Original Research Article

Conservatism Negatively Predicts Creativity: A Study Across 28 Countries

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Abstract

Previous studies have found a negative relationship between creativity and conservatism. However, as these studies were mostly conducted on samples of homogeneous nationality, the generalizability of the effect across different cultures is unknown. We addressed this gap by conducting a study in 28 countries. Based on the notion that attitudes can be shaped by both environmental and ecological factors, we hypothesized that parasite stress can also affect creativity and thus, its potential effects should be controlled for. The results of multilevel analyses showed that, as expected, conservatism was a significant predictor of lower creativity, adjusting for economic status, age, sex, education level, subjective susceptibility to disease, and country-level parasite stress. In addition, most of the variability in creativity was due to individual rather than country-level variance. Our study provides evidence for a weak but significant negative link between conservatism and creativity at the individual level ($\beta = -0.08$, $p < .001$) and no such effect when country-level conservatism was considered. We present our hypotheses considering previous findings on the behavioral immune system in humans.

Keywords

creativity, TCT-DP, behavioral immune system, parasite stress, conservatism, liberalism, cross-cultural

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Introduction

The individual and situational conditions that affect creativity—the ability to produce products that are original and useful (Amabile, 1983; Runco & Jaeger, 2012)—have been studied by researchers for decades. They have looked not only for cognitive (Finke et al., 1992) or personality-related (Batey & Furnham, 2006; Feist, 1998) individual differences in creativity but also for those related to ideology (Dollinger, 2007). Here, we examine the relationship between creativity and conservatism, the latter being understood as a psychological construct depicting attitudes toward socially relevant issues represented by traditionalism and conformity (Crowson, 2009). We also consider the roles of parasite stress and subjective vulnerability to parasitic disease in shaping creativity. Parasite-related factors are potential environmental predictors of creativity, yet their relationships with creativity have not been extensively examined.

Creativity and Conservatism

Previous research has shown that creative thinking is promoted by thinking "outside of the box," breaking schemata, and experiencing unexpected events (Gocłowska & Crisp, 2014; Ritter et al., 2012). Some of the psychological phenomena positively linked to creativity are divergent thinking (the capacity to generate multiple alternative solutions to open questions [Guilford, 1967]),

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creative imagination (Dziedziewicz & Karwowski, 2015; Finke et al., 1992), novelty-seeking (Gocłowska et al., 2019), curiosity (Schutte & Malouff, 2020), flexible shifting between perspectives (Ionescu, 2012), and openness to experience (Lebuda et al., 2021). At the same time, conservative thinking entails the need for order, structure, certainty, tradition, and predictability (Thórisdóttir & Jost, 2011), as opposed to liberal cognitive styles with higher tolerance for ambiguity and openness to experience (Jost et al., 2003). Considering the conceptual core and correlates of creativity and conservatism, it seems plausible that these two variables are negatively related.

Some studies have been conducted to address this issue, using various methodological approaches. Rubinstein (2003) looked at authoritarian personality, specifically Right-Wing Authoritarianism (RWA) (Altemeyer, 1996), an individual difference variable related to conservatism (yet not synonymous with it, see Crowson et al., 2005), and examined its level in relation to career choice. He found that students of the "design" faculty were more creative (scored higher in a divergent thinking test) and were less authoritarian than were behavioral science or law students (Rubinstein, 2003). In another study, the individual level of creativity, measured as the number of creative accomplishments and the creative quality of photo essays and drawings, was found to be relatively lower in more conservative undergraduates (Dollinger, 2007). Moreover, Dollinger et al. (2007) also showed that creative accomplishments assessed by three different measures correlated negatively with a set of values composed of tradition, security, and power (conservatism-related notions) from Schwartz's (1992) model of values. Finally, a slightly different operationalization of both conservatism and creativity was proposed by McCann (2011). His analyses were run at the state level (in the United States) with conservatism represented by a joint measure composed of an average self-assessment score and the percentage of popular votes cast in each state for G.W. Bush in the 2004 presidential election. In this case, creativity was represented by the number of patents per state population. McCann's results confirmed the pattern of a negative relationship between conservatism and creativity obtained in previous studies (see also Runco et al., 2017). These studies provide convincing evidence for the relationship between creativity and conservatism; however, they were all conducted in only a few, highly industrialized, societies. To date, data from other countries (including less wealthy ones) are crucially missing.

