01$) after adjusting the coefficients for a country’s economic inequalities. Similarly, the point estimate of Extraversion also maintains its positive and significant effect on democracy ($\beta_E = 1.93, p < .01$). Other predictors are far from standard thresholds of significance. The effect of the Gini coefficient is negative. As expected, more economically unequal countries have lower levels of democracy; however, the effect is not statistically significant ($\beta_{\text{Gini}} = -0.002, p > .1$).

In the second place, I use the log of the GDP per capita in 2005 from the World Bank data as a control variable. Column 3 from Table 1 reports that the effect of Openness is positive, although only marginally significant at a 90% level ($\beta_O = 1.44, p < .1$). Although the $p$ value is not below the .05 level, the bootstrapped estimates yield some confidence on the positive effect of Openness after adjusting for GDP per capita. In particular, the vast majority of the replicates yield an estimate above 0—9,332 out of the 20,000 replicates—and the majority of them even above 1—6,430 out of the 20,000 replicates yield an estimate above 1. By contrast, all other predictors are not close to statistical significance, including Extraversion ($\beta_E = 0.57, p > .1$). As expected, the coefficient of GDP per capita has a great effect size and highly different from zero ($\beta_{\text{GDP pc}} = 4.15, p < .01$).

Following the importance of mobilization in the democratization literature discussed above, I also test whether technological advancements in a country confounds the relationship between a country’s nationally aggregated personality traits and democracy score. I operationalize this concept by taking the number of Internet users per 100 inhabitants in 2005 as provided by the World Bank. After adjusting the estimates for this variable, column 4 from Table 1 shows that the coefficient of Openness remains significantly positive in the one-tailed test at 95% confidence level ($\beta_O = 1.56, p < .05$). With the exception of Neuroticism, which is significant at a 90% confidence level ($\beta_N = 1.35, p < .1$), all other effects fall short of statistical significance. Unsurprisingly, the effect of the number of Internet users is positive and statistically significant ($\beta_{\text{Internet}} = 0.22, p < .01$).
Two important alternative explanations come directly from the cross-cultural psychology literature. On one hand, a relationship between a country’s level of Openness and Extraversion and its level of democracy is vulnerable to the confounding factor of diseases prevalence. To address this concern, the full model is adjusted for the prevalence of diseases in the country. Following Murray and Schaller’s (2010) nine-item disease index, a country’s disease stress is measured as the prevalence of each of the following nine diseases: leishmaniasis, schistosomes, trypanosomes, leprosy, malaria, typhus, filariasis, dengue, and tuberculosis. Column 5 from Table 1 reports the adjusted effects. After taking into account the pathogen-stress model, the positive effect of Openness remains significantly positive ($\beta_O = 2.08, p < .05$). Two other traits are only significant at 90% confidence level but not at the 95% level with one-tailed tests: Extraversion ($\beta_E = 0.95; p < .1$) and Neuroticism ($\beta_N = 1.41; p < .1$).

On the other hand, another important explanation is the country-specific heat radiation from space. Not accounting for this alternative explanation may be a serious shortcoming of this empirical strategy. Most importantly, some recent studies have shown that a country-specific level of too little and/or too much heat might influence societal values, trust, and even the democraticness of political institutions (Kong, 2013; Robbins, 2015; Van de Vliert, 2007, 2013a, 2013b; Van de Vliert & Postmes, 2014). However, it is also true that no research so far have shown a relationship between nationally aggregated personality traits and climate. To measure thermal demands in the form of too little and/or too much heat radiation from space, scholars define the most ideal temperature to be at 72°F, or 22.2°C (e.g., Kong, 2013; Van de Vliert, 2007). Then, I sum up the two absolute difference scores between the average low and 22.2°C and the average high temperature and 22.2°C to create a second index of country-specific demanding thermal climate based on data of societies’ average temperatures from the website of Weatherbase (www.weatherbase.com). In this measure, a higher value represents a more demanding thermal climate.

