Person-culture personality fit: Dispositional traits and cultural context explain country-level personality profile conformity

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Abstract

In general, people are influenced by the standards set forth by groups of others; however, the levels of such conformity vary between people and across cultures. Here, we investigated factors related to country-level personality profile conformity (i.e., person-culture personality fit) across ~5.9 million participants, residing in 57 different countries. We examined how each of the Big Five personality traits and cultural tightness are associated with variation in person-culture personality fit. We found that scoring higher in Extraversion, Agreeableness and Conscientiousness and residing in a tight cultural context explains increased personality profile conformity, while scoring higher in Openness and Neuroticism and residing in a loose cultural context explains lower personality profile conformity. Furthermore, we found that Openness and Extraversion interact with cultural context to predict levels of personality profile conformity. These findings reveal that both dispositional and cultural factors correspond to the tendency to conform to country level norms.

Introduction

Identities are shaped, at least in part, by social and cultural contexts. What factors can explain the tendency to conform one's identity to existing sociocultural norms? How much does it matter who you are, as represented by one's own dispositional traits? How much does it matter where you are, as represented by the cultural context? It is well established that across many different social contexts, people are influenced by the standards set forth by groups of others (Cialdini & Goldstein, 2004). Social group pressure shapes many overt behaviors, ranging from how people dress to protesting in the streets, and characteristics often thought of as highly inherent to one's self or identity, such as emotions or attitudes, and even personality. Personality has traditionally been defined as enduring patterns of thinking, feeling, and behaving, but personality expression is still influenced by short-term (e.g., momentary social situations; Fleeson, 2004) and long-term (e.g., culture; Güngör et al., 2013; Hofstede & McCrae, 2004) contextual factors. Several studies show that culture (Church, 2016) and geography (Rentfrow, 2020) are associated with mean levels of personality traits, but very little is known regarding the tendency to conform to country-level personality norms. In this study, we sought to investigate person-culture personality fit. That is, we examined what factors relate to the tendency to be more similar to the average personality profile within one's culture. Two sources of variance that may relate to levels of person-culture personality fit are some of the Big Five personality traits (Neuroticism, Extraversion, Openness, Agreeableness, and Conscientiousness) themselves and the strength of social norms within a particular cultural context (cultural tightness). Personality traits that confer conformity may predict being more similar to the average personality profile within one's country, and existing

within a cultural context where social norms are strongly enforced may also predict being more similar to the average personality profile within one's country.

Person-culture match theory predicts that people are generally motivated to fit into existing sociocultural norms because they tend to experience several well-being benefits when they are more similar to others within a culture (Fulmer et al., 2010). This prediction is supported by large-scale, cross-cultural research showing that people generally experience increased well-being when their attitudes, religiosity, and personality profiles are more similar to the average profile of the culture in which they exist (Bleidorn et al., 2016; Fulmer et al., 2010; Gebauer et al., 2020). These findings demonstrate that people may be, in general, motivated to fit in. These findings however leave open the possibility that individual-level and cultural-level differences exist in terms of the tendency to conform, such as those related to Big Five personality traits, and the strength and clarity of sociocultural norms. We therefore sought to advance this area of knowledge by analyzing how personality and cultural factors correspond to the tendency to conform to country level norms.

Dispositional traits and conformity

The sociocultural norm perspective predicts that several of Big 5 personality traits are differentially linked to numerous preferences, decisions and behaviors according to what is socioculturally normative (Eck & Gebauer, 2022). Prior research has not however, specifically addressed how each of the Big Five traits correspond to conforming to the average personality profile within one's country. Openness is related to the motivation to swim against the sociocultural tide (Gebauer, Bleidorn et al., 2014). High Openness is associated with an affinity

towards novelty, innovation (McCrae, 1987), and uniqueness (Wood et al., 2007). People high in Openness tend to be comfortable challenging the status quo or authority, and prefer diversity and variety over stability, tradition, and routine (Butler, 2000; McCrae, 1996). Furthermore, higher Openness is associated with lower levels of ethnocentrism and prejudice (Huxley, Bizumic, & Kenny, 2015) and is characterized by an agentic self-concept (DeYoung, 2006; Paulhus & John, 1998), which seeks out contrast from sociocultural norms (Gebauer, Sedikides, et al., 2014). This evidence points to high Openness being related to the tendency to deviate away from culture-level personality norms and low Openness being related to being more similar to the average personality profile within one's country.

Two other Big Five traits, Agreeableness and Conscientiousness, are related to the motivation to fit in with sociocultural norms (Gebauer, Bleidorn, et al., 2014). Agreeableness and Conscientiousness are related to a communal self-concept (Paulhus & John, 1998), and belong to the higher order Social Propriety factor (Saucier, 2009). People high in Agreeableness strive for social harmony (John & Srivastava, 1999), cooperation (Graziano, et al., 2007; Volk, Thöni, & Ruigrok, 2011) and prosociality (Gebauer, Sedikides, et al., 2014). People high in Conscientiousness have an affinity towards order, dutifulness (Roberts et al., 2005), and adherence to conventional norms (Roberts & Pomerantz, 2004). Prior research indicates Agreeableness can enhance the well-being benefits linked to fitting into one's culture (i.e., culture-match effect) (Bleidorn et al., 2016; Gebauer et al., 2020). For Conscientiousness, some research shows Conscientiousness enhances the culture-match effect (Bleidorn et al., 2016), while other research shows Conscientiousness diminishes the culture-match effect (Gebauer et al., 2020). Taken together, Agreeableness should be positively related to being more similar to the average personality profile within one's country,

and Conscientiousness could relate to either conforming to, or deviating from, culture-level personality norms.

In terms of Extraversion and Neuroticism, there is some weak and somewhat mixed support to predict these traits are also linked to the motivation to fit in with sociocultural norms. Prior research shows the person-culture match effect occurs for Extraversion (Fulmer et al., 2010), and that Extraversion is associated with civic engagement (Omoto, Snyder, & Hackett, 2010) and approval seeking (MacDonald, Saltzman, & Leary, 2003), supporting the idea that high Extraversion is associated with motivations to fit it. Conversely, Extraversion relates to an agentic self-concept (Paulhus & John, 1998), which tends to foster deviation from sociocultural norms. As for Neuroticism, some evidence links Neuroticism to antagonistic externalizing and antisocial behavior (Brandes & Tackett, 2019), which suggests tendencies to deviate away from sociocultural norms. Taken together, there is some basis to predict that each of the Big Five traits may relate to the tendency to either conform with, or deviate away from, the average personality profile within one's country.

Cultural context and conformity

Culture represents a set of shared values and meaning systems. Cultures do however differ in how salient norms are and how strong social norms tend to be enforced. Cultural tightness-looseness reflects the degree to which cultures have strict norms versus tolerance for deviance (Gelfand, Harrington, & Jackson, 2017; Gelfand et al., 2011). Tighter cultures have clear expectations about what is appropriate and not appropriate, and tend to exert stronger social pressure to conform to existing norms. Loose cultures allow more freedom and flexibility to decide what is appropriate or

not, and tend to afford more opportunities to deviate away from existing norms. Thus, it follows that cultural tightness-looseness may be relevant to the tendency to conform to, or deviate away from, country-level norms in personality profiles (Gelfand, Harrington, & Fernandez, 2017).

Some research supports the idea that cultural tightness-looseness is associated with the heterogeneity of personality traits (Bartram, 2013; Gurven, 2018). Gurven (2018) demontrated that cultural tightness was associated with personality trait covariation, which represents the extent to which traits covary with one another, but does not address the how similar people's personality profiles are to one another. Bartram (2013) demonstrated that across 21 different countries (6 of which were from non-WEIRD [western, educated, industrialized, rich, and democratic] countries; Henrich, Heine, & Norenzayan, 2010), cultural tightness was associated with smaller standard deviations of some personality traits. Although the finding of country-level differences in standard deviations of traits does imply countries do differ in personality conformity, the Bartram (2013) study was limited in several important ways. The study was designed to investigate patterns of work-related personality traits solely within occupational settings and the statistical analysis did not adequately account for the nested and unbalanced nature of the data. In the current study, we sought to advance this body of work by investigating how similar personality profiles are to one another using a much larger and more representative sample (~ 5.9 million participants), across 57 different countries (n = 57, with 32 from non-WEIRD countries), and an advanced analysis approach designed to measure country-level conformity across the entire span of the Big Five model of personality.