Conservatism and Creativity as Functions of Parasite Stress

Conservatism is also related to human functioning at a biological and socioecological level (see Lu et al., 2023 for review). Not only cellular- and tissue-based but also behavioral immune systems are responsible for defense against parasites (Schaller & Duncan, 2007) which represent a major cause of morbidity and mortality in humans (Wolfe et al., 2007). Conservatism, entailing out-group distrust and in-group favoritism, reduces potentially risky contact with members of out-groups and hence decreases the likelihood of infection; both chronic and short-term concern about exposure to disease transmission triggers xenophobic responses (Navarrete et al., 2007; Navarrete & Fessler, 2006; Sorokowski et al., 2020). Furthermore, sexual restrictiveness (higher in conservative individuals), which also serves as a defense mechanism against infection, has been shown to be positively correlated with parasite stress (Schaller & Murray, 2008).

Based on a large-scale study, Thornhill et al. (2009) showed that collectivism, autocracy, women's subordination relative to men's status, and women's sexual restrictiveness are values that both positively covary and correspond with a high prevalence of infectious diseases. Historical data also suggest a relationship between high latitudes (and hence reduced parasite stress) or enhancement in sanitation, vaccinations, and antibiotics, with increased liberalization of social values (Thornhill et al., 2009). This hypothesis has also earned empirical support from experiments. For instance, experimentally elevated awareness of disease threat increased xenophobia (Faulkner et al., 2004), while manipulated salience of disease threat produced—to some

extent—stronger conformist attitudes and behaviors compared with either control conditions or other types of threats (Murray & Schaller, 2012). Finally, when people were threatened by pathogens such as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), an increase in social conservatism was observed, extending support for more conservative presidential candidates in the United States and Poland (Karwowski et al., 2020). Although findings about parasite stress and conservatism are relatively consistent across studies that implement diverse measures of conformity (Murray et al., 2011), little is known about the effects these may have on other related socially relevant issues, including creativity.

Although previous studies are scarce, some creativity-related outcomes have already been explained by ecological factors. For example, variation in scientific and technological innovation (driven by creativity) has been attributed to pathogen prevalence (Murray, 2014). Besides having a direct negative effect on technological enhancement, parasite stress has been shown to affect creativity indirectly through cultural value systems, namely collectivism and conformity (Murray, 2014). Murray (2014) analyzed five different country-level measures of innovation: Global Innovation Index, Technology Achievement Index, Innovative capacity, as well as numbers of Nobel Prize laureates and patent applications. He further utilized two measures of conformity (effect size on Asch-style experiments and reported effects of obedience) and two measures of nonconformity (within-country personality variation and percentage of left-handed people), as well as historical disease prevalence. The results clearly indicate a relationship between parasitic disease prevalence and innovation and suggest that conformist attitudes may buffer against disease transmission (but note that the data were correlational). However, it remains unknown how parasites, conservatism, and creativity are related at an individual level. Moreover, the outcome variables (innovations) used can only be high in highly developed, rich countries, as opposed to individual-level creativity (Dai et al., 2012).

There are also other important factors that can be linked both to creativity and disease prevalence, which have been repeatedly tested at an individual level. Perceived vulnerability to infectious disease has emerged as a significant predictor of various forms of social conservatism, including social ethnocentrism and collectivism (see Terrizzi et al., 2013 for a meta-analysis). This vulnerability and subsequent social avoidant tendencies can be elevated even by brief experimental exposure to disease. Yet, chronic concern with disease is related with lower openness to experience (Mortensen et al., 2010), a strong predictor of creativity (Feist, 1998; Lebuda et al., 2021).

Current Study

To address the questions arising from previous research, our study has the main goal of examining the predictive role of conservatism on creativity on a large cross-cultural sample, while controlling for other potential influencing factors. Importantly, these control variables include country-level and individual-level indicators of parasite stress and history of parasitic disease as well as vulnerability to infectious disease. It should be highlighted that our sample includes non-Western countries, which are often neglected in psychological science (Arnett, 2016), including in studies of the conditions that influence creativity. Existing evidence thus does not allow researchers to generalize previous findings regarding the link between creativity and conservatism across countries.

