

# Global Increases in Individualism



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## Abstract

Individualism appears to have increased over the past several decades, yet most research documenting this shift has been limited to the study of a handful of highly developed countries. Is the world becoming more individualist as a whole? If so, why? To answer these questions, we examined 51 years of data on individualist practices and values across 78 countries. Our findings suggest that individualism is indeed rising in most of the societies we tested. Despite dramatic shifts toward greater individualism around the world, however, cultural differences remain sizable. Moreover, cultural differences are primarily linked to changes in socioeconomic development, and to a lesser extent to shifts in pathogen prevalence and disaster frequency.

## Keywords

cultural change, individualism, cross-cultural differences, social ecology, change over time, open data

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Over the past hundred years, some affluent societies moved toward greater individualism in values and practices. Has individualism risen around the globe, or is this shift limited to a few highly developed societies? Why has this shift occurred? Utilizing 51 years of data on individualist practices and values from 78 countries, we sought answers to these questions. Here, we present the novel empirical evidence we obtained and reflect on outstanding questions for future research.

## Cross-Cultural Differences in Individualism and Collectivism

Individualism-collectivism is currently the most discussed construct in cross-cultural studies. Since the seminal works by Triandis (1995), Hofstede (2001), and Markus and Kitayama (1991), researchers have used this cultural dimension to explain variations in psychological processes across cultural groups. Individualism promotes a view of the self as self-directed, autonomous, and separate from others. Conversely, collectivism fosters an interconnected view of the self as overlapping with close others, such that one's thoughts, feelings, and behaviors are embedded in social contexts (Markus & Kitayama, 1991; Triandis, 1995; Varnum, Grossmann,

Kitayama, & Nisbett, 2010). Individualist cultures prioritize independence and uniqueness, whereas collectivist cultures emphasize family ties and fitting in (Grossmann & Na, 2014).

Cross-cultural differences in individualism-collectivism are found in values and norms (e.g., obedience; Hofstede, 2001), socialization practices (Greenfield, 2009), and cultural products (Morling & Lamoreaux, 2008). With regards to living arrangements, individualist cultures also favor living alone, whereas collectivist cultures favor living with parents and grandparents (Vandello & Cohen, 1999).

## Cross-Temporal Shifts in Individualism-Collectivism

Cultural values and practices are not static (Kashima, 2014; Morris, Chiu, & Liu, 2015). Recently, scholars have begun to explore how individualism-collectivism may change over time (e.g., Greenfield, 2009; Grossmann &

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Varnum, 2015; Kitayama, Conway, Pietromonaco, Park, & Plaut, 2010; Twenge, Dawson, & Campbell, 2016). Initial studies tracked changes between 1969 and 1991 in Mayan communities (Greenfield, 2009). During this period, this group's economy shifted from a subsistence to a market-based economy, and this change was associated with a socialization environment that became more individualist. More recently, researchers have analyzed several decades of U.S. survey data to assess potential changes in constructs related to individualism-collectivism. For instance, Twenge and her colleagues (Twenge, Campbell, & Gentile, 2012) found increases in positive self-views (the better-than-average effect) among college students from 1966 to 2009.

Subsequent studies have shown shifts in individualism in cultural products and practices. For example, Americans and Japanese have become increasingly likely to give their children relatively unique names (Grossmann & Varnum, 2015; Ogiwara et al., 2015; Twenge et al., 2016). Also, Americans have become less likely to live in multigenerational households and more likely to divorce (Grossmann & Varnum, 2015). Moreover, the frequencies of words reflecting individualist themes (e.g., *self*, *unique*, *personal*, *me/mine*) relative to the frequencies of words reflecting collectivist themes (e.g., *obedience*, *belong*, *together*, *we/ours*) have increased over time in books from the United States (Greenfield, 2013; Grossmann & Varnum, 2015) and several other countries (e.g., Yu et al., 2016; Zeng & Greenfield, 2015).

At least three studies have explored changes in markers of individualism-collectivism across societies. Using data from the World Values Surveys, Inglehart and Baker (2000) found increasing self-expression (a concept related to individualism; Inglehart & Oyserman, 2004) across 65 countries. Similarly, Yu et al. (2016) found increasing use of words meaning "me" and "mine" in eight language groups over a span of 59 years. Further, Hamamura's (2012) analysis of survey and census data from the United States and Japan revealed shifts toward more individualist relational practices in both countries. These studies suggest that there may be a global trend toward individualism. However, these data came primarily from developed countries, which limits what one can infer about less economically developed countries. And although Inglehart and Baker (2000) observed that countries that experienced greater economic development endorsed more individualist values, they did not examine changes in practices, nor did they systematically test multiple hypotheses for why individualist values and practices might have been on the rise.

### **Changes in Ecology and Changes in Individualism-Collectivism**

Recently, scholars studying cross-cultural variation have begun using an ecological framework to explain

cross-cultural differences (Oishi & Graham, 2010; Thornhill & Fincher, 2014; Van de Vliert, 2013). This research has focused on dimensions of ecological affordance and threat, including socioeconomic development, frequency of natural disasters, pathogen prevalence, and climatic stress. We applied this framework to our investigation of individualism-collectivism.