Thus, column 6 from Table 1 reports the results after the inclusion of the thermal climate variable, and rules out the possibility that this variable confounds the main relationships between Openness and Extraversion, and the index of democracy. As a refinement of Models 3 and 6, Model 9 controls for thermal demands, wealth resources, and their interaction, which accounts for the conditional claims of the effect of thermal demands. On one hand, the main-effect model shows that the effect of Openness remains significantly positive and with a substantive effect largely unchanged from the uncontrolled model ($\beta_O = 2.07, p < .01$). Similarly, the effect of Extraversion is largely unaffected by the inclusion of this variable ($\beta_E = 1.71, p < .01$). On the other hand, the estimates adjusted for thermal demands, wealth, and their interaction are generally less efficient given the reduction in degrees of freedom in the model. This is so much the case that neither the well-known empirical relationship between economic development and democracy nor the significance of the interaction term disappears. Even in this conservative specification, Model 9 shows that the effect of Openness remains marginally significant at 90% confidence level with the vast majority of the estimates consistently pointing toward a positive effect of Openness and the majority of them yielding a point estimate above 1.

Generally speaking, results also support the positive effect of harsher climate conditions on a country’s index of democracy. This is consonant with Kong’s (2013) extension of the effects of climate on societal generalized trust. In addition, the expectation of a negative main effect of thermal demands on democracy and positive interaction with wealth resources is also consistent with Van de Vliert and Postmes’s (2014) prior work, although the coefficient falls short of statistical significance. In summary, these results support the thesis that nationally aggregated personality traits are associated with a country’s institutional configuration independent from the effect of climate.

Another alternative explanation of these results is methodological artifact. The quality of the data in each sample varies as a function of their proximity to the Western culture. The NEO-PI-R was initially conceptualized in capturing the personality traits in Western countries. Thus, data...
quality depends on the fit between an imported Western personality measure and the experience and attitudes of individuals in each country. For instance, translation may convey different meanings, response styles may vary across countries, respondents may be more unfamiliar of completing a questionnaire in some countries and less in others, and so forth. All these factors indicate that the data quality of the samples might influence the nationally aggregated traits extracted for each country. And, at the same time, data quality may also be correlated to being a Western and democratic country.

To control for the influence of data quality in the relationships, McCrae and Terracciano (2005b) created an index of data quality based on six indicators: (a) percentage of valid responses in the sample; (b) frequency of acquiescent responses (reverted), which is measured as mean sum of agree or strongly agree responses; (c) number of missing responses (reverted); (d) questionnaire in native language; (e) questionnaire using an unpublished translation from the original NEO-PI-R (reverted); and (f) presence or absence of a problem during the administration of the questionnaire.

I take this overall quality index and the more specific acquiescence index (second component in the quality index) to check the robustness of the empirical relationships between personality traits and levels of democracy. Bootstrap regression models with 20,000 replicates confirm the robustness of the estimate of Openness and Extraversion to unequal quality of the data. In particular, the effect of Openness is significantly positive after controlling for both the quality index ($\beta_O = 1.47, p < .05$) and the acquiescence rate ($\beta_O = 1.64, p < .05$). Similarly, the effect of Extraversion is positively associated in the model that includes a control for the overall quality of the data, although only at a 90% confidence level and not at the standard threshold of 95% confidence level ($\beta_E = 1.01, p < .1$). By contrast, the relationship remains significantly so after adjusting for people’s acquiescence at a 95% confidence level ($\beta_E = 1.59, p < .05$). All other coefficients remain statistically insignificant in both models. The effect of the controls is significant at conventional levels in the expected direction. In short, a country’s quality of the data is correlated with a higher levels of democracy ($\beta_{Quality index} = 0.65, p < .01$) and the rate of acquiescence with lower levels of democracy ($\beta_{Acquiescence} = -0.26, p < .05$).

The Mechanism: Traditional and Self-Expression Values

My model assumes that national personality develops at an early time in national histories, only changes over long periods of time, and influences the development of societal values. As a consequence, the impact of personality on the likelihood of having democratic institutions is basically indirect—that is, personality contributes (in combination with other factors, especially economic inequalities, development, technological advancement, local exposure to diseases, etc.) to nourishing values, which themselves more directly affect the likelihood to transition toward more democratic institutions.