Material and Methods

Participants

The study included 8,186 participants (3,746 males, 4,440 females) with a mean age of 27.44 years (SD = 9.22). They inhabited 37 countries (Austria, Algeria, Australia, Belgium, Brazil,

Chile, China, Colombia, Germany, Greece, Estonia, Georgia, Croatia, Indonesia, Italy, Mexico, Peru, Poland, Portugal, Romania, Russia, South Korea, Sweden, Slovenia, The Netherlands, Turkey, Ukraine, the United States, Costa Rica, Cuba, India, Iran, Jordan, Malaysia, Pakistan, El Salvador, and Uganda). The detailed descriptive statistics of all demographic measures can be found in Supplemental Material (Table S1) along with descriptive data on all measures of interest (Table S2) and correlations between all measures (Table S3). In our analyses, we did not include data from Costa Rica, Cuba, India, Jordan, Malaysia, Pakistan, El Salvador, and Uganda as the psychometric properties of conservatism and perceived vulnerability to disease were not satisfactory (αs below .5, see Table S4).[1] We also did not include data from Iran because some questions from the main scales of interest were not asked because of cultural taboos (questions about gay rights and legalized prostitution). The final sample consisted of 28 countries: 6,865 adult participants (3,100 males, 3,765 females) with a mean age of 28.25 years ($SD = 10.92$). The study was a part of a broader research project (see: Conroy-Beam et al., 2019a, 2019b; Sorokowska et al., 2021, 2023; Sorokowski et al., 2021, 2023; Kowal et al., 2020; Walter et al., 2020, 2021) but in this article, we analyzed only data from countries where participants completed measures that were of interest to our stated aims. We expected to collect data from at least 50 participants per collaborator in each country. In many countries, the research teams comprised several researchers, and the sample sizes were, therefore, larger. Participants were recruited both within the academic community and outside of it, with approximately half of the participants being members of academia. Participants were recruited by authors in each country through advertisements in public places, personal contacts, or via courses at the universities. Participants were not compensated for their participation. All subjects were blind to the study hypotheses.

Measures

Creativity. To assess participants' levels of creativity, we used the Test for Creative Thinking—Drawing Production (TCT-DP, Urban & Jellen, 1996). Participants were asked to complete an unfinished drawing that had ostensibly been started by another person and consisted of a few shapes. They were not restricted to any rules regarding the drawing. TCT-DP does not include any verbal expressions of creativity but instead involves drawing, a way of expressing creativity that is shared throughout most of the world and not restricted by linguistic or cultural differences. Therefore, this test is described as "culturally fair" (Urban, 2005). The pictures provided by the participants were given a general creativity score based on 13 criteria: continuations, completions, new elements, connections made with a line, connections made to produce a theme, boundary-breaking/fragment dependent, boundary-breaking/fragment independent, perspective, humor and affectivity, unconventional manipulation, surreal abstract drawings, use of signs and symbols, and nonstereotypical drawings (Urban, 2005). The global creativity score was assessed by averaging the 13 scores received in the aforementioned criteria. Participants were not rated for speed of drawing. The TCT-DP was scored by seven raters blind to the study hypotheses. Each drawing was rated by two raters. The interrater reliability between these raters was always above $\alpha = .85$. Descriptive statistics of all crucial measures of interest, correlations between them, and reliabilities of these measures can be found in Supplemental Material (Tables S2, S3, and S4, respectively).

Conservatism. We used the 10-item version of Henningham's (1996) conservatism scale. Participants were asked to assess whether they support certain phenomena, that is, death penalty, multiculturalism, stiffer jail terms, voluntary euthanasia, gay rights, premarital virginity, new immigration to one's country, legalized abortion, legalized euthanasia, and religious authority (1 = *yes*, 2 = *no*). We excluded two items from the original scale (condom-vending machines,

Bible truth) because they were not applicable in some of the samples. Four items (death penalty, stiffer jail terms, premarital virginity, and church authority) were reverse-scored such that a higher score indicates higher conservatism. The scores were obtained by summing scores from all items. Due to the binary nature of our data, we assessed the reliabilities of the scale using tetrachoric correlations (Zumbo et al., 2007). We limited our study to countries where the reliability of this scale exceeded .50 (remaining αs = .51–.87, M = 0.72). Reliabilities in nine countries were below this threshold and were perceived as unacceptable. The remaining number of countries was 28.