### ***Socioeconomic development***

Several scholars have theorized that individualism-related changes are explained by socioeconomic development, which involves a shift from agricultural to industrial and postindustrial economies, greater occupational prestige and education, and higher income (e.g., Inglehart & Baker, 2000; Kagitçibasi, 2007; Kraus, Piff, Mendoza-Denton, Rheinschmidt, & Keltner, 2012; Newson & Richerson, 2009; Triandis, 1995; Varnum et al., 2010). Living in an economically developed society reduces the need to rely on a group for survival, allowing people to prioritize individual goals and personal freedom (Inglehart & Baker, 2000). A related argument specifically focuses on the rise of urban centers, holding that city environments promote individualism (Greenfield, 2009; Yamagishi, Hashimoto, Li, & Schug, 2012). Although there are various explanations for modernization, correlational studies across multiple countries (e.g., Hofstede, 2001; Kashima & Kashima, 2003) and observations of single communities before and after economic development (Greenfield, 2009) support the claim that more developed and urbanized societies are more individualist. Also, time-lagged analyses in the United States showed that over 150 years, shifts from blue-collar to white-collar jobs preceded increases in individualist living arrangements, cultural products, and practices (Grossmann & Varnum, 2015).

### ***Disaster frequency***

Environmental threats can also shape culture. Triandis (2009) proposed that frequent disasters would reduce individuals' sense of agency, which would then lead to less individualism. However, research on reactions to trauma and the cognitive effects of stress suggests that the experience of a disaster would narrow attentional scope (Wachtel, 1968)—a tendency that frequently accompanies individualism (Varnum et al., 2010). Thus, it is possible that more frequent disasters may lead to greater individualism. Consistent with the latter view, a recent study found that increases in individualist practices were preceded by increases in disaster frequency in the United States (Grossmann & Varnum, 2015).

### ***Pathogen prevalence***

Evolutionary theorists argue that humans have developed a behavioral immune system (Schaller & Park,

2011), a suite of cognitive-behavioral tendencies—including collectivism—that reduce disease transmission. Collectivism limits people's contact outside the in-group, reducing the likelihood of acquiring infections (Thornhill & Fincher, 2014). Further, compared with people who live in regions with few infectious diseases, those who live in regions with many infectious diseases are more likely to de-emphasize individualist values such as self-reliance and to encourage obedience and conformity, which, all else being equal, likely reduce the chance of infection (e.g., Murray, Trudeau, & Schaller, 2011). Whereas many of the studies on this topic have examined the correlations between historical pathogen prevalence and contemporary data on variables related to individualism-collectivism, only one U.S.-based study has investigated this relationship over time, finding that increases in pathogen prevalence are associated with increased individualist practices and word use (Grossmann & Varnum, 2015).

### ***Climatic stress***

People living in climates that deviate from the optimal mean temperature (22 °C/72 °F; cf. Van de Vliert, 2013) face greater environmental stresses than do those who live in optimal climates. These stresses may increase focus on survival goals and in-group support as opposed to individualist pursuits such as self-expression (Hofstede, 2001; Kashima & Kashima, 2003; Van de Vliert, 2013). Notably, the effects of suboptimal climates are felt particularly strongly in countries that do not have the financial resources to cope with them. According to this climato-economic theory, increased climatic stress should lead to a shift away from individualism in relatively poor countries (Van de Vliert, 2013).

### **The Current Research**

We performed a formal analysis of change over 51 years in a subset of individualist practices and values across 78 countries that varied in their economic development (e.g., highly developed Switzerland vs. less-developed Malawi) and geography. To assess whether the rise in individualism is a global phenomenon, we extended previous work that was conducted in a few industrialized countries (Greenfield, 2013; Grossmann & Varnum, 2015; Hamamura, 2012; Zeng & Greenfield, 2015) to a more representative sample of societies. We also examined whether certain socio-ecological factors—socioeconomic development, disaster frequency, pathogen prevalence, and climatic stress—can account for pan-cultural shifts in individualism-collectivism.

### **Method**

We focused on individualist behavioral practices (e.g., living alone rather than with grandparents; Triandis, 1995) and values associated with individualism (e.g., valuing independence; Hamamura, 2012). Following previous research (Grossmann & Na, 2014; Hofstede, 2001), we conceptualized cultural-level changes in individualism-collectivism as a single country-level dimension, though we acknowledge that individualism and collectivism may be independent from each other when explored at the individual level of analysis (Grossmann & Na, 2014; Schimmack, Oishi, & Diener, 2005; Triandis, 1995).

### ***Country selection***

Table 1 shows all the countries used in the analyses and the sources of their data. For the analysis of individualist practices, we selected 41 countries for which we had access to national census data at a minimum of three time points (i.e., data covering at least two decades between 1960 and 2011, as most census data are collected every 10 years). We retrieved these data from the Integrated Public Use Microdata Series-International (IPUMS-I; Minnesota Population Center, 2015; see Table S1 in the Supplemental Material for a full list of the databases used). This database provides standardized measures so that indicators can be easily compared across countries or surveys. For the analysis of individualist values, we selected 53 countries for which the World Values Survey and European Values Survey integrated database (WVS; World Values Survey Association, 2015) provides at least three data points over 10 years. We chose a shorter range of time for values than for practices because the WVS data were collected in more frequent waves. Of these 53 countries included in our analysis of individualist values, 16 were also included in our analysis of individualist practices.