We also sought to yield new insight onto the mechanics linked to conformity by investigating how dispositional traits and cultural context can interact with one another to predict

the distribution of personality profiles. It is well established that traits and cultural or ecological contextual factors interact with one another to influence phenotypic expression (Laland et al., 2001; Smaldino et al., 2019). Thus, it may be case that personality traits are differentially linked with levels of conformity according to cultural context. That is, traits linked to conformity may predict conformity more in particular cultural contexts, while other traits linked to being eccentric or deviance may predict deviation away from sociocultural norms more in particular cultural contexts. In this study, we tested the prediction that individual-level Big Five traits would interact with cultural context (i.e., cultural tightness-looseness) to predict person-culture personality fit.

Research overview

Our study was designed to fill some specific knowledge gaps in the social and personality sciences. First, while prior evidence shows that some personality traits are linked to motivations to fit in or deviate away from others (Bleidorn et al., 2016; Eck & Gebauer, 2022; Gebauer et al., 2020), it is currently unknown how each Big Five personality trait may correspond to conforming to county-level standards in personality profiles. Furthermore, although many studies have revealed links between culture and mean levels of personality traits (Church, 2016), it is currently unknown how culture may be associated with variation in county-level personality profile conformity. Lastly, it is currently unknown how dispositional traits and culture may interact to explain county-level personality profile conformity. Our data set and analytic approach afforded us the opportunity to test each of the following specific hypotheses:

Hypothesis 1: Big Five traits linked to conformity will be associated with greater person-culture personality fit.

Hypothesis 2: Cultural tightness will be associated with greater person-culture personality fit.

Hypothesis 3: Cultural tightness-looseness will moderate the link between Big Five traits and person-culture personality fit.

Method

Sample

The primary data in this study came from two independent sources. Personality data were collected as part of the Gosling-Potter Internet Personality Project between 2001 and 2015 (GPIPP; Gosling et al., 2004). Cultural tightness-looseness data were collected as part of a study on perceptions of norm violations spanning 57 different countries (Eriksson et al., 2021). The total sample sizes derived from each data set were sufficient to obtain a power of .80 with an ability to detect small-to-medium effect sizes (ω^2=.04) with α=.05 (Matuschek et al., 2017).

Personality data

The GPIPP data set comprises data from multiple online studies and underwent several steps of prior data cleaning (see **Section S1** in the Supplementary Materials). To extract the relevant data, we first limited the data set to participants residing in the 57 countries for which we also had cultural tightness-looseness data. Next, we selected participants who completed all 44 items within the Big-Five Inventory (BFI; John, Donahue, & Kentle, 1991). The resultant sample contained

5,904,203 participants (61.93% women; age: *M*=26.16 years, *SD*=11.61). **Supplementary Section S2** presents demographics for each country.

Each participant completed the 44-item BFI using a rating scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Item-level data were adjusted for acquiescence bias according to established methods in cross-cultural personality research across WEIRD (Henrich, Heine, & Norenzayan, 2010) and non-WEIRD populations (see **Section S1** in the Supplementary Materials) (Laajaj et al., 2019). **Supplementary Tables S3 and S4** report internal consistencies and measurement invariance for personality data across countries and **Table S5** reports sample-wide intercorrelations among personality traits. Average country-level internal consistency for the Big Five traits was good (α = 0.80). The results of multigroup confirmatory factor analysis demonstrated acceptable configural and metric invariance across countries.

Cultural tightness-looseness data

Cultural tightness-looseness was assessed using Gefland's 6-item tightness scale (Gelfand et al., 2011). Responses were collected from a total of 22,863 participants (52.2% women, 26.4% men, 21.4% have missing data for gender; age: *M*=24.9 years, *SD*=8.9). Country-level tightness-looseness scores were standardized by subtracting participants' mean response to all appropriateness items (see Erikson et el., 2021 for complete details regarding sampling and representativeness of these data). Country-level internal consistency was good (α=0.80).

Person-culture personality fit

Person-culture personality *(*PCP) fit was operationally defined as the similarity between each participant's personality profile and the average personality profile for the country in which they resided. We used cluster analysis, calculated based on average Euclidean distance (Gerlach et al., 2018; Kerber, Roth, & Herzberg, 2021) to quantify the similarity between each participant's personality profile and the average country-level personality profile. The average Euclidean distance between personality profiles was calculated using the following formula:

$$\sqrt{(\Delta N)^2 + (\Delta E)^2 + (\Delta O)^2 + (\Delta A)^2 + (\Delta C)^2}$$

where Δ denotes the difference between each participants' trait score and country-level average trait score.

This approach involves initially calculating the average personality profile for each country, which is based on each sub-sample of participants' self-reporting the country in which they resided. For each country, we calculated the average personality profile. We entered the average personality profile values as the centroid for each country-level cluster, with the number of clusters set to 1. We then calculated the average Euclidean distance between each participants' personality profile and the centroid (i.e., average country-level personality profile) and reversed these scores so that higher values correspond to better fit (i.e., to preserve conceptual consistency with the term "fit") (higher values = better fit). Average Euclidean distance is an optimal approach to characterize profile similarity with respect to other approaches such as using intraclass-correlation coefficients (ICC). Approaches based on correlations are highly sensitive to how each personality trait is coded (Eriksson & Haas, Under Review). For example, the arbitrary decision to code

Neuroticism as N, versus Emotional Stability (ES = N inversed), will perturb profile similarity measures based on correlation (such as Pearson or ICC), while metrics based on distance (such as average Euclidean distance used here) are preserved.

First, we calculated PCP fit values across all Big Five personality traits. This variable served as the primary way we tested if cultural tightness-looseness was associated with PCP fit. Then, to ensure that variance of the predictor variable (each trait) was not embedded within the dependent variable (PCP fit values), we calculated a set of five other PCP fit values where each single trait was excluded from the calculation.[1] For example, when we tested for the link between Openness and PCP fit, we used PCP fit values calculated based on Neuroticism, Extraversion, Agreeableness and Conscientiousness (but not Openness). **Table S6** reports intercorrelations among all dependent variables.

Statistical modelling

Participants were nested within countries, so linear mixed-effects modeling, using the lme4 package for R (Bates et al., 2015), was conducted. The individual-level continuous factors were centered by group mean and the country-level continuous factors were centered by grand mean following the suggestion of Enders and Tofighi (2007), which allows for unambigious interpretation of cross-level interactions. Given the standardization of the variables, we report standardized beta coefficients from each model, which can be interpreted as a measure of effect size.

We conducted linear mixed-effects modeling analysis for each Big Five trait with PCP fit values entered as the dependent variable. In the first step (Model 1: Null), only country (nesting

[1] We used this approach to preserve consistency across results and interpretability. However, other statistical methods may also be appropriate such as residualizing all independent variables.

variable) was included as a random intercept. This approach allowed us to determine whether a significant amount of variation in PCP fit is explained by an individual's country. In Model 2 (IL: Individual-level model), fixed effects for all individual-level (i.e., Big Five traits) were added. This model determines whether a significant amount of variation in PCP fit is explained by individual-level predictors. In Model 3 (RC: Random coefficients model), we allowed the slopes between trait and PCP fit to vary across countries (i.e., the addition of a random slope). Model 3 determines whether the slope between trait and PCP fit varies across countries. In Model 4 (GL: Group-level model), cultural-level predictor variables (i.e., cultural tightness-looseness) were added; this model determines whether a significant amount of variation in PCP fit is explained by cultural-level variables. Lastly, we ran Model 5 (CLI: Cross-level interaction model), which determines whether the individual level (Big Five trait) variable interacts with the group-level (cultural tightness-looseness) variable to predict PCP fit.