Societal values are measured by using Inglehart and Welzel’s (Inglehart, 2003) traditional versus secular and self-expression versus survival values. This is a measure temporally close to the Vanhanen’s (2003) measure of democracy used in the analysis, and the closest to the national measures of the Big Five (collected between 2002 and 2004 by McCrae & Terracciano, 2005a, 2005b). In a recent contribution, Welzel (2013) claims that emancipative values are the subset of values that are most strongly related to democratic development. Emancipative values are defined as a subset of self-expression values, and include values that emphasize an individual’s freedom of choice and equality of opportunities. To make sure my analysis is not sensitive to the use of either measure, I keep the main analysis in the text the measures of self-expression values because they are temporally closest to the other covariates in the models.

Table 2 regresses Vanhanen’s index of democracy on both societal values (traditional and self-expression values) and national personality traits in different models and in the same model. If
Table 2. National Personality Traits, Values, and Democratic Institutions.

<table>
<thead>
<tr>
<th>Dependent variables</th>
<th>Index of democracy</th>
<th>Secular rational values</th>
<th>Index of democracy</th>
<th>Index of democracy</th>
<th>Self-expression values</th>
<th>Index of democracy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
</tr>
<tr>
<td>Secular values (as opposed to traditional values)</td>
<td>5.10*** (1.74)</td>
<td></td>
<td>3.30** (1.58)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-expression values (as opposed to survival values)</td>
<td></td>
<td>6.16*** (1.92)</td>
<td></td>
<td></td>
<td>3.38* (2.31)</td>
<td></td>
</tr>
<tr>
<td>Openness</td>
<td>0.17* (0.11)</td>
<td>0.98 (0.84)</td>
<td>0.14*** (0.08)</td>
<td>1.05 (0.82)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.01 (0.07)</td>
<td>1.73*** (0.58)</td>
<td>0.17*** (0.05)</td>
<td>1.18* (0.70)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreeableness</td>
<td>0.19*** (0.12)</td>
<td>0.64 (1.15)</td>
<td>0.12 (0.08)</td>
<td>0.86 (1.22)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neuroticism</td>
<td>−0.07 (0.12)</td>
<td>1.78* (1.19)</td>
<td>−0.05 (0.09)</td>
<td>1.73* (1.08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>−0.03 0.08</td>
<td>0.51 (0.70)</td>
<td>−0.12 (0.06)</td>
<td>0.83 (0.72)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>26.15*** (1.66)</td>
<td>−13.4 (9.06)</td>
<td>−254.28*** (78.0)</td>
<td>23.45*** (1.76)</td>
<td>−12.19*** (5.94)</td>
<td>−257.21*** (65.64)</td>
</tr>
<tr>
<td>Observations</td>
<td>39</td>
<td>39</td>
<td>39</td>
<td>39</td>
<td>39</td>
<td>39</td>
</tr>
</tbody>
</table>

Note. Bootstrapped OLS regression models. Coefficients are based on 20,000 replications. Standard errors in parenthesis. OLS = ordinary least squares. Significance values: *p < .1. **p < .05. ***p < .01 from one-tailed tests.
values mediate the impact of personality, we should observe that the impact of national traits on democratic institutions disappears when I introduce societal values. As we have seen throughout the empirical analysis, not all traits play the same role. As a consequence, I expect Openness (the most consistent predictor of democratic institutions across all different model specifications) to inform more strongly national values than any other trait.11

After showing the empirical association between societal values and a country’s level of democracy, Models 2 and 5 regress societal values on national personality traits. In both models, Openness emerges among the most important traits of both sorts of values. First, Openness (βᵪ = 0.17, p < .1) and Agreeableness (βₐ = 0.19, p < .1) marginally affect secular values. Second, Openness also becomes significantly positive in the model that explains nationally aggregated self-expression values (βₒ = 0.14, p < .1). In addition to Openness, Extraversion is the other trait that significantly influences a country’s self-expression values (βₑ = 0.17, p < .01).