Parasite Stress

History of Parasitic Disease. Participants were asked whether they have ever (1 = *never*, 2 = *once*, 3 = *a few times*) suffered from any of the listed infectious diseases (dengue, filaria, leishmania, leprosy, malaria, schistosomiasis, trypanosomiasis, tuberculosis, and typhoid fever). This list was based on a similar set of diseases used in other studies on parasite stress (Murray, 2014). The individual level of parasitic disease history was assessed by summing the scores from each individual, with 9 being the lowest possible and 27 the highest possible final score.

Country-Level Parasite Stress. In addition, we assessed country-level parasite stress by utilizing zoonotic (transmitted to humans by contact with animals and livestock) and nonzoonotic (transmitted from human to human) parasite prevalence across countries (Fincher & Thornhill, 2012). These indices were positively correlated with the measure obtained from participants, aggregated at a country level (r = .61 and .45 for nonzoonotic and zoonotic parasite stress, respectively, both $p < .001$).

Perceived Vulnerability to Disease. We also assessed participants' subjective levels of vulnerability to infectious disease by using the subscale "Perceived Infectability" from the Perceived Vulnerability to Disease Questionnaire (Duncan et al., 2009). It comprised seven items (e.g., "If an illness is 'going around,' I will get it.") with a 7-point Likert-type scale (1 = *strongly disagree*, 7 = *strongly agree*). Three items were reverse-scored such that a higher score indicated higher vulnerability. The reliabilities of the scale are presented in Supplemental Material (Table S3). We excluded countries with αs below .5; all remaining reliabilities were satisfactory (αs = .55–.92, M = 0.80).

Demographics. In addition, participants were asked to provide some demographic data: age, sex, education (1 = *no formal education*, 2 = *primary school*, 3 = *secondary school*, 4 = *high school or technical college*, 5 = *bachelor, masters, or higher degree*), and economic situation (1 = *much lower than in my country*, 3 = *average*, 5 = *much higher than in my country*). See Table S1 in Supplemental Material for details.

Procedure

The study was conducted following the guidelines from the Declaration of Helsinki. The study protocol was approved by the institutional review board at the institution of the leading authors and in all countries where it was required. All participants provided written, informed consent prior to study participation and responses were anonymous.

The data were collected before the COVID-19 pandemic by the coauthors and respective research teams. After receiving instructions, participants individually and independently completed a paper-and-pencil questionnaire. The survey included demographic questions, measures of interest, and other measures collected for purposes of other studies (see for example Conroy-Beam

et al., 2019a, 2019b; Kowal et al., 2020; Sorokowska et al., 2021, 2023; Sorokowski et al., 2021, 2023; Walter et al., 2020, 2021). The original version of the questionnaire was in English, but in all non-English-speaking countries, authors translated the measures into participants' native languages by researchers fluent in both languages using the back-translation procedure (Brislin, 1970).

Statistical Analyses

We ran a series of multilevel regression analyses (linear mixed model) with a 2-level data structure (individuals nested within countries). We examined the relationship between conservatism and creativity controlling for parasite stress and other potential demographic predictors. In the first step, we performed a baseline (empty) model to assess the variability of creative performance across countries. The second (random intercept and fixed slope) model included potential individual-level predictors of creative performance: conservatism, sex, level of education, age, economic status, and perceived vulnerability to parasitic disease and country-level predictors: zoonotic and nonzoonotic parasite prevalence, conservatism aggregated at a country level, and perceived vulnerability to parasitic disease aggregated at a country level. All variables except sex- and country-level parasite stress were grand mean centered. Next, we ran the third model including conservatism as a random variable, that is, allowing the slope to vary (random intercept, random slope model). We compared the models using the −2 log likelihood (−2LL) statistic with lower values indicating better fit (Burnham & Anderson, 2004). Models were estimated using maximum likelihood estimators. We interpreted the model with the best fit. In addition, to explore the variability of the effects across country, we conducted Pearson's correlation analyses for each country separately.