### ***Socio-ecological factors***

**Socioeconomic development.** We examined country-level markers of socioeconomic development that should be associated with differences in individualism: type of economy (agricultural vs. service), occupational prestige, educational attainment, income, and urbanization (Greenfield, 2009; Grossmann & Varnum, 2015; Inglehart & Baker, 2000; Kraus et al., 2012).

- **White-collar versus agricultural jobs:** We examined whether people tended to have white-collar jobs (i.e., more developed economy) or agricultural jobs

(i.e., less developed economy; Greenfield, 2009). Using harmonized census data from IPUMS-I, we calculated the percentage of people classified as “skilled agricultural, forestry, and fishery workers” as a measure of agricultural jobs. The percentage of people classified as “legislators, senior officials, and managers,” “professionals,” “technicians and associate professionals,” “clerks,” and “service workers and shop and market sales” was our measure of white-collar jobs. We then subtracted the percentage of agricultural jobs from the percentage of white-collar jobs. Thus, higher scores represented more white-collar jobs in society.

- Occupational prestige: We obtained occupational data coded by IPUMS-I into the major categories in the 1988 International Standard Classification of Occupations scheme. We weighted these categories by multiplying the percentage of people in each category by the corresponding weighted value from the 1996 Standard International Occupational Prestige Scale (Ganzeboom & Treiman, 1996), a measure of popular evaluation of occupational standing across multiple countries. Higher scores indicated that more people were working at jobs with greater prestige.
- Educational attainment: We used harmonized census data on educational attainment that was already recorded in the IPUMS-I database using a standard 4-point scale (1 = less than completion of primary school, 4 = completion of university education).
- Income: We used gross domestic product (GDP) as an indicator of income. Following recommendations by Deaton (2008), we log-transformed GDP per capita (in current U.S. dollars). The GDP data were obtained from the World Bank (2015) database.
- Urbanization: Using the same harmonized census data from IPUMS-I, we calculated the percentage of households coded as urban.

These variables were correlated with each other in the expected direction,  $.17 < \tau_s < .74$  (see Table S2 in the Supplemental Material). Note that the measures of type of economy (agricultural vs. white-collar jobs), occupational prestige, educational attainment, and urbanization were available only for those countries in the IPUMS-I sample. To simplify the data for these countries, we computed composite scores for individualist socioeconomic development by standardizing the five variables and then calculating the mean across the five variables for each country and each year. To account for missing data when computing the composite score, we used linear interpolation between any two data points that were no more than

**Table 1.** List of Countries in the Samples

Countries only in the IPUMS-I	Countries in the IPUMS-I and WVS	Countries only in the WVS
Bangladesh	Argentina	Albania
Bolivia	Austria	Armenia
Brazil	Canada	Australia
Burkina Faso	Chile	Azerbaijan
Cameroon	France	Belarus
Colombia	Hungary	Belgium
Costa Rica	India	Bulgaria
Dominican Republic	Ireland	China
Ecuador	Mexico	Croatia
Fiji	Morocco	Czech Republic
Greece	Portugal	Denmark
Haiti	Romania	Estonia
Indonesia	Spain	Finland
Israel	Switzerland	Georgia
Kenya	United States	Germany
Malawi	Uruguay	Iceland
Malaysia		Italy
Mali		Japan
Nicaragua		Latvia
Panama		Lithuania
Puerto Rico		Macedonia
Thailand		Malta
Venezuela		Moldova
Vietnam		Netherlands
Zambia		New Zealand
		Nigeria
		Norway
		Peru
		Poland
		Russian Federation
		Slovenia
		South Africa
		South Korea
		Sweden
		Turkey
		Ukraine
		United Kingdom

Note: IPUMS-I = Integrated Public Use Microdata Series-International (Minnesota Population Center, 2015); WVS = World Values Survey and European Values Survey integrated database (World Values Survey Association, 2015).

10 years apart (we had income data for almost every year in the sample, and thus no interpolation was necessary for this variable). For the countries not in the IPUMS-I database, we used standardized income data as the measure of socioeconomic development in the analyses reported here. The findings were similar when analyses excluded these countries (see Supplementary Analyses in the Supplemental Material).



**Disaster frequency.** We obtained data on disaster prevalence from 1960 to the present from the International Disaster Database, maintained by the Centre for Research on the Epidemiology of Disasters in Belgium (Guha-Sapir, Below, & Hoyois, 2015). Disasters were classified as natural events (e.g., earthquakes, storms, floods) or technology-related events (e.g., fire, chemical spill, transportation accidents) that met at least one of the following criteria: 10 or more people dead, 100 or more people affected, declaration of a state of emergency, or call for international assistance. We log-transformed the frequency of these events for each year to address the skew in the data.

**Pathogen prevalence.** We obtained annual data on the incidence of infectious diseases from the Global Health Observatory data repository (World Health Organization, 2016). We selected seven diseases for which the files had data spanning at least 20 years: cholera, diphtheria, measles, neonatal tetanus, pertussis, total tetanus, and tuberculosis. To estimate the prevalence of these diseases, we divided the number of incidences of each disease in each year by the total annual population, taken from the World Bank (2015) database. We then took the sum of all of these ratios as an overall measure of the prevalence of infectious pathogens.

**Climatic stress.** We obtained mean monthly temperatures for each country from the Climate Change Knowledge Portal database (World Bank, 2016). These data were obtained from thousands of weather stations throughout the world and represent the average climate across each country. We calculated the mean for each year for each country and took the absolute value of the difference between the annual mean and 22 °C as a measure of the deviation from the optimal temperature for humans (Van de Vliert, 2013).