Covariates

To evaluate the robustness of our results, we modelled effects with, and without several control variables. As individual-level control variables, we entered participant age and sex. As country-level control variables, we entered sample size per country, gross domestic product (GDP) per capita, and ethnic fractionalization.

We included sample size as a covariate to control for possible variation across sample sizes in the covariance structure between or within personality traits (Lukaszewski et al., 2017). We log-transformed this variable because it was positively skewed. We included GDP per capita to control for possible effects of socio-economics on the distribution of personality traits (Heine, Buchtel, &

Norenzayan, 2008). We obtained the GDP per capita for 2015 from the World Bank (https://data.worldbank.org), and log-transformed it because it was positively skewed. Lastly, we included a measure of ethnic heterogeneity (Ethnic Fractionization) as a covariate to control for possible effects driven by societal levels of diversity in cultural, linguistic, and/or religious groups. Ethnic Fractionalization values were obtained from a world-wide study on fractionalization (Alesina et al., 2003). All analyses, code, and output are available for download on the Open Science Framework (https://osf.io/jmku3/?view_only=20569bf2f42348cb84c41f33ad9586c7).

Results

Across all analyses we report effects on PCP fit values where higher scores correspond to being more similar to the average personality profile within each country (i.e., better fit) and lower scores correspond to deviating further away from the average personality profile within each country. **Figure 1** provides a world-wide heat map of average PCP fit values for all countries in the study.

Hypothesis 1

Table 1 provides the results of linear mixed-effects modeling (for full results see **Supplementary Tables S7-S10**). Model 2 (M2:IL) tests for the effect of each Big Five trait on PCP fit values. We found that across all Big Five traits, adding the individual-level predictor variables to the Null Model (Model 1), significantly improved the model fit ($\Delta\chi^2$) (see M2:IL in Table 1) (all *p*'s<.001). An examination of the direction of the effect for each Big Five trait (standardized beta coefficients) reveals that higher scores on Extraversion (*B*=.025), Agreeableness (*B*=.055) and Conscientiousness (*B*=.037) were associated with greater similarity to the average personality

profile within each country (i.e., higher PCP fit scores). While higher scores on Neuroticism (*B*=-.080) and Openness (*B*=-.068) were associated with a greater deviation away from the average personality profile within each country (i.e., lower PCP fit scores).

Figure 1.

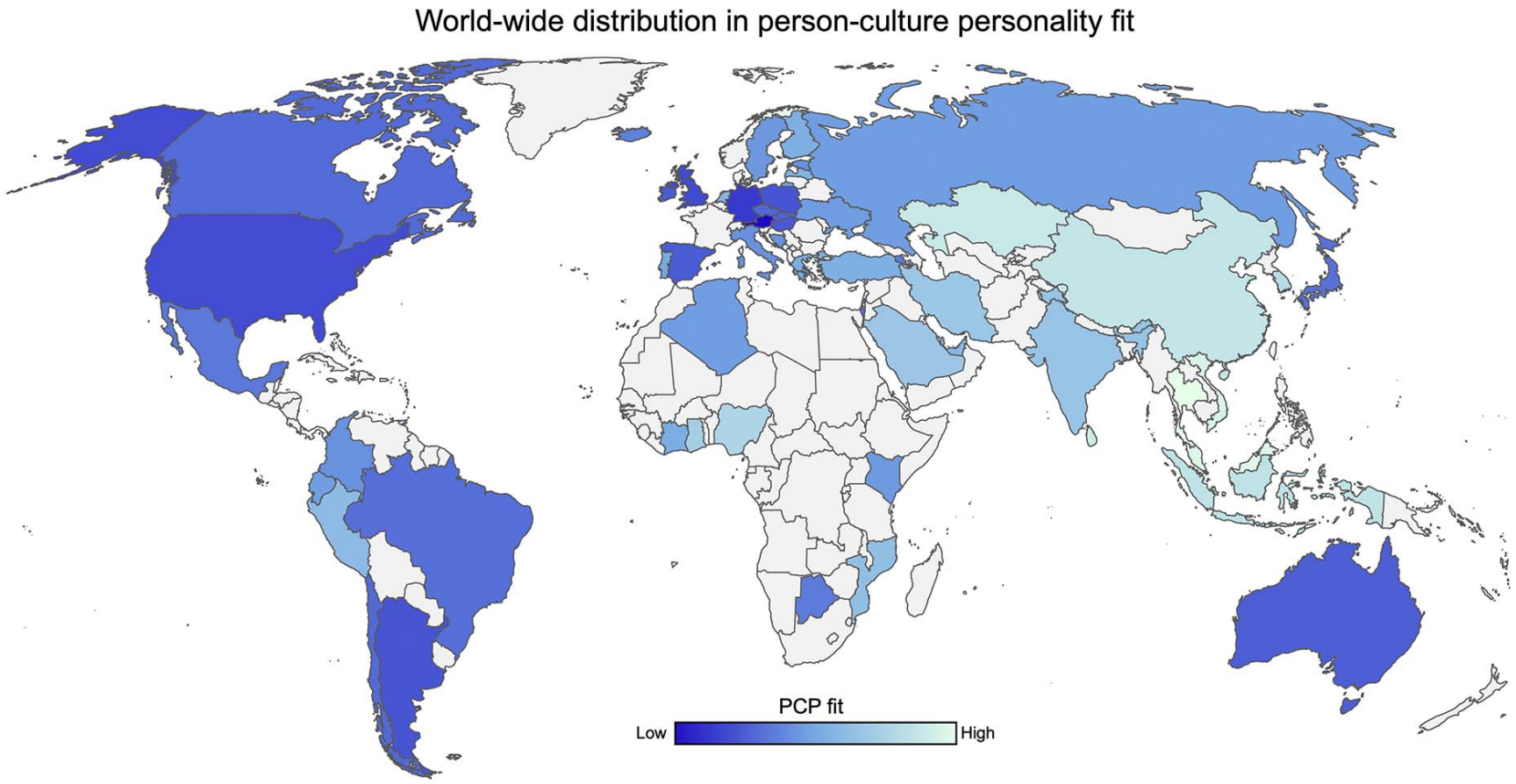

Figure 1. Worldwide map displaying country-level person-culture fit values. Lighter colors indicate areas where personality profiles tend to cluster closer towards the average personality profile in that country (i.e., higher PCP fit values), and darker colors indicate areas where personality profiles tend to deviate away from the average personality profile in that country (i.e., lower PCP fit values).

Figure 2.