We observed an extreme floor effect on the history of parasitic disease with four countries presenting no variance on this measure. Even after log transformation, the skewness and kurtosis remained very high (5.05 and 39.81, respectively). This warrants caution in terms of interpreting any results using this measure. Therefore, we present additional analogical analysis including the history of parasitic disease as a predictor in Supplemental Material (Table S6). All analyses were performed using SPSS v. 28 software (SPSS Inc., Chicago, Illinois, USA), and R Studio (Team, 2013). We used packages "lme4" (Bates et al., 2015) and parameters (Lüdecke et al., 2020) for multilevel regression models, "psych" (Revelle & Revelle, 2015) to compute tetrachoric correlation matrices and "merTools" (Knowles et al., 2016) to create Figure 1. The python package "matplotlib" (Ari & Ustazhanov, 2014) was used to prepare Figure 2. Data and codes can be found here: https://osf.io/adfr7/?view_only=340bdf7d07fd40dd9e357797b66aa483.

Results

The baseline model showed significant variability in creativity at both individual and country levels. Intraclass correlation coefficients (ICCs) demonstrated that the proportion of variance in creativity between countries is 7.69%, while 92.31% of the variance in creativity is related to individual differences.

The second model provided a significantly better fit than the baseline model did ($\Delta - 2LL = 83.2$, $\Delta df = 10$, $p < .001$), and the third model provided an improvement compared with the second model ($\Delta - 2LL = 40.54$, $\Delta df = 2$, $p < .001$). This implies that the relationship between conservatism and creativity differed across countries. Therefore, we decided to focus on the third model (random intercept, random slope model). The model explained 2.05% of individual-level variance as compared with the baseline model. All estimates of the final model are fully standardized and are presented in Table 1.[2] As expected, conservatism negatively and significantly predicted creativity, yet only at an individual level ($\beta = -0.08$, $p < .001$; $\beta = 0.08$, $p = .21$ for individual and country level, respectively). Level of education was

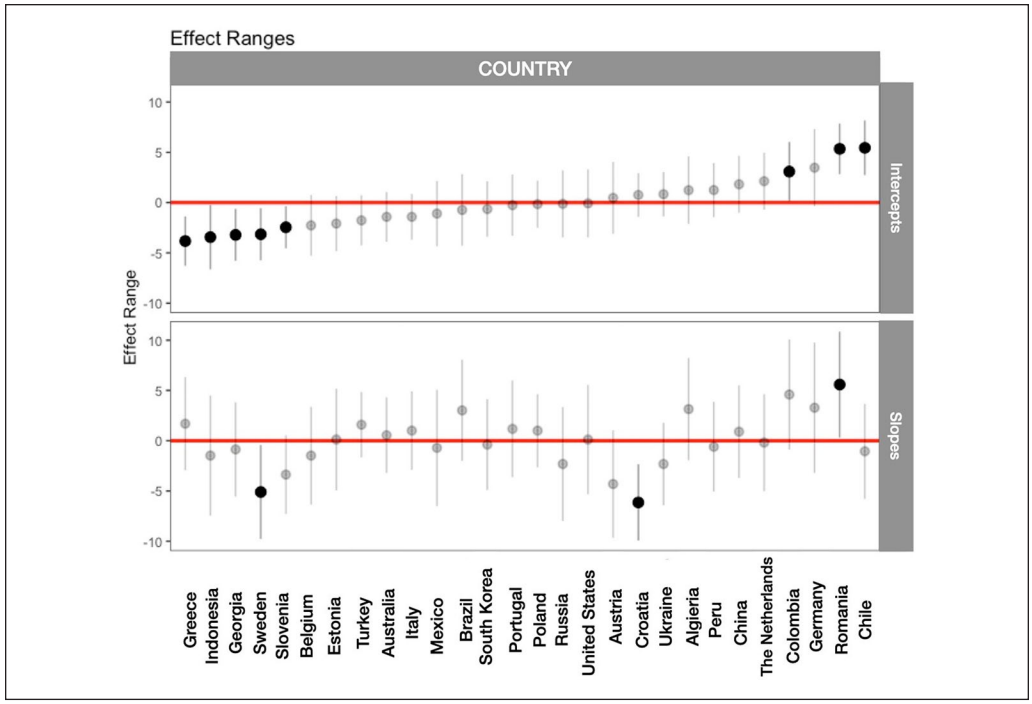

Figure 1. Effect Ranges for Intercepts and Slopes of the Effects of Individual Levels of Conservatism on Creativity in a Random Intercept–Random Slope Multilevel Regression Model
The red line represents the average intercept and slope. The dots represent the point estimates of the country effects and are presented with 95% CIs. Gray dots represent estimates CIs of which cross zero (i.e., they do not differ significantly from the average estimates).