## Individualism-collectivism

**Practices.** Previous work has examined shifts in individualism by looking at changes in choices people make concerning their living arrangements. More individualist people tend to have smaller households, are more likely to live alone, are less likely to personally care for their parents and grandparents by living with them, and are more likely to be divorced (Grossmann & Varnum, 2015; Triandis, 1995; Vandello & Cohen, 1999). To measure these behaviors, we used harmonized census data from IPUMS-I, as follows.

- **Household size:** We calculated the mean number of relatives (by blood, marriage, or adoption) per household. This measure was reverse-scored so that higher mean values indicated greater individualism.

- **Living alone:** We calculated the percentage of households that had only one member. Higher percentages indicated greater individualism.
- **Older adults living alone:** We calculated the percentage of single-member households in which the household consisted of someone age 60 or older. Higher percentages indicated greater individualism.
- **Divorce:** We calculated the ratio of the number of divorced and separated people to the number of married and widowed people. A higher ratio indicated greater individualism.

These variables were correlated with each other in the expected direction,  $.27 < \tau_s < .69$ , with the exception that there was no reliable correlation between the scores for older adults living alone and divorce,  $\tau = .02$  (see Table S3 in the Supplemental Material). Therefore, we pooled and then standardized these measures across all years and countries with available data. Each country's annual measure of individualist practices was the mean of its standardized values for these variables. Analyses without divorce as part of the individualism-collectivism composite yielded results similar to those reported here (see Supplementary Analyses in the Supplemental Material). We also looked at the number of children born, single-child families, and married couples with no children as part of the individualism index, but because these variables are closely related to life-history strategies, we did not include them in our main analysis. When we included these variables in the composite, our findings were similar to those reported here (see Supplementary Analyses).

**Values.** Culture is also manifested in the values held by a country's population. To measure cultural values, we used three items from the World Values Survey that have been used as indices of individualism-collectivism in prior cross-cultural research and have been linked to established self-report and non-self-report measures of individualism-collectivism (Hamamura, 2012; Inglehart & Oyserman, 2004):

- **Importance of friends versus family:** Respondents answered two items asking them about the importance of their friends and their family (1 = *very important*, 4 = *not very important*). Responses were reverse-scored so that higher scores indicated greater value given to friends and family. We then subtracted the score for friends from the one for family. Thus, higher scores on this measure reflected a lower emphasis on the family relative to friends, which is associated with less collectivism (Hamamura, 2012; Triandis, 1995).

- Independent children: We calculated the percentage of respondents who said that it was important to teach the value of independence to their children (dichotomous yes/no measure). Individualist societies socialize children to be independent, whereas collectivist societies put greater emphasis on obedience (Hamamura, 2012; Triandis, 1995). Responses to this item were reverse-scored, so that higher scores indicated greater individualism.
- Preference for self-expression: Respondents were asked to think about their country's goals in the future and to select two goals (out of a list of four) that would be important to them. If they picked at least one self-expression goal (i.e., "Giving people more say in important government decisions" or "Protecting freedom of speech"), they were coded as valuing self-expression, which is nomologically linked to the notion of individualism (Inglehart & Oyserman, 2004).

These variables were correlated to each other in the expected direction,  $.11 < r < .24$  (see Table S4 in the Supplemental Material). After pooling the variables, we standardized the values across all countries. Each country's annual measure of individualist values was computed by averaging its standardized values for these variables.

### Data analysis

We performed all analyses in the R language for statistical computing (R Core Team, 2016; see Table S1 in the Supplemental Material for a list of the main R packages used). As noted, we computed averaged index scores for each year and country for the proposed predictors, individualist practices, and individualist values after the scores for the individual measures were standardized. To standardize the scores, we calculated  $z$  scores using the grand means and standard deviations across all years and countries in the sample (as opposed to calculating them within each country or year) because we were interested in countries' level of individualism and socioeconomic development relative to one another and in how these levels changed over time (Hox, 2002). Following recommendations for longitudinal analyses, we set the first time point to zero.

We performed multilevel modeling (MLM) with the *lme4* and *lmerTest* packages for R, because differences between countries explained a significant part of the variance in individualism: 54% of the variance for practices and 30% of the variance for values (intraclass correlations = .73 and .54, respectively). This variance pattern necessitated the use of MLM to control for these differences (Hox, 2002).

To estimate how the data for each country shifted over time, we nested data per year within countries and treated the proposed predictors as fixed effects, controlling for differences between countries (i.e., random effects; Hox, 2002). Because we expected countries to vary in their starting values, we allowed the intercepts to be random in our analyses. Following the procedure used by other statistical programs (e.g., SPSS, SAS), we estimated statistical significance using the Satterthwaite approximation for denominator degrees of freedom. To estimate the relative effect size of main effects, we chose to use marginal  $R^2$  ( $R^2_m$ ), which estimates the proportion of residual variance explained by the predictors only (i.e., irrespective of the variance explained by between-country differences; Nakagawa & Schielzeth, 2013), using the *MuMIn* package for R.