As mentioned above, if the effect of some personality traits on democracy is mediated by national values, we should expect the effect of these traits to disappear once values are included in the model. This is precisely what Table 2 in general and Models 3 and 6 in particular show. Model 3 shows that the direct effects of Openness and Agreeableness vanish when traditional values are taken into account. While the coefficient of secular values halves but maintains its significant influence on democracy (βₘₐₓ = 3.30, p < .05), the effects of Openness (βₒ = 0.98, p = .12) and Agreeableness (βₐ = 0.64, p < .05) become imprecise and far from conventional standards of significance. Even though Extraversion and Neuroticism now become significant, they do not influence values in the causally antecedent Model 2, and as a consequence, they are not part of the mediation analysis explained here.

Finally, Model 6 from Table 2 also provides evidence showing that the direct effect of Openness and Extraversion (significant in the causally antecedent Model 5) vanishes when self-expression values are part of the equation. Openness becomes imprecise and indistinguishable from zero (βₒ = 0.98, p = .12) after controlling for self-expression values. In contrast, Extraversion significantly influences democratic institutions before and after taking into account the nationally aggregated self-expression values. Even though the estimate of Extraversion does not entirely vanish (βₑ = 1.18, p < .1), it becomes substantially more imprecise. As a consequence, we could interpret that self-expression values mediate the effect of both Extraversion and, especially, Openness on a country’s democratic institutions.12

To properly test the mediation of national personality traits on democracy through national values, I evaluate the direct and indirect effects within a structural equation modeling framework. As suggested by Preacher and Hayes (2008), the mediation analysis is implemented non-parametrically through bootstrapping.13 The structural equation modeling has been implemented with 20,000 replicates. Now, I turn to the discussion of the mediation through secular values, which showed more mixed results in the previous analysis (see Table 2), and self-expression values, each in turn.

As for the pathway through secular values, the bootstrapped mediation analysis shows that the direct effect of Openness on democratic institutions is not statistically significant in a one-tailed hypothesis testing, at 95% confidence level (βₒ→ₘₐₓ = 1.57, SE = 0.77; p < .05). The lack of direct association between Openness and a country’s democratic institutions is because this trait is mostly associated with democratic institutions indirectly through secular values. Yet, this association is only statistically significant at a 90% confidence level, and not at a 95% confidence level, in a one-tailed test (βₒ→ₘₐₓ→ₚₑₕₑₐₑ = 0.60, SE = 0.37; p < .1). As we saw earlier, the total effect—the sum of the indirect and the direct effects—is significantly positive. As for the effect of Agreeableness, which Table 2 suggested that could indirectly influence democratic institutions, the mediation analysis confirms a positive direct and indirect effect on democratic institutions, but neither of the two channels is statistically significant in a one-tailed test at a 90% confidence level. Finally, the bootstrapped structural equation model also shows that nearly the entire influence of Extraversion on democracy does not go through secular values; the effect of the indirect channel
is nearly equivalent to indistinguishable from no-effect ($\beta_{E \rightarrow \text{Secular} \rightarrow \text{Democracy}} = 0.04, SE = 0.21; p > .1$), but it is associated directly or through alternative pathways statistically significant at a 99% level in a one-tailed hypothesis testing ($\beta_{E \rightarrow \text{Democracy}} = 1.73, SE = 0.52; p < .01$).

Moving to the analysis of the pathway between national personality and democracy through self-expression values, I now evaluate the results for each national personality trait in turn. On one hand, the indirect effect of Openness on democratic institutions through self-expression values is statistically significant at a 95% confidence level ($\beta_{O \rightarrow \text{Self-expression} \rightarrow \text{Democracy}} = 0.92, SE = 0.47; p < .05$). By contrast, the direct effect alone is significant at a 90% confidence level but not at a 95% level ($\beta_{O \rightarrow \text{Democracy}} = 1.37, SE = 0.86; p < .1$). On the other hand, national Extraversion is significantly associated with democracy both directly and indirectly through self-expression values at a 95% confidence level (indirect effect: $\beta_{E \rightarrow \text{Self-expression} \rightarrow \text{Democracy}} = 0.59, SE = 0.34; p > .05$; direct effect: $\beta_{E \rightarrow \text{Democracy}} = 1.18, SE = 0.61; p < .05$).