positively correlated ($\beta = 0.05$, $p < .001$), while age was negatively correlated with creativity ($\beta = -0.08$, $p < .001$). Finally, perceived vulnerability to infectious disease was not meaningfully related to creativity, neither at the individual ($\beta = -0.02$, $p = .16$) nor at the country level ($\beta = -0.02$, $p = .76$). None of the remaining country-level predictors were significant ($p = .74$ for zoonotic and $p = .39$ for nonzoonotic parasite stress), and neither were the remaining control variables, sex and economic situation ($\beta = -0.02$, $p = .181$ and $\beta = 0.02$, $p = .20$, respectively). See Figure 1 for effect ranges (for both intercepts and slopes). The estimated random intercept was 0.07 (σ^2_intercept), indicating that the between-country variance in creativity is significant. The variance of the slope was also significant (σ^2_slope = 0.01, random slope *SD* = 0.09), indicating that while generally the effect of individual level of conservatism is $\beta = -0.08$, it varied from country to country. The within-country, between-individual level variation in creativity was 0.92 (σ^2_residual). All obtained effect sizes should be considered as small or very small, as illustrated by all standardized coefficients below $\beta = 0.10$ (Gignac & Szodorai, 2016). In addition, to explore the variability of the effects across country, we conducted Pearson's correlation analyses for each country separately. The results are graphically presented in Figure 2.

Discussion

This study was designed to examine the role of conservatism in predicting creative abilities, utilizing a large sample including countries rarely represented in published psychological

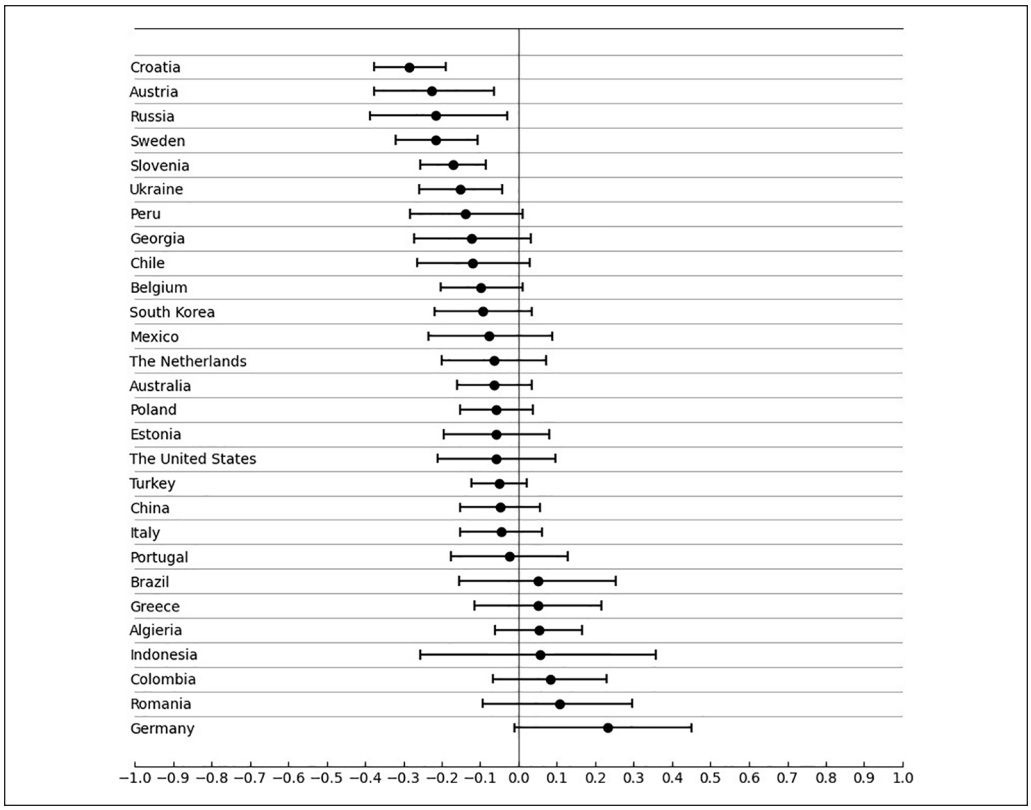

Figure 2. Graphical Representation of Pearson's r Correlation Coefficients Between Creativity and Conservatism in Each Country
Coefficients are presented with 95% CIs.