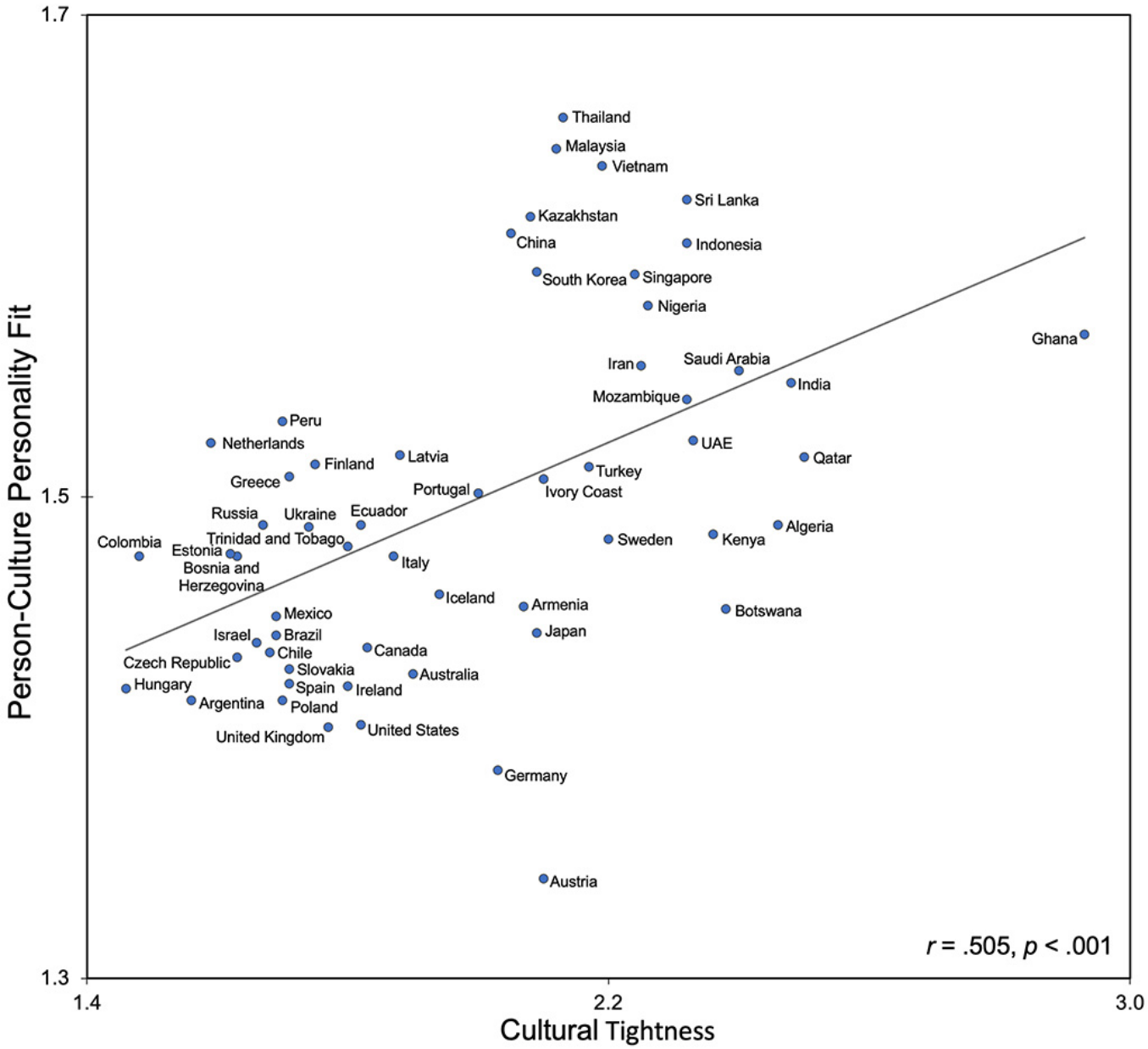

Figure 2. Scatterplot displaying the association between cultural tightness-looseness (*x*-axis) and country-level person-culture personality fit values (*y*-axis). Higher values on the x-axis correspond to increased tightness, and higher values on the y-axis correspond to increased country-level personality profile conformity.

Table 1. Results of linear mixed-effects modelling predicting person-culture personality fit.

	No Covariates					Level 1 and Level 2 Covariates				
Model	*B*	*SE*	*t*	*p*	*Δχ2*	*B*	*SE*	*t*	*p*	*Δχ2*
Neuroticism										
M2: IL	-.080	.0004	196.81	<.001	8334986***	-.085	.0004	200.71	<.001	8248885***
M3: RC	-.061	.0049	12.40	<.001	8333840***	-.065	.0049	13.31	<.001	8247742***
M4: GL	.027	.0066	4.16	<.001	8333832***	.020	.0064	3.18	.001	8247737**
M5: CLI	.001	.0022	.59	.558	8333832	.001	.0022	.54	.592	8247737
Extraversion										
M2: IL	.025	.0004	60.16	<.001	8363769***	.024	.0004	58.80	<.001	8277565***
M3: RC	.012	.0050	2.40	.016	8363245***	.013	.0051	2.60	.009	8277053***
M4: GL	.020	.0059	3.49	.000	8363241**	.017	.0059	2.86	.004	8277050*
M5: CLI	-.009	.0020	4.77	<.001	8363231***	-.010	.0020	4.95	<.001	8277040***
Openness										
M2: IL	-.068	.0004	166.53	<.001	8349935***	-.068	.0004	164.63	<.001	8264755***
M3: RC	-.079	.0057	13.87	<.001	8348839***	-.078	.0058	13.46	<.001	8263689***
M4: GL	.015	.0048	3.16	.002	8348835**	.014	.0051	2.74	.006	8263686***
M5: CLI	-.007	.0024	2.95	.003	8348831**	-.007	.0024	3.00	.003	8263682**
Agreeableness										
M2: IL	.055	.0004	133.90	<.001	8351481***	.058	.0004	140.30	<.001	8263822***
M3: RC	.038	.0037	10.41	<.001	8350800***	.042	.0037	11.31	<.001	8263148***
M4: GL	.028	.0067	4.21	<.001	8350792***	.023	.0068	3.37	.001	8263142***
M5: CLI	.000	.0017	.20	.843	8350792	.000	.0017	.20	.844	8263142
Conscientiousness										
M2: IL	.037	.0004	89.29	<.001	8352044***	.042	.0004	97.41	<.001	8266015***
M3: RC	.026	.0045	5.81	<.001	8351529***	.030	.0045	6.80	<.001	8265497***
M4: GL	.030	.0065	4.64	<.001	8351520***	.024	.0065	3.71	<.001	8265490***
M5: CLI	.001	.0020	.29	.773	8351520	.000	.0020	.19	.850	8265490

Note. Standardized parameter estimates (*B*) and standard errors (*SE*) for linear effects. The Level 1 covariates were age and sex. The Level 2 covariates were sample size, Gross Domestic Product per capita and Ethnic Fractionalization. IL = Individual-level; RC = Random coefficients; GL = Group-level; CLI = Cross-level interaction. **p* < .05, ***p* < .005, ****p* < .001.

Hypothesis 2

We found evidence in support for Hypothesis 2, that cultural tightness would be associated with greater person-culture personality fit**. Figure 2** displays the association between cultural tightness-looseness and average PCP fit for each country. The results of a simple linear regression with cultural tightness-looseness entered as the predictor variable and mean country-level PCP values entered as the criterion variable indicated that tighter cultures were associated with larger PCP fit values (r= .505, t=4.334, p<.001). We also used a multiple regression analysis to examine if cultural tightness-looseness predicted average PCP fit values over and above other cultural/ecological dimensions known to be linked to conformity and the distribution of personality traits (collectivism; Pelham et al., 2022 and niche diversity; Lukaszewski et al., 2017; Durkee et al., 2021), which revealed that indeed cultural tightness-looseness continued to predict PCP fit beyond the effects of both collectivism and niche diversity, B=.075, 95%CI=[.14, .02], t=2.547, p=.014. Furthermore, the results of linear mixed-effects modeling showed that adding cultural tightness-looseness significantly improved the model fit for each "trait specific" model (see row M4:GL in **Table 1**). Across all 5 models, when each single trait was removed from the PCP fit (e.g., dependent variable) calculation, cultural tightness remained significantly associated with increased PCP fit values.

Hypothesis 3

Model 5 (M5:CLI) within our mixed-effects model formally tested for interactions between each Big Five trait and cultural tightness-looseness (cross-level interaction) on PCP fit values. As can be seen in **Table 1**, Openness and Extraversion interacted with cultural tightness-looseness to

predict PCP fit. Plots displaying simple slopes for each interaction are show in **Figure 3**. Adding the interaction term between trait and cultural tightness-looseness (M5: CLI) significantly improved the model fit from Model 4 for Openness ($p < 0.005$) and Extraversion ($p < .001$).

An inspection of **Figure 3** reveals the pattern of each interaction. For Openness, the interaction appears to be driven by those scoring low in Openness and residing in tight cultural contexts. This pattern suggests that low Openness corresponds to conformity, and that this effect is amplified within a tight cultural context. For Extraversion, we found that low Extraversion was associated with lower PCP fit values (i.e., greater deviation from the average personality profile within each country), and suggests that the tendency for those scoring low in Extraversion to deviate away from the norm is amplified within loose cultural contexts.