In short, the mediation analysis shows that the effects of Openness on democratic institutions are channeled through national values. While the indirect effect through secular values is only significant at a 90% confidence level, the indirect effect through self-expression value is statistically significant at 95% level. In addition, while the effect of Extraversion through secular values is negligible, the effect through self-expression values is significant at 95% confidence level.

**A Comment on Causality**

Up to this point, this article has empirically tested the relationship between personality traits and the democracy level of a country’s political institutions. In addition, it has shown that alternative explanations do not undermine the main model and the intermediating role of citizens’ values. However, there is a concern that remains to be addressed: What causes what? Certainly, causality can go both ways. One can argue, as I do in this article, that societies with a high level of Openness and Extraversion are more likely to adopt democratic institutions, but one can also make an argument in the opposite direction: Democratic institutions make citizens more open and extraverted, while autocratic polities create a more closed-minded and introverted society. In addition, potential unobserved confounders that are related to national personality traits as well as the democratic levels of a country’s institutions can also bias the estimates. Even though research on nationally aggregated personality traits tends to claim associations rather than causation (e.g., McCann, 2015; Mondak & Canache, 2014), this section aims to shed some light on the direction of causality in the relationship between national personality traits and democratization.

However, it is theoretically more plausible that the sequence of variables moves from personality to political phenomena. From psychology research, it is known that personality traits are intrinsic predispositions stable over time (e.g., Cobb-Clark & Schurer, 2012). Theoretically, at least, personality traits are less changeable than values, and values are less changeable than regimes. If this is true, then the principle that causality usually runs from the less changeable to the more changeable variable would support my thesis that the causal sequence runs from personality traits to values, and from values to regimes (Lewis-Beck, Bryman, & Liao, 2004). The correlation between self-expression (or emancipative) values with democracy is .51 (or .60), respectively. By contrast, the correlation between Openness and democracy is .41. Consistent with the idea that variables in the same causal chain that are closer tend to correlate more strongly than variables that are further apart, it is reasonable to conceive the causal sequence as going from personality to values to regimes.\(^{14}\)

**Discussion and Conclusion**

Previous research has shown that democratization is a function of societal cultural modernization, economic interests, and mobilization capabilities. This study is a first step toward understanding
the impact of collective psychological factors on political institutions. In particular, the findings make some significant contributions to the democratization literature. One implication of this research is that societal personality differences may play a larger role in predicting a country’s democracy than previously realized. In particular, national personality traits of Openness influence a country’s democracy score even after adjusting for confounding variables related to these theoretical perspectives such as economic inequalities, economic development, national technological advancement, a pathogen-stress index, an index of thermal demands, and its interaction with a country’s wealth resources. By contrast, although the unadjusted effect of Extraversion is also significant, the relationship loses its statistical significance when the coefficient is adjusted for economic development, mobilization resources, and the climatoeconomic model.

In addition, this article contributes to the current explanations of democratization. From a rational-choice perspective, the findings from this article show that the two national personality traits that are expected to be most associated with a collective mobilization potential, especially Openness and Extraversion, are indeed associated with higher levels of a country’s democracy score, although Extraversion less consistently so. Consistent with this mechanism, higher collective mobilization potential, which is expected to be related to Openness and Extraversion, should lead to higher repression costs. In turn, higher repression costs should lead to stronger incentives for the elites to provide democracy in a country. From a culturalist perspective, this article provides an important antecedent factor that preludes cross-national variability in societal values, which predicts cross-national variability in countries’ democracy level of their political institutions Inglehart’s (1997; 2003). The main effects shown in the first set of analyses explore the mechanisms exploiting the empirical correlation of U.N. voting patterns with the United States and democracy. These preliminary results suggest that the effect that goes from personality to institutions is far stronger than the effect that goes from institutions to personality. Yet, some methodological limitations are inherent to this approach, and further research will be required to empirically determine the direction of the association. See the online appendix for further details on the three-stage least square (Instrumental Variable - Three-Stage-Least-Squares; IV-3SLS) analysis that may link national personality traits to democratic political institutions. The findings show that Openness and Extraversion scores exert a positive influence over Inglehart’s (1997, 2003) and Welzel’s (2013) secular and self-expression values, which, themselves, influence a country’s democratic institutions. The mediation analysis empirically supports the hypothesis that the effect of Openness on democratic institutions is mediated by the absence of traditional values (at a 90% confidence level) and, especially, the presence of self-expression values in a country (at a 95% confidence level). As far as Extraversion is concerned, the mediation analysis shows that its effect is channeled through self-expression values (at a 95% confidence level) but not traditional values.