Table 1. Multilevel Regression Models With Random Intercept and Random Slope With Creativity Predicted by Conservatism (Individual Level), Sex, Age, Education, Economic Situation, Perceived Vulnerability to Disease (Individual Level), Parasite Stress, Conservatism (Country Level), and Perceived Vulnerability to Disease (Country Level).

Fixed effects	β	*SE*	95%CI (lower)	95%CI (upper)	*p*
Individual-level predictors					
Intercept	0.03	.06	0.08	0.14	.587
Conservatism	–0.08	.02	–0.12	–0.04	<.001
Sex (0-F, 1-M)	–0.02	.01	–0.04	0.01	.181
Age	–0.08	.01	–0.10	–0.05	<.001
Education	0.05	.01	0.02	0.08	<.001
Economic situation	0.02	.01	–0.01	0.04	.199
Vulnerability to disease	–0.02	.01	–0.04	0.01	.164
Country-level predictors					
Zoonotic parasite stress	–0.02	.07	–0.16	0.11	.739
Nonzoonotic parasite stress	–0.06	.07	–0.20	0.08	.392
Conservatism	0.08	.06	–0.04	0.19	.213
Vulnerability to disease	–0.02	.08	–0.17	0.13	.758

Note. All predictors except sex were mean-centered and standardized. Standard errors and confidence intervals refer to the standardized coefficients.

research. The negative relationship between creativity and conservatism has been found in earlier research (Dollinger, 2007; Runco et al., 2017). We expanded this existing evidence by analyzing data from 28 countries. We also considered the role of parasite stress, subjectively assessed vulnerability to infectious disease, and individual history of parasitic disease, at levels of creativity.

Multilevel analyses confirmed that the negative relationship between creativity and conservatism was significant, after controlling for education, economic situation, sex, age, parasite stress, and vulnerability to infection. More conservative people were thus relatively less creative than were less conservative people. Importantly, only the individual level (rather than country level) of conservatism predicted creative performance. The analyses also indicated that, although there is significant variation in creativity that is attributable to countries, a much higher proportion is explained at the individual level. Subjective ratings of vulnerability to disease were not meaningfully related to creativity, neither at the individual nor at the country level. The comparisons of subsequent models indicated that the relationship between creativity and conservatism varies across countries. The model with random intercept and slope presented a significantly better fit to the data compared with the model with random intercept and fixed slope. These differences can also be observed in correlation analyses performed separately for each country. While in some countries this relationship was negative and significant as expected (Austria, Croatia, Russia, Slovenia, Sweden, and Ukraine), it was not significant in the remaining populations. It was, however, never significantly positive. The heterogeneity of the effects may be considered moderate, suggesting that the effects did not differ massively, nor were they close to equal.

Creativity's relation to conservatism was significant, but rather weak compared with results from previous studies (Dollinger, 2007; McCann, 2011). Models where conservatism predicted creativity were only slightly better in explaining variance in individual-level creativity compared with clustering itself. There are several potential explanations for this, including sampling procedures or methods used. The overall weak effect may also be a result of cultural differences due to which the effect was significant only in some countries. However, we did not observe any clear patterns (e.g., climate or culture related) that might contribute to these differences. Small samples in some study sites might have contributed to nonsignificant correlations in these specific countries.

One aspect of our research question that should be considered while interpreting the results is that, in past studies, conservatism might have been described through the liberal lens of the social sciences (with little political diversity in academic psychology), making our understanding of this construct potentially biased (by confirmation bias) and in turn potentially inflating the effect sizes observed in past studies (Proulx & Brandt, 2017). The debate on liberal bias in social science is relatively new (see Duarte et al., 2015) but has already shown, for example, that both conservatives and liberals are similarly intolerant toward ideologically dissimilar target groups (Brandt & Crawford, 2019; Brandt et al., 2014). Other studies have shown no differences between liberals and conservatives in aversion to ideologically opponent statements (Frimer et al., 2017) or in general complexity (Conway et al., 2016). This, together with our results, suggests a need for a deeper reflection on how we understand the cognitive and motivational antecedents of conservatism, as some previously reported effects may have been overestimated and we should not expect strong effects in the first place. Nevertheless, higher conservatism should indicate, for example, a lower preference for diversity and novelty (in our measure expressed as lower support for "new immigration to one's country" or "multiculturalism"), and therefore should tend to inhibit the invention of novel (and therefore creative) ideas.