Figure 3.

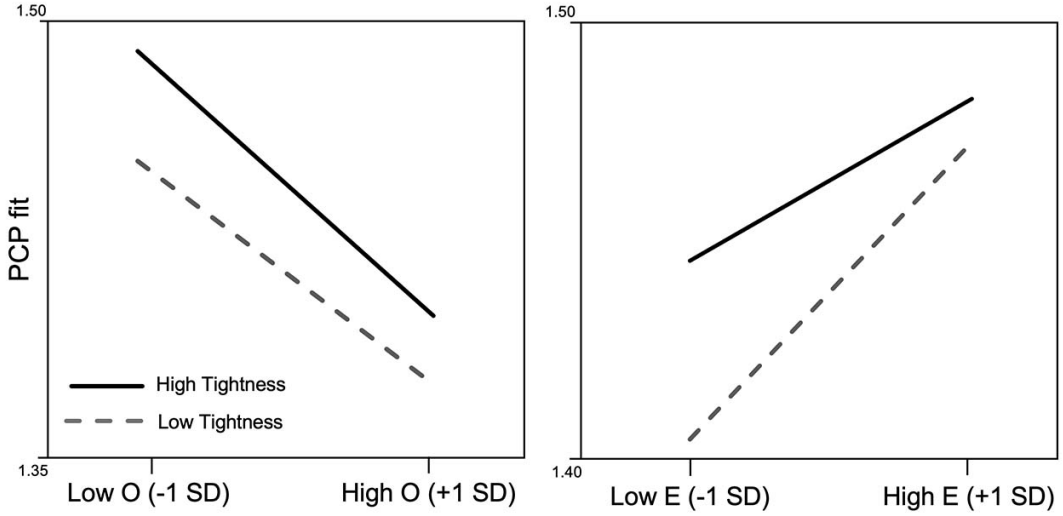

Figure 3. Trait x culture interactive effects on person-culture personality (PCP) fit. PCP values are plotted on the y-axis as a function of openness to experience (O) and extraversion (E) and cultural tightness-looseness. Low and high values for each trait and cultural tightness represent 1 *SD* below and above the scale mean, respectively.

Robustness check

To examine the robustness of our results, we reran all linear mixed-effects models with Level 1 (age and sex)[2] and Level 2 (sample size, GDP per capita, and Ethnic Fractionalization) covariates added (**Table 1**, right hand column). **Tables S8 and S9** in Supplementary Material reports the results of each mixed-effects model with only Level 1 covariates and only Level 2 covariates. The results of each set of linear mixed-effects models confirmed the findings reported as primary results. Lastly, each effect where an individual trait was entered as a predictor variable remained statistically significant when all five traits were used to calculate PCP fit, as opposed to only four.

Discussion

Our study reveals that country-level personality profile conformity is related to who you are (dispositional traits), and where you are (cultural context). We found that several Big Five traits known to be linked to adherence to social norms, are related to the tendency to conform to country-level standards in personality profiles, and that those residing in tighter cultural contexts tended to conform more than those residing in loose cultural contexts. We also demonstrate a pattern of trait x culture interactive effects; the tendency for individuals low in Openness to conform was amplified in tight cultures and the tendency for individuals low in Extraversion to deviate was amplified in loose cultures.

[2] The total sample size for each model when level 1 covariates were entered, was slightly smaller (N = 5,858,545) than the original sample size (N = 5,904,203) because of some missing data for the age variable.

These findings advance the way culture and personality are understood in several key ways. Our results support idea that each of Big Five personality traits explain some variance in terms of sensitivity to country-level social group pressure. Each Big Five trait explained some variance in the tendency to conform to, or deviate away from, sociocultural norms indicating that each of the Big Five traits confers some tendency to at least "tune in" to what other people are like. Although some traits are more interpersonal in nature than others, our findings reveal that every Big Five trait explains some portion of how people attend to, and respond to existing sociocultural standards. This study also supports the idea that personality expression does vary according to culture (Poortinga & Van Hemert, 2001). Extant research has sought to measure and compare mean levels of personality traits across cultures (Church, 2016; Kajonius & Mac Giolla, 2017; Schmitt, Allik, McCrae, & Benet-Martínez, 2007). In this study we find that the salience and the strength of sociocultural norms, as represented by cultural tightness, has relevance in terms of distribution of personality profiles around the world (Gelfand, Harrington, & Fernandez, 2017).

Our findings contribute to a growing body of research that seeks to identify antecedents of contemporary variation in cultural contexts and the distribution of personality traits. Some evidence indicates that cultural tightness-looseness emerged from historical levels of vulnerability to natural disasters, food scarcity, arable land, pathogen prevalence, and child mortality (Gelfand et al., 2011). There is also evidence that variation in personality traits is linked to geography (Rentfrow, 2020), and can be traced back to historical and ecological factors (Gurven, 2018; Lukaszewski et al., 2020; Murray, Trudeau & Schaller, 2011; Smaldino et al., 2019). For example, Smaldino et al., (2019) recently reported on the association between country-level socioecological complexity and larger standard deviations of personality traits. Socioecological complexity refers

to the number of diverse specialized social and occupational niches and can be traced back to Neolithic agricultural practices where societies differentiated based on divisions of labor, technological and industrial revolutions, and the expansion of markets (Lukaszewski et al., 2017). Based on these ideas, we undertook a post-hoc exploratory analysis and found that across the 57 countries in the current sample, greater socioecological complexity was associated with cultural looseness (r=.46, p<.001). This body of work highlights the need to further elucidate the link between historical social, ecological, and economic factors and present-day distribution of personality traits (Gurven, 2018; Lukaszewski et al., 2020). This body of work also highlights the need to better understand how personality variability may be shaped by other contextual factors such as physical geography, climate, and urban versus rural contexts.

We found that the link between some Big Five traits (Openness and Extraversion) and PCP fit was moderated by cultural tightness-looseness. The finding that Openness and Extraversion interacted with culture to predict PCP fit, and Neuroticism, Agreeableness, and Consciousness did not, indicates that Openness and Extraversion may possess some dissociable attributes with respect to the other Big Five traits. This interpretation is consistent with evidence of the Big Two personality meta-traits (DeYoung, 2006), which differentiates Plasticity (Openness and Extraversion) from Stability (Neuroticism, Agreeableness, and Consciousness). Plasticity is associated with approach-related behaviors and represents a person's basic need to incorporate novel information from the environment (Hirsh, DeYoung, & Peterson, 2009). Within the context of cultural moderation, it may be the case that Plasticity is more linked to levels of cultural sensitivity and engagement than Stability. However, this interpretation is speculative because we did not directly test this link in this study.

For Openness, we observed that the tendency for individuals low in Openness to conform to country-level personality standards was amplified within tight cultural contexts, although the size of this effect was small. This finding is consistent with prior evidence linking low Openness with evaluations of normality (Wood et al., 2007) and restrictive conformity (Dollinger, Leong, & Ulicni, 1996). The finding that Openness interacted with cultural context reveals that in tight cultures, where deviations from social norms tend to be highly restricted (i.e., tight), Openness may drive the tendency to conform to, or deviate away from, social norms more than in cultures that allow more freedom (i.e., loose). This pattern of results may reflect, in part, cultural differences in the saliency of social norms. More specifically, if Openness tends to strongly drive the tendency to conform to, or deviate away from, social norms, than in either case, it is important to clearly understand what the social norms are. It is easier to conform or deviate, when the social standards are highly salient (i.e., tight cultures), and it may be more difficult to conform or deviate when the social standards are less clear (i.e., loose cultures).