A common concern from cross-cultural political psychology is the direction of the causation or, in other words, the importance of endogeneity in the empirical models. In this article, the findings presented in the main relationship could be because personality traits affect institutions, institutions affect personality, or both are mutually influenced simultaneously. Even though there is no method that would allow me to sort out between the two causal arrows, I argue that the causal association from personality to institutions is more reasonable than the reverse causation given that causality usually runs from the less changeable to the more changeable variable. In addition, the rationale for national values to be the mediating variable between personality and institutions is empirically supported by the larger correlations between personality and values and institutions and values than personality and institutions. In addition, the online appendix provides another empirical test by implementing a system of equations involving two simultaneous IV regressions (IV-3SLS). This empirical strategy provides some leverage over the direction of the causality by exploiting the correlation of a country’s democratic score with patterns of U.N. voting and the correlation between national personality and the Cold Water Index.
the exclusion restriction, that is, the assumption that U.N. voting patterns do not affect national personality, but through national institutions, and that the Cold War Index does not affect institutions, but through national personality, the model captures the causal effect between variables. Under these assumptions, the model provides preliminary evidence that the effect of national Openness and Extraversion on democracy is about 4 and 2 times stronger, respectively, than the reverse effect from democracy to Openness and Extraversion, respectively.

Although the current research provides an important extension of the existing literature on national personality and political institutions, there are still some limitations, and some unanswered questions remain for future research. Most obviously, the reliability of the personality mean score might be of concern. To overcome this limitation, I tested the main model with two indicators of the country’s sample quality: the quality index and the acquiescence index. The main result of the trait of Openness was substantively unchanged. Furthermore, the main empirical relationship is controlled for a number of alternative explanations in the empirical section. These could be regarded as proxy control variables capturing other unobserved confounding variables that may underlie concerns related to discrepancies of quality in the collection of data or representativeness of the samples across countries. However, even after adjusting for all of them, the main relationship remains significant in the expected direction.

Another limitation of the empirical analysis is the use data for a limited number of countries (39 or 47 depending on the model). Evidently, the small sample size reduces the statistical power of the models. To address this concern, I have conducted all the analyses by implementing bootstrapped regression models with 20,000 replicates (Fox, 2015). Another concern related to the sample of countries may be the use of a non-representative sample of countries. Thus, even though McCrae and Terracciano’s (2005a) sample includes countries from all continents and with different characteristics, missing data on personality traits are not randomly distributed. Generally speaking, more developed countries are more likely to have a personality trait mean score available in the data set. However, sufficient variation in the independent and dependent variables ensures an adequate establishment of an association. In fact, samples above these figures are rare because of the high costs associated with the distribution of nationally representative questionnaires across a large number of nations. Thus, a sample of countries in the range of 30 and 50 is generally quite good in research within the field of cross-cultural psychology.

In summary, further research is needed to investigate whether these results obtained from comparable samples across countries are generalized to samples that are fully representative of the national population. Also, an open question is whether the effect of personality traits at the national level can be translated in similar effect of inter-individual differences within society. For instance, it would be worth looking at the explanatory power of traits on traditional and self-expression values as well as their association with diffuse support for democratic institutions at the individual level, and even to look whether the mediation relationship that has been found here can also be replicated at the individual level. Furthermore, national mean scores can mask distinct patterns of personality traits according to social, religious, or ethnic groups. Most empirically developed research on the origins of national personality traits underline the group-level adaptation to local diseases as a likely cause of spatial differences of traits. However, alternative explanations such as enculturation of selective migration could also explain such differences.

Finally, while this article focuses on the role of national personality traits within the framework of the Big Five Model, it is worth asking whether the effects can be attributed to some of the six facets associated with each of the Big Five personality traits. Therefore, a final objective for future research should be a more complete and finer-grained understanding of the entire process and mechanisms from the origins of personality to its impact on political institutions. Nevertheless, this article constitutes a first step toward this understanding.
Acknowledgments
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Author’s Note
The data used in this study and the replication code will be available to download for purposes of replication from the corresponding author’s website.