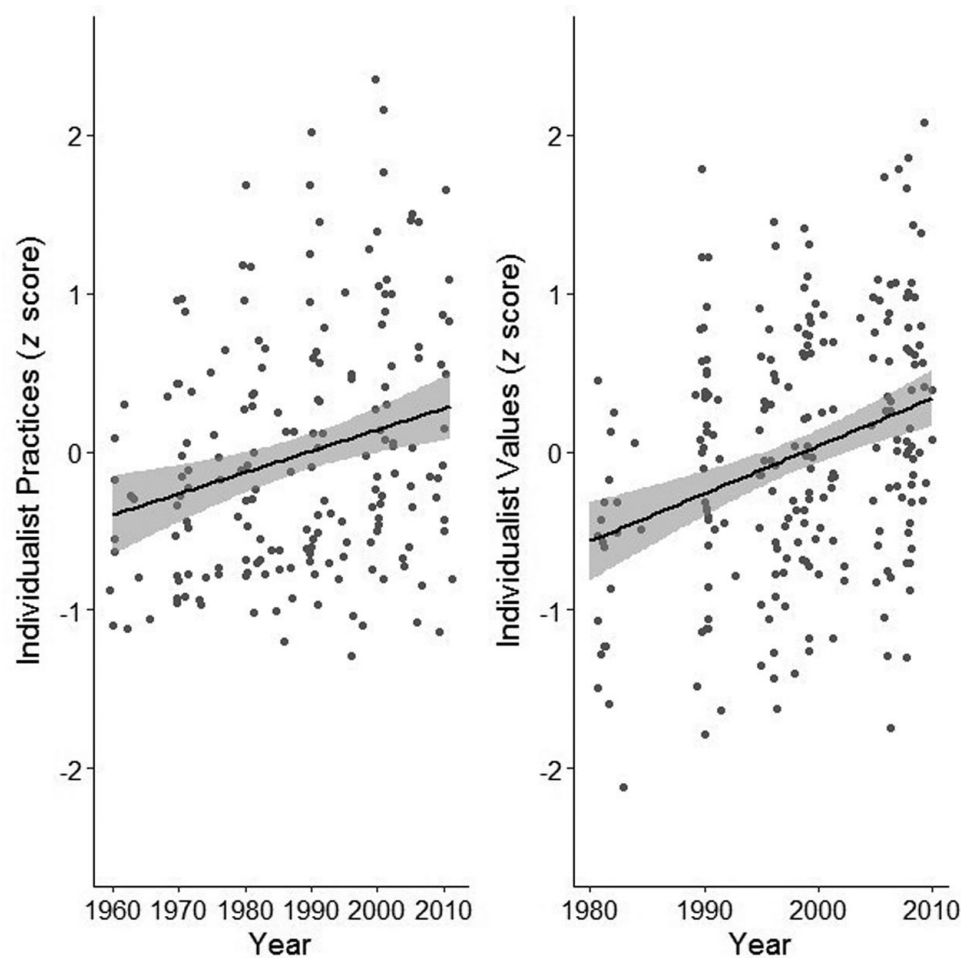
Caution should be taken when interpreting the  $R^2_m$  term for the interaction between two variables in a multilevel model. This is because  $R^2_m$  does not estimate the effect size for the interaction term per se. Rather, it estimates the effect size for the whole model, which includes the main effects. Therefore, to clarify the incremental effect of interactions, we used Akaike's information criterion (AIC), which allows for exact model comparisons (Hox, 2002). A lower AIC value indicates a better model. To evaluate an interaction effect, we subtracted the AIC of the model with the interaction effect from the AIC of the model with only main effects. If the resulting  $\Delta$ AIC value was greater than 2, that indicated that the interaction model was the superior model (i.e., it explained additional variance, compared with a model including only main effects).

## Results

### Change in individualism over time

We modeled the rate of change in individualism over time by adding year (from 1960 through 2011) as a predictor in the model. Results revealed increased individualism over time, when we examined both practices,  $b = 0.02$ ,  $SE = 0.001$ ,  $t(142.03) = 13.54$ ,  $p < .001$ ,  $R^2_m = .12$ , and values,  $b = 0.03$ ,  $SE = 0.004$ ,  $t(191.88) = 9.76$ ,  $p < .001$ ,  $R^2_m = .12$  (see Fig. 1). The models suggested that since 1960, individualism has increased by about 12% worldwide.

Supplemental regional and country-specific analyses indicated that individualism rose in all the regions and most of the countries we examined (see Fig. 2 and Table S5 in the Supplemental Material for the results of regional analyses). For cultural practices, only 4 countries (Cameroon, Malawi, Malaysia, and Mali) showed a non-negligible decrease in individualism over time, whereas 34 out of the 41 countries exhibited a substantial increase



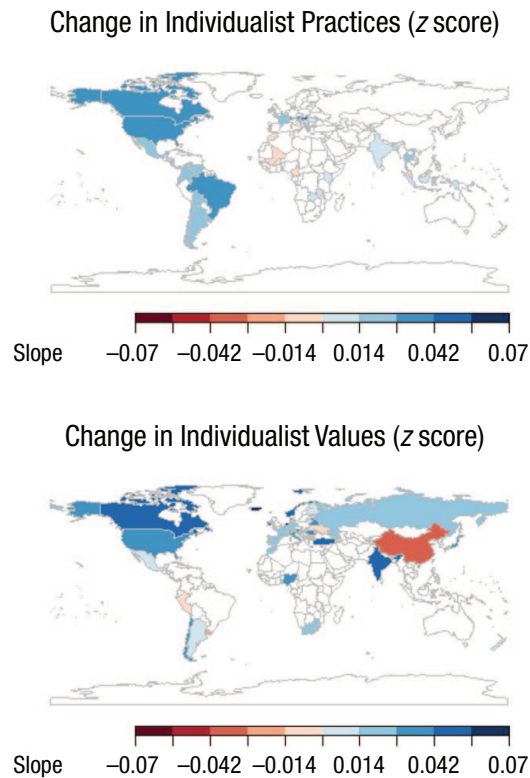
**Fig. 1.** Overall change in individualist practices (left) and values (right) over time. Each plotted point represents the score from a single country in the year indicated. The lines represent the slopes from the multilevel models, and the gray bands represent the 95% confidence intervals.