We also found that Extraversion interacted with cultural context to explain PCP fit, although the size of this effect was small. For Extraversion, we observed that the tendency for individuals low in Extraversion to deviate away from country-level personality standards was amplified within loose cultural contexts. This finding may reflect how Extraversion relates to social and civic engagement. It may be the case that loose cultures allow for a greater volume, as well as variety, of social activities. Thus, loose cultures may afford a greater array of opportunities for the social aspects of Extraversion to emerge. People low in Extraversion may be more apt to deviate from social norms within loose cultures because there are many types of social activities to opt out of. People high in Extraversion may tend to conform more than those low in Extraversion, in

loose cultures because they are highly comfortable across a wide array of different types of social activities. This interpretation is consistent with prior evidence linking Extraversion to greater civic engagement (Omoto et al., 2010) and increased social network complexity (Kalish & Robins, 2006). However, the effect sizes for the interactions were small, so it is important to exercise caution when interpreting these results.

In conclusion, this research reveals that conforming to personality norms within one's country is related to both dispositional Big 5 traits and cultural context. Although some affinity towards conformity may be a human universal, our results suggest that conformity varies according to who you are and where you are.

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SUPPLEMENTARY MATERIALS

Person-culture personality fit: Dispositional traits and cultural context explain country-level personality profile conformity

Section S1.

Gosling-Potter Internet Personality Project: Data cleaning and processing

Several steps of data-cleaning were applied to the GPIPP dataset prior to making it available to researchers: Participants were excluded if they indicated that they (1) had completed the study before, (2) did not want their data to be used for research purposes, (3) stated that they currently live in a U.S. state and also in a country outside of the U.S. or (4) did not respond truthfully. In addition, (5) random responders were also excluded (identified with three complementary methods: Mahalanobis distances, within-participant correlation, and maximal long-string (Meade & Craig, 2012).

Acquiescence bias correction

Item-level data were adjusted for acquiescence bias according to established methods in cross-cultural personality research across western, educated, industrialized, rich, and democratic (WEIRD; Henrich, Heine, & Norenzayan, 2010) and non-WEIRD populations (Laajaj et al., 2019). This method involves calculating the difference between the average response to reverse scored items and the average response to non-reverse scored items, which is divided by 2, and then added to every reverse coded item and subtracted from every non-reverse coded item. This approach improves the psychometrics and interpretability of large-scale cross-cultural personality data (Laajaj et al., 2019).

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Table S2. List of 57 countries included in the main analysis, demographics (age, sex) and average person-culture personality (PCP) fit values within each country.

Country	*N*	Age		% Women	PCP fit
		M	*SD*		
UAE	13986	26.39	10.57	60.68	1.523
Algeria	954	23.96	10.29	60.80	1.488
Argentina	19800	26.89	10.64	63.83	1.415
Armenia	454	26.52	14.25	67.77	1.454
Australia	180626	25.91	11.78	61.89	1.426
Austria	26304	27.11	11.47	60.21	1.341
Indonesia	13596	23.12	8.04	62.96	1.605
Bosnia and Herzegovina	1155	24.18	8.60	63.39	1.475
Botswana	532	28.60	11.09	62.50	1.453
Brazil	24822	25.21	9.81	60.33	1.442
Canada	342731	24.97	11.45	61.78	1.437
Sri Lanka	3846	24.47	8.68	56.57	1.623
United Kingdom	391265	25.50	11.19	56.82	1.404
Chile	10782	28.68	12.20	58.87	1.435
China	19065	26.35	8.08	62.23	1.609
Colombia	12761	24.92	9.44	61.13	1.475
Ivory Coast	94	27.93	13.29	42.55	1.507
Greece	9807	25.94	9.45	61.15	1.508
Czech Republic	2357	25.48	8.92	49.32	1.433
Ecuador	4710	27.39	10.94	60.89	1.488
Estonia	1896	22.75	8.26	61.21	1.476
Finland	20625	24.44	9.11	59.62	1.513
Germany	181984	29.22	11.79	58.47	1.386
Ghana	1892	27.78	9.00	51.43	1.567
Hungary	3344	26.33	9.41	56.21	1.420
Iceland	2291	26.29	10.51	55.92	1.459
India	111369	24.60	7.75	51.09	1.547
Iran	4101	25.59	8.03	59.18	1.554
Ireland	38050	25.62	10.30	60.61	1.421
Israel	6521	27.21	10.74	56.22	1.439
Italy	12188	29.07	10.96	55.48	1.475
Japan	9210	27.12	9.95	54.54	1.443
Kazakhstan	321	26.18	10.08	59.19	1.616
Kenya	6766	26.96	8.24	61.31	1.484
South Korea	9609	26.35	8.43	48.34	1.593
Latvia	1186	23.30	7.44	63.91	1.517

Portugal	6570	25.53	9.93	55.06	1.501
Malaysia	37491	23.45	7.66	68.49	1.644
Mexico	51020	24.31	9.24	56.70	1.450
Mozambique	223	28.52	9.74	48.20	1.540
Netherlands	159404	28.95	12.03	61.36	1.522
Nigeria	6871	28.09	8.04	52.03	1.579
Peru	8807	26.71	10.03	57.54	1.531
Poland	6633	24.68	7.85	54.89	1.415
Qatar	1947	26.82	10.34	61.84	1.516
Russia	3205	25.61	8.81	61.94	1.488
Saudi Arabia	5594	25.79	10.04	54.14	1.552
Thailand	8163	25.13	9.60	62.09	1.657
Singapore	54318	21.84	7.50	61.16	1.592
Slovakia	1175	24.57	8.93	57.85	1.428
Spain	28351	27.53	10.90	59.64	1.422
Sweden	39762	26.16	10.33	51.08	1.482
Trinidad and Tobago	3991	27.07	10.19	72.13	1.479
Turkey	4813	25.93	8.88	55.80	1.512
Ukraine	928	25.42	9.03	60.52	1.487
United States	3980737	26.25	11.92	63.28	1.405
Vietnam	3200	24.21	7.86	60.74	1.637

Table S3. Internal consistencies (Cronbach's α) for each personality trait across all countries included in the main analysis.

Country	N	E	O	A	C
UAE	.84	.82	.70	.77	.85
Algeria	.84	.77	.71	.78	.78
Argentina	.83	.84	.76	.70	.81
Armenia	.84	.84	.73	.75	.82
Australia	.86	.88	.78	.82	.86
Austria	.87	.89	.80	.78	.88
Indonesia	.83	.82	.67	.77	.83
Bosnia and Herzegovina	.85	.85	.65	.77	.85
Botswana	.84	.83	.70	.81	.87
Brazil	.84	.82	.72	.77	.83
Canada	.85	.88	.79	.82	.85
Sri Lanka	.82	.79	.65	.76	.84
United Kingdom	.86	.88	.78	.82	.86
Chile	.83	.85	.76	.71	.85
China	.82	.81	.77	.74	.81
Colombia	.83	.84	.76	.71	.84
Ivory Coast	.86	.87	.70	.68	.82
Greece	.83	.82	.71	.77	.84
Czech Republic	.87	.86	.71	.78	.84
Ecuador	.82	.82	.75	.71	.85
Estonia	.86	.87	.72	.78	.83
Finland	.85	.86	.75	.80	.84
Germany	.87	.89	.80	.77	.87
Ghana	.81	.82	.71	.76	.86
Hungary	.86	.86	.73	.79	.85
Iceland	.86	.85	.78	.78	.85
India	.84	.83	.65	.74	.83
Iran	.82	.79	.71	.73	.80
Ireland	.85	.87	.79	.80	.96
Israel	.88	.85	.72	.79	.84
Italy	.86	.84	.76	.76	.85
Japan	.84	.86	.78	.81	.84
Kazakhstan	.80	.85	.72	.74	.82
Kenya	.82	.84	.71	.77	.85
South Korea	.81	.85	.78	.78	.82
Latvia	.87	.87	.69	.76	.83
Portugal	.86	.86	.76	.77	.84
Malaysia	.84	.81	.65	.77	.84
Mexico	.83	.82	.76	.72	.83
Mozambique	.83	.82	.72	.72	.82
Netherlands	.86	.86	.79	.76	.84
Nigeria	.84	.79	.67	.77	.87
Peru	.83	.85	.75	.71	.85
Poland	.86	.86	.68	.78	.85

Qatar	.85	.82	.68	.75	.84
Russia	.84	.84	.70	.78	.84
Saudi Arabia	.83	.78	.66	.73	.83
Thailand	.82	.80	.74	.76	.82
Singapore	.85	.86	.73	.81	.86
Slovakia	.88	.88	.68	.77	.85
Spain	.86	.86	.79	.74	.85
Sweden	.85	.87	.76	.79	.84
Trinidad and Tobago	.83	.84	.72	.78	.86
Turkey	.84	.84	.69	.76	.84
Ukraine	.87	.83	.71	.77	.85
United States	.85	.88	.80	.83	.85
Vietnam	.82	.80	.69	.75	.83

Section S4. Measurement Invariance Across Countries.