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Notes
1. Throughout the article, national personality traits refer to a country’s average score in personality traits, that is, a central tendency toward a personality trait among individuals living in a particular national geographic unit. This concept should not be confounded with national stereotypes. Stereotypes tend to inaccurately represent actual national personality traits (McCrae et al., 2013). Thus, they are both conceptually and empirically distinct.
2. Some scholars in this body of research have initiated debates on the impact of emancipative/self-expression values on democracy. See Spaiser, Ranganathan, Mann, and Sumpter (2014) and Spaiser and Sumpter (2016) for evidence against the existence of this effect, and see Welzel, Inglehart, and Kruse (2015) and Welzel, Inglehart, and Kruse (2016) for new evidence on precisely that effect.
3. Additional details about the measures and samples can be found in McCrae and Terracciano (2005a, 2005b)
4. Given that the hypothesis is clearly directional, p values are extracted from one-tailed hypothesis tests unless otherwise indicated. Results from the simple bootstrapped regressions are not shown in Table 1 due to space limitations. Robustness checks using standard ordinary least squares (OLS) regression models do not substantively alter the results (see robustness checks in the online appendix).
5. For a descriptive visualization of these relationships, the scatterplots of Openness and Extraversion, and the index of democracy are reported in the online appendix.
6. Given the small sample size in the models, I include the five personality traits all the time, but I do not include more than one confounder at a time.
7. In particular, 9,251 and 6,084 out of the 20,000 replicates yield estimates above 0 and 1, respectively.
8. To test the robustness of this finding, I then replicate the analysis with a second measure of thermal climate in which I simply take the absolute value of the difference between a country’s average temperature and 22.2°C. The statistical and substantive significance of the findings are essentially unchanged.
9. Including an interaction between Openness and Extraversion and the data quality measures yields an insignificant coefficient for the interaction term, and no substantive changes in the main effects. Reassuringly, this means that the relationship between personality traits and democracy score is not affected by the quality of the data, as measured by these indicators of quality.
10. See the online appendix for a re-analysis with emancipative values (Welzel, 2013). The correlation between the two measures is .8, and findings are substantively unchanged. See below and the online appendix for more details.
11. The effects of personality on values have been interacted with technological advancement and socio-economic factors. However, models with interactions have been dismissed because the interaction
terms have not shown significant effects throughout the models.

12. The same substantive finding is obtained if emancipative values are used instead of self-expression values. This means that the direct effect between a country’s mean of emancipative values and democracy is highly related ($\beta_{\text{Emancipative}} = 0.99$, $p < .01$); the direct effect between a country’s means of Openness and Extraversion and democracy is highly related ($\beta_O = 1.45$, $p < .01$), but the direct effects of Openness and Extraversion disappear once emancipative values are included in the model ($\beta_{\text{Emancipative}} = 0.59$, $p < .05$; $\beta_O = 1.34$, $p = .15$; $\beta_E = 1.44$, $p < .05$). See below for a proper mediation test of direct and indirect effects.

13. This analysis uses the lavaan (Rosseel, 2012) package within the R statistical environment.

14. Testing this causal proposition empirically is problematic. Random assignment of Openness and/or Extraversion to societies is obviously impossible. Therefore, we would need to rely on observational data, which typically violate the exogeneity assumption of the OLS estimates. I provide a preliminary analysis of the causal direction of the association by implementing a three-stage least square (IV-3SLS) in the online appendix. On one hand, I test the causal effect of Openness and Extraversion on democracy by exploiting the empirical correlation between Welzen’s Cold Water Index and personality traits. On the other hand, I test the causal effect of democracy on personality traits by exploiting the empirical correlation of U.N. voting patterns with the United States and democracy. These preliminary results suggest that the effect that goes from personality on institutions is far stronger than the effect that goes from institutions to personality. Yet, some methodological limitations are inherent to this approach and further research will be required to empirically determine the direction of the association. See appendix for further details on the IV-3SLS analysis.

References