in individualism (see Table S6 in the Supplemental Material). For values, only 5 countries (Armenia, China, Croatia, Ukraine, and Uruguay) showed a nonnegligible decrease in individualism, whereas 39 out of the 53 countries exhibited a substantial increase in individualism (see Table S7 in the Supplemental Material). In the Discussion section, we consider a possible reason why a handful of countries showed a different trend than the rest of the world for each measure. In summary, we observed increasing individualism in the vast majority of sampled countries. Notably, despite dramatic shifts toward greater individualism around the world, Figure 1 suggests that cultural differences remained sizable for any given year up through 2011.

### ***Predictors of change in individualism***

Next, we examined how socio-ecological changes affected shifts in individualism. Prior work (e.g.,

Grossmann & Varnum, 2015; Inglehart & Baker, 2000) suggested that increases in socioeconomic development, increases in disaster frequency, and decreases in pathogen prevalence accompany increases in individualism. As shown in Table 2, these previous findings were mostly supported: Increases in socioeconomic development predicted increases in individualist practices,  $R^2_m = .58$ , and values,  $R^2_m = .35$ , and decreases in pathogen prevalence predicted increases in individualist practices,  $R^2_m = .03$ , and values,  $R^2_m = .02$ . Increases in disaster frequency led to increases in individualist practices,  $R^2_m = .09$ , but not values,  $R^2_m = .01$ . In addition, climate and socioeconomic development had a significant interaction effect on individualist practices,  $\Delta AIC = 7.30$ , but not values,  $\Delta AIC = 0.40$ . Specifically, the harsher the climate, the more strongly socioeconomic development was associated with individualist practices (see Fig. 3). This finding is partially consistent with the climato-economic theory of cultural change



**Fig. 2.** Slopes for change in individualist practices (top) and values (bottom) in the countries analyzed. The slopes are from the linear regression of standardized individualism scores on time (year). Exact regression estimates and standard errors for each country are presented in Tables S6 and S7 in the Supplemental Material.

(Van de Vliert, 2013), which predicts that harsher climate promotes less individualism in less developed countries, whereas harsher climate promotes more individualism in more developed countries. We observed that changes in climate were related to decreases in individualism in countries with low socioeconomic development, but were not related to individualism in countries with high socioeconomic development.

Of all the factors, socioeconomic development had the strongest effect; between 35% and 58% of the change in individualism over time can be attributed to shifts in socioeconomic development (almost 4 times as much as can be attributed to the predictor with the next largest effect). The effect of socioeconomic development on individualism held when we controlled for year, disaster frequency, pathogen prevalence, and climate.

Looking more closely at the individual measures of socioeconomic development, we found that increase in the proportion of white-collar relative to agricultural jobs was related to increases in individualist practices,  $R^2_m = .42$ , and values,  $R^2_m = .42$ ; increase in occupational prestige was related to increases in both individualist practices,  $R^2_m = .33$ , and values,  $R^2_m = .25$ ; increase in educational attainment was related to increases in both individualist practices,  $R^2_m = .60$ , and values,  $R^2_m = .46$ ; and increase in income was related to increases in both individualist practices,  $R^2_m = .40$ , and values,  $R^2_m = .38$  (see Table 3). Increase in urbanization was associated with increase in individualist practices,  $R^2_m = .25$ , but we did not have enough data to examine the relationship between urbanization and individualist values. In summary, although all five measures of socioeconomic development were strong correlates of cultural change, the proportion of white-collar jobs, education, and income were particularly powerful factors.

### ***Socioeconomic development as a mediator***

Although the MLM analyses we have reported show a correlation between socio-ecological factors and individualism, they do not necessarily imply a causal relationship. Given that socioeconomic development was the only non-negligible correlate of individualism, we focused on this factor in subsequent analyses of lagged effects and mediation (see Supplementary Analyses in the Supplemental Material for mediation analyses with the other factors).

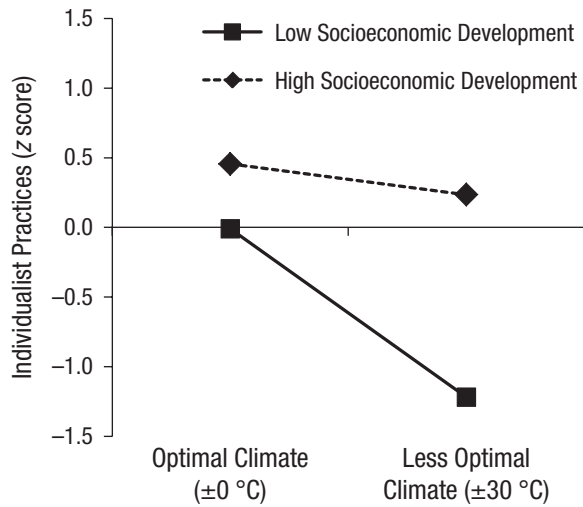
**Table 2.** Effects of Socio-Ecological Factors on Individualist Practices and Values