We performed a multigroup confirmatory factor analysis (MGCFA) to test for configural and metric invariance of the personality data across countries using AMOS version 25. We tested if the factor structure of the BFI displayed configural and metric invariance across countries. Configural invariance represents how similar the overall pattern of factors is across countries, and was evaluated by calculating fit indices when the multigroup model was estimated freely. Metric invariance represents how similar factor loadings are across countries, and was evaluated by comparing resultant fit indices calculated when the model was estimated freely to the fit indices calculated when the model was fully constrained.

Large imbalances in group size can affect the results of factorial invariance studies and lead to incorrect conclusions of invariance because the fit function in MGCFA includes a weighting by group sample size (Chen, 2007; Kaplan & George, 1995). To reduce possible effects driven by unbalanced sample sizes across countries we used a subsampling approach following the suggestion of Yoon and Lai (2018). A common recommendation for appropriate sample sizes for MGCFA is least 200 per group (Putnick & Bornstein, 2016; Yoon & Lai 2018). We randomly subsampled our data set to ensure that the average sample per country was at least 400. To do so we randomly selected 420 participants from each country, with the exception of three countries with sample sizes less than 420 (Ivory Coast: *N* = 94, Kazakhstan: N = 321 and Mozambique: *N* = 223). The resultant dataset for MGCFA consisted of a total of 23,318 participants, with an average N of 409 per country.

Table S4. Multigroup confirmatory factor analysis across countries.

		N	E	O[a]	A	C
number of items		8	8	10	9	9
MI	model					
CFI	config	.962	.921	.989	.909	.966
	metric	.939	.903	.980	.890	.957
	Δ	.023	.018	.009	.019	.009
RMSEA	config	.009	.014	.010	.010	.008
	metric	.010	.013	.008	.009	.007
	Δ	.001	.001	.002	.001	.001
SRMR	config	.030	.061	.040	.051	.033
	metric	.036	.067	.042	.062	.039
	Δ	.006	.006	.003	.011	.007

Note: MI = measurement invariance, CFI = comparative fit index, RMSEA = root mean square error of approximation, SRMR = standardized root mean square residual, config = configural model, metric = metric model Δ = fit difference between the two models

[a] For Openness to experience, fit indices improved considerably when four item-parcels served as indicators (Gebauer et al., 2020), and the restraint to a single parcel (items O7 and O9) was relaxed.

We determined configural and metric invariance using commonly accepted thresholds used for MGCFA, for research using a large number of groups (~ > 20) (configural: CFI > .95, RMSEA < .10, SRMR < .10) (metric: ΔCFI < .02 and ΔRMSEA < .03) (Jang et. Al., 2017; Putnick & Bornstein, 2016; Rutkowski, & Svetina, 2014). Across the majority of personality traits and invariance tests (27 out of 30), we found evidence of adequate configural and metric invariance across countries.

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Table S5. Zero-order correlations among Big Five traits**.**

	1	2	3	4
1. Neuroticism				
2. Extraversion	-.30			
3. Openness	-.11	.18		
4. Agreeableness	-.35	.17	.05	
5. Conscientiousness	-.31	.16	.03	.31

Table S6. Zero-order correlations among dependent variables.

	1	2	3	4
1. PCP fit excluding Neuroticism				
2. PCP fit excluding Extraversion	.74			
3. PCP fit excluding Openness	.83	.83		
4. PCP fit excluding Agreeableness	.82	.80	.88	
5. PCP fit excluding Conscientiousness	.81	.79	.87	.86

Table S7. Results of linear mixed-effects modelling predicting person-culture personality fit with no covariates.

		Neuroticism ICC = .016			Extraversion ICC = .012			Openness ICC = .015			Agreeableness ICC = .016			Conscientiousness ICC = .016		
Model		*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*
M1	Int	.157(.017)	9.34	<.001	.096(.015)	6.44	<.001	.093(.016)	5.64	<.001	.125(.017)	7.27	<.001	.155(.017)	9.06	<.001
M2	Int	.157(.017)	9.34	<.001	.096(.015)	6.44	<.001	.093(.016)	5.64	<.001	.125(.017)	7.27	<.001	.155(.017)	9.06	<.001
	Trait	-.080(.000)	196.81	<.001	.025(.000)	60.16	<.001	-.068(.000)	166.53	<.001	.055(.000)	133.90	<.001	.037(.000)	89.29	<.001
M3	Int	.157(.017)	9.34	<.001	.096(.015)	6.45	<.001	.092(.016)	5.63	<.001	.125(.017)	7.27	<.001	.155(.017)	9.06	<.001
	Trait	-.061(.005)	12.40	<.001	.012(.005)	2.40	.016	-.079(.006)	13.87	<.001	.038(.004)	10.41	<.001	.026(.004)	5.81	<.001
M4	Int	.131(.016)	8.19	<.001	.007(.014)	5.37	<.001	.078(.015)	5.07	<.001	.098(.016)	6.01	<.001	.127(.016)	7.97	<.001
	Trait	-.061(.005)	12.36	<.001	.013(.005)	2.46	.014	-.078(.006)	13.71	<.001	.038(.004)	10.39	<.001	.026(.005)	5.82	<.001
	TL	.027(.007)	4.16	<.001	.020(.006)	3.49	<.001	.015(.005)	3.16	.002	.028(.007)	4.21	<.001	.030(.007)	4.64	<.001
M5	Int	.131(.016)	8.31	<.001	.074(.014)	5.25	<.001	.067(.015)	4.37	<.001	.098(.016)	6.12	<.001	.127(.016)	8.11	<.001
	Trait	-.062(.005)	12.01	<.001	.020(.004)	4.42	<.001	-.072(.006)	12.84	<.001	.098(.005)	9.74	<.001	.026(.005)	5.37	<.001
	TL	.028(.006)	4.27	<.001	.024(.006)	4.10	<.001	.027(.006)	4.32	<.001	.028(.007)	4.23	<.001	.030(.006)	4.73	<.001
Trait x TL		-.001(.002)	0.59	.558	-.009(.002)	4.77	<.001	-.007(.002)	2.95	.003	.000(.002)	0.20	.843	.001(.002)	0.29	.773

Note. Standardized parameter estimates (*B*) and standard errors (*SE*) for linear effects. M1 = Null model; M2 = Individual-level model; M3 = Random coefficients model; M4 = Group-level model; M5 = Cross-level interaction model; Int = Intercept; TL = cultural tightness-looseness; ICC = Intraclass correlation coefficient estimates for the null model.

Table S8. Results of linear mixed-effects modelling predicting person-culture personality fit with Level 1 covariates.