Predictor	Individualist practices		Individualist values	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
Socioeconomic development	0.66 (0.04)**	$t(181.22) = 15.46$	0.59 (0.06)**	$t(188.64) = 9.51$
Disaster frequency	0.58 (0.10)**	$t(114.31) = 5.81$	0.19 (0.13)	$t(178.85) = 1.46$
Pathogen prevalence	-0.18 (0.05)*	$t(116.22) = -3.25$	-0.19 (0.07)*	$t(221.32) = -2.71$
Climate × Socioeconomic Development	0.02 (0.007)*	$t(181.79) = 3.13$	0.02 (0.01)	$t(156.49) = 1.58$

Note: The table presents estimates from a multilevel-model analysis with annual data nested within country data. Standard errors for the coefficients are given in parentheses. We calculated these standard errors using the data for all countries and years in the sample.

\* $p < .01$ . \*\* $p < .001$ .





**Fig. 3.** Results illustrating the interaction effect of climate and socioeconomic development on individualist practices (with data per year nested within countries). The graph shows estimated levels of individualist practices for countries with an optimal mean temperature (22 °C) and with a mean temperature 30 °C from the optimal temperature. *High* and *low* socioeconomic development refer to the 25th and 75th percentiles, respectively.

First, we looked at the lagged effects of socioeconomic development, as previous work has suggested that cultural change due to ecological change may happen later than the ecological change that caused it (e.g., Grossmann & Varnum, 2015). We expected changes in socioeconomic development to be associated with corresponding shifts in individualism 10 years later (i.e., a 10-year lead), which would suggest a causal path from the former variable to the latter. We chose to model the data using a lead of 10 years because most census data are collected by the decade (we obtained similar findings with shorter leads; see Supplementary Analyses). An MLM analysis revealed that increases in socioeconomic development resulted 10 years later in increases in

individualist practices,  $b = 0.59$ ,  $SE = 0.04$ ,  $t(154.03) = 13.55$ ,  $p < .001$ ,  $R^2_m = .48$ , and values,  $b = 0.46$ ,  $SE = 0.09$ ,  $t(36.70) = 5.27$ ,  $p < .001$ ,  $R^2_m = .43$ .

Next, we tested whether socioeconomic development could explain the effect of time on individualism. Using the mediation package in R, we conducted an MLM analysis with socioeconomic development as a mediator of the association between time (in years) and individualist practices and values 10 years later (see Fig. 4). The conditions for establishing mediation were met, as the 95% confidence intervals (CIs) of the indirect effects did not include zero for either individualist practices, 95% CI = [0.01, 0.02], or individualist values, 95% CI = [0.003, 0.01]. These results suggested that the rise of individualism was in part explained by an increase in socioeconomic development (see Supplementary Analyses for similar mediation results without a 10-year lead). Taken together, the lagged and mediation analyses lend support to the hypothesis that there is a causal relationship between socioeconomic development and individualism.

## Discussion

Is the rise of individualism a global phenomenon? Our analysis of data across 51 years and 78 countries suggests that the answer is yes. Thirty-four (out of 41) countries showed a substantial rise in individualist practices. Thirty-nine (out of 53) countries showed a similar rise on a subset of markers assessing individualist values. The increases for practices and values were similar, at around 12%. Overall, these results show that the shift toward greater individualism is not confined to the developed world.

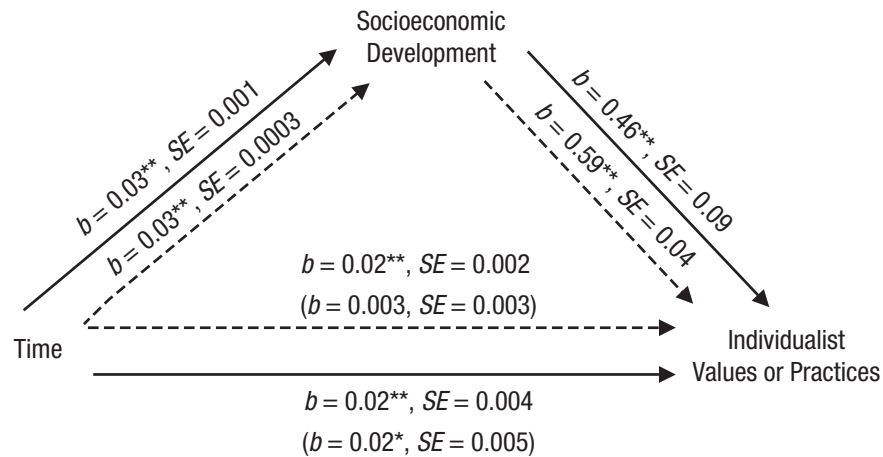
Increasing individualism appears to be linked to several previously theorized sources of cultural variation, including socioeconomic development, disaster frequency, pathogen prevalence, and climatic variations.

**Table 3.** Effects of Individual Measures of Socioeconomic Development on Individualist Practices and Values

Predictor	Individualist practices		Individualist values	
	<i>b</i>	<i>t</i>	<i>b</i>	<i>t</i>
White-collar vs. agricultural jobs	1.22 (0.12)**	$t(148.55) = 9.81$	1.38 (0.30)**	$t(19.30) = 4.55$
Occupational prestige	0.19 (0.02)**	$t(155.81) = 8.45$	0.10 (0.03)*	$t(25.68) = 3.34$
Educational attainment	1.16 (0.07)**	$t(179.73) = 16.09$	0.83 (0.15)**	$t(27.28) = 5.53$
Income	0.69 (0.05)**	$t(158.58) = 13.15$	0.87 (0.09)**	$t(182.74) = 10.03$
Urbanization	1.52 (0.24)**	$t(119.00) = 6.44$	—	—

Note: The table presents estimates from a multilevel-model analysis with annual data nested within country data. Standard errors for the coefficients are given in parentheses. We calculated these standard errors using the data for all countries and years in the sample. There were not enough data to conduct multilevel-modeling analyses on the association between urbanization and individualist values.

\* $p < .01$ . \*\* $p < .001$ .



**Fig. 4.** Indirect effect of time on individualist values (solid lines) and practices (dashed lines) 10 years later as mediated by socioeconomic development. The values in parentheses show the relationship between time and individualism after controlling for socioeconomic development. Asterisks indicate significant coefficients ( $*p < .01$ ,  $**p < .001$ ).

Notably, disaster frequency and climatic variations affected only individualist practices, not individualist values. Of these ecological dimensions, socioeconomic development emerged as the key predictor, explaining between 35% and 58% of the variance in change in individualism over time. Moreover, we found that changes in socioeconomic development mediated the effect of time on individualism, and increases in socioeconomic development preceded increases in individualism. Future research could examine how regional variations in these predictors might influence the rate of cultural change.

We observed a few exceptions to the global rise in individualism. Cameroon, Malawi, Malaysia, and Mali showed a nonnegligible decline in individualist practices, and Armenia, China, Croatia, Ukraine, and Uruguay showed a nonnegligible decline in individualist values. Also, several countries did not change much over time (see Supplementary Analyses in the Supplemental Material). The fact that most of the countries that did not show an increase in individualist values were among the lowest in socioeconomic development over the time period examined is consistent with the observation that socioeconomic development drove the rise in individualism. China is an exception to this pattern, showing a decrease in individualist values even though the country has experienced economic growth. Notably, China has a complex socioeconomic history, so it will be worthwhile to investigate this country in more detail in future research.

In the current work, cultural changes in individualism-collectivism were viewed mostly as evoked responses; that is, we conceptualized environmental cues or conditions as leading to adaptive behavioral and psychological responses. However, cultural transmission likely

played a role in the phenomena we observed. That is, changes in how individuals interact with one another may lead to shifts in norms and institutions that reflect and promote an individualist orientation. The notion that cultural transmission is involved in cultural changes in individualism-collectivism is consistent with Newson and Richerson's (2009) proposal that close interaction with kin promotes social learning about reproductive fitness. They argued that the transmission of this information encourages traditional and collectivist values. In this view, individualism should increase with the rise of modern economies because they lead to greater contact with nonkin relative to kin. An important future direction in the study of cultural change will be integrating theory and research on cultural evolution, which tend to focus on processes of cultural transmission, with work (such as the present study) on how specific ecological changes may lead to specific patterns of cultural change.

Before concluding, we consider some caveats. First, the present study focused on the role of relatively proximal ecological factors in promoting changes in individualism-collectivism. Researchers have also advanced several distal historical explanations of variations in individualism-collectivism, including explanations hinging on modes of subsistence (e.g., Talhelm et al., 2014) and migration to frontiers (Kitayama et al., 2010). Ecological factors might drive such trends or mediate their effects on individualism-collectivism. A key future direction in studying cultural change will involve theoretical or modeling-based (cf. Oishi & Kesebir, 2012) integration of proximal and distal explanations. Further, though our study focused on overall shifts in common features of individualism-collectivism over time, some aspects of individualism may deviate

from these general patterns (Hamamura, 2012; Kashima, 2014; Kitayama et al., 2010). Indeed, there is emerging evidence that individualism-collectivism may be more multifaceted than previously believed (Vignoles et al., 2016). Moreover, we had a limited number of data points available per country, and our analyses were constrained to linear models of change. With the prospect of greater availability of cross-temporal data, future work may explore more fine-grained models integrating social ecology and a multifaceted individualism-collectivism construct. These methodological advances will make the study of cultural change an exciting scientific endeavor in the years ahead.

### Action Editor

Ayşe K. Uskul served as action editor for this article.

### Author Contributions

I. Grossmann developed the study concept. All the authors contributed to the study design. Data analysis was conducted by H. C. Santos under the supervision of I. Grossmann. H. C. Santos and I. Grossmann drafted the manuscript, and M. E. W. Varnum provided critical revisions. All the authors approved the final version of the manuscript for submission.

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The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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### Supplemental Material

Additional supporting information can be found at <http://journals.sagepub.com/doi/suppl/10.1177/0956797617700622>

### Open Practices



All code and data have been made publicly available at the Open Science framework and can be accessed at [osf.io/au4x3](https://osf.io/au4x3). The complete Open Practices Disclosure for this article can be found at <http://journals.sagepub.com/doi/suppl/10.1177/0956797617700622>. This article has received the badge for Open Data. More information about the Open Practices badges can be found at <https://www.psychologicalscience.org/publications/badges>.

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