		Neuroticism			Extraversion			Openness			Agreeableness			Conscientiousness		
Model		*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*
M1	Int	.158(.017)	9.39	<.001	.097(.015)	6.49	<.001	.094(.016)	5.69	<.001	.126(.017)	7.31	<.001	.156(.017)	9.10	<.001
M2	Int	.142(.017)	8.46	<.001	.087(.015)	5.88	<.001	.081(.016)	4.91	<.001	.127(.017)	7.46	<.001	.151(.017)	8.83	<.001
	Trait	-.085(.000)	200.71	<.001	.024(.000)	58.80	<.001	-.068(.000)	164.63	<.001	.058(.000)	140.30	<.001	.042(.000)	97.41	<.001
M3	Int	.141(.017)	8.45	<.001	.087(.015)	5.90	<.001	.080(.016)	4.91	<.001	.127(.017)	7.48	<.001	.151(.017)	8.85	<.001
	Trait	-.065(.007)	13.25	<.001	.012(.005)	2.48	<.001	-.079(.006)	14.00	<.001	.042(.004)	11.34	<.001	.030(.005)	6.73	<.001
M4	Int	.115(.016)	7.26	<.001	.067(.014)	4.73	<.001	.066(.015)	4.30	<.001	.100(.016)	6.26	<.001	.122(.016)	7.78	<.001
	Trait	-.065(.005)	13.21	<.001	.013(.005)	2.52	.003	-.078(.006)	13.84	<.001	.042(.004)	11.30	<.001	.030(.005)	6.73	<.001
	TL	.019(.000)	46.81	<.001	.020(.000)	47.55	<.001	.003(.000)	6.25	.006	.004(.001)	4.17	<.001	.008(.001)	8.95	<.001
M5	Int	.114(.016)	7.38	<.001	.064(.014)	4.65	<.001	.054(.015)	3.59	<.001	.100(.016)	6.36	<.001	.122(.015)	7.92	<.001
	Trait	-.066(.005)	12.82	<.001	.021(.004)	4.61	<.001	-.072(.006)	13.00	<.001	.042(.004)	10.83	<.001	.030(.005)	6.29	<.001
	TL	.028(.006)	4.46	<.001	.020(.000)	47.55	<.001	.003(.000)	6.25	<.001	.032(.000)	76.61	<.001	.021(.000)	49.55	<.001
Trait x TL		.001(.002)	0.58	.578	-.010(.002)	4.97	<.001	-.007(.002)	3.04	.002	.000(.002)	0.21	.061	.000(.002)	0.16	.362

Note. Standardized parameter estimates (*B*) and standard errors (*SE*) for linear effects. M1 = Null model; M2 = Individual-level model; M3 = Random coefficients model; M4 = Group-level model; M5 = Cross-level interaction model; Int = Intercept; TL = cultural tightness-looseness. The Level 1 covariates were age and sex.

Table S9. Results of linear mixed-effects modelling predicting person-culture personality fit with Level 2 covariates.

		Neuroticism			Extraversion			Openness			Agreeableness			Conscientiousness		
Model		*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*
M1	Int	.157(.017)	9.34	<.001	.096(.015)	6.44	<.001	.093(.016)	5.64	<.001	.125(.017)	7.27	<.001	.155(.017)	9.06	<.001
M2	Int	.080(.043)	1.85	.065	.054(.040)	1.36	.173	.068(.045)	1.51	.131	.069(.046)	1.50	.134	.091(.044)	2.06	.039
	Trait	-.080(.000)	196.81	<.001	.025(.000)	60.16	<.001	-.068(.000)	166.53	<.001	.155(.000)	133.90	<.001	.037(.000)	89.29	<.001
M3	Int	.072(.042)	1.71	.088	.050(.038)	1.31	.192	.059(.034)	1.71	.087	.066(.046)	1.44	.150	.087(.044)	1.98	.047
	Trait	-.061(.005)	12.45	<.001	.013(.005)	2.52	.012	-.078(.006)	13.34	<.001	.139(.004)	10.39	<.001	.026(.004)	5.88	<.001
M4	Int	.070(.040)	1.76	.079	.049(.037)	1.33	.182	.056(.033)	1.70	.088	.059(.042)	1.41	.159	.082(.040)	2.07	.038
	Trait	-.061(.005)	12.38	<.001	.013(.005)	2.49	.013	-.078(.006)	13.33	<.001	.039(.004)	10.39	<.001	.026(.004)	5.86	<.001
	TL	.019(.006)	2.98	.003	.016(.006)	2.59	.010	.014(.005)	2.66	.007	.023(.007)	3.25	.001	.023(.007)	3.56	<.001
M5	Int	.069(.041)	1.82	.069	.047(.035)	1.35	.176	.047(.031)	1.50	.134	.059(.040)	1.46	.144	.082(.038)	2.16	.031
	Trait	-.062(.005)	12.01	<.001	.020(.005)	4.44	<.001	-.072(.008)	12.53	<.001	.038(.004)	9.74	<.001	.026(.005)	5.40	<.001
	TL	.020(.006)	3.16	.002	.018(.006)	3.18	.001	.025(.006)	3.97	<.001	.022(.007)	3.38	<.001	.023(.006)	3.69	<.001
Trait x TL		.001(.002)	0.54	.592	-.009(.002)	4.75	<.001	-.007(.002)	2.91	.004	.000(.002)	0.21	.833	.001(.002)	0.33	.743

Note. Standardized parameter estimates (*B*) and standard errors (*SE*) for linear effects. M1 = Null model; M2 = Individual-level model; M3 = Random coefficients model; M4 = Group-level model; M5 = Cross-level interaction model; Int = Intercept; TL = cultural tightness-looseness. The Level 2 covariates were sample size, gross domestic product per capita and ethnic fractionalization.

Table S10. Results of linear mixed-effects modelling predicting person-culture personality fit with all (Level 1 and Level 2) covariates.

		Neuroticism			Extraversion			Openness			Agreeableness			Conscientiousness		
Model		*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*	*B(SE)*	*t*	*p*
M1	Int	.158(.017)	9.39	<.001	.097(.015)	6.49	<.001	.094(.016)	5.69	<.001	.126(.017)	7.31	<.001	.156(.017)	9.10	<.001
M2	Int	.059(.043)	1.38	.168	.041(.039)	1.05	.293	.052(.045)	1.15	.249	.066(.045)	1.47	.142	.083(.044)	1.89	.058
	Trait	-.085(.000)	200.71	<.001	.024(.000)	58.80	<.001	-.068(.000)	164.63	<.001	.058(.000)	140.30	<.001	.042(.000)	97.41	<.001
M3	Int	.053(.042)	1.26	.208	.038(.038)	1.01	.313	.044(.034)	1.28	.199	.064(.045)	1.42	.156	.081(.044)	1.85	.064
	Trait	-.065(.005)	13.31	<.001	.013(.005)	2.60	.009	-.078(.006)	13.46	.000	.042(.004)	11.31	<.001	.030(.004)	6.80	<.001
M4	Int	.050(.039)	1.28	.201	.037(.036)	1.02	.308	.041(.033)	1.25	.210	.058(.041)	1.41	.158	.076(.039)	1.94	.053
	Trait	-.065(.005)	13.24	<.001	.013(.005)	2.55	.011	-.077(.006)	13.45	.000	.042(.004)	11.29	<.001	.030(.004)	6.78	<.001
	TL	.020(.006)	3.18	.001	.017(.006)	2.86	.004	.014(.005)	2.74	.006	.023(.007)	3.37	<.001	.024(.006)	3.71	<.001
M5	Int	.049(.037)	1.32	.187	.035(.034)	1.03	.305	.031(.031)	1.02	.309	.058(.039)	1.46	.143	.076(.038)	2.02	.044
	Trait	-.066(.005)	12.82	<.001	.021(.004)	4.63	<.001	-.071(.006)	12.68	<.001	.042(.004)	10.82	<.001	.030(.005)	6.32	<.001
	TL	.021(.006)	3.37	<.001	.019(.006)	3.36	<.001	.026(.006)	4.09	<.001	.023(.007)	3.53	<.001	.024(.006)	3.88	<.001
Trait x TL		.001(.002)	0.54	.592	-.010(.002)	4.95	<.001	-.007(.002)	3.00	.003	.000(.002)	0.20	.844	.000(.002)	0.19	.850

Note. Standardized parameter estimates (*B*) and standard errors (*SE*) for linear effects. M1 = Null model; M2 = Individual-level model; M3 = Random coefficients model; M4 = Group-level model; M5 = Cross-level interaction model; Int = Intercept; TL = cultural tightness-looseness. The Level 1 covariates were age and sex. The Level 2 covariates were sample size, gross domestic product per capita and ethnic fractionalization.