The effect of conservatism on creativity differed across countries, but the variation was not large, and the effect was close to zero in most study sites. Further exploration of other cross-country and cross-cultural factors that may shape these differences will be an interesting avenue for future research. Some potentially moderating factors here might include the political climate

in a given country, the emphasis/value related to creativity and originality, and migration policies, among others (Rudowicz, 2003; Simonton, 1990). Another potential moderating factor is education level (Osborne et al., 2017). Potential cultural differences should be hypothesized after careful consideration of the mutually constitutive nature of personality and culture and their dependence on socioecological factors (Lu et al., 2023). Also, samples with an even larger number of countries than presented in this study are advisable to increase statistical power, especially if many predictors are to be tested at once.

Strengths and Limitations

The key strength of this investigation is that we utilize a much more diverse sample in comparison with previous studies. We managed to reach subjects from countries that are very underrepresented in empirical research and our sample is relatively large. Moreover, although our hypotheses were already present in the literature, our approach to testing them is novel.

Nevertheless, the study is not free of limitations. First, the data were cross-sectional and correlational. This prevents us from drawing certain conclusions about causality. To conclude that conservatism and/or environmental factors can influence creativity, we would need experimental designs. The possibility that individual- or country-level creativity influences conservatism also seems plausible.

Participants were recruited by experimenters and although they spanned a broad age range and included a roughly even mix of students and nonstudents, they were not representative of all people living in each country and the subsamples were not of equal size. Furthermore, while the total sample included 28 countries, the majority were highly developed. This can account for a relatively low variability of prevalence of parasitic disease in this study. However, the diversity of cultural, economic, and religious backgrounds, as well as diverse ages, nonetheless makes the sample of this study more representative of the world's population than previous samples (e.g., Dollinger, 2007). In future studies, researchers may strive to obtain not only diverse samples of countries but also more diverse populations within these countries, for example, by sampling in rural, remote sites. This would provide an opportunity to collect data from samples with higher variability in parasite stress and those that are more diverse in terms of educational level. Although most participants reported their economic situation to be close to the country average, they typically reported completing high school or college, which might influence their creativity level while not necessarily affecting their conservatism. Education level might also strengthen the relationship between conservatism and creativity, as it strengthens the link between conservatism and openness (Osborne et al., 2017). Another issue related to data quality is the fact that in many of the studied populations, the reliability of some of the applied questionnaires was low. This might have its origin in the measures themselves, as well as in sampling bias.

Measuring creativity using the TCP-DP drawing task, although being described as culturally fair (Urban, 2005), is not perfect (Glăveanu, 2019). Thanks to the use of figural material, the risk of task misinterpretation is minimized, but one has to keep in mind that creativity does not have to mean the same in all cultures (Karwowski, 2016). For example, while novelty seems to be of the highest importance for Westerners, Easterners place more value on appropriateness (Niu & Kaufman, 2013). Even though the drawings used as our dependent variable may be differently judged (in terms of creativity) by people in different cultures, the TCP-DP task values both originality and schema-breaking, as well as continuation and compositional theme. Therefore, despite the Western origin of the measure, some of its subscores favor either individualistic or collectivistic values. Nevertheless, studies utilizing different measures of creativity, or products of creativity evaluated by members of each country, might contribute to a better understanding of the relationship between ideologies and creativity, and its link to parasitic stress.

A further limitation of the measure used is that TCP-DP does not cover all the aspects of creativity. To explore the relationship between conservatism and creativity in its full complexity, one would have to consider a broad range of creative processes, such as divergent thinking (Guilford, 1967), convergent thinking (Cropley, 2006), creative imagination (Ward, 1994), or creative problem-solving (Treffinger et al., 2023). Such an approach may be crucial in cross-cultural research due to potentially varying definitions of creativity (as mentioned above) and because mastery in specific aspects might vary from country to country. Because the measure of creativity as well as conservatism and other measures used in the study were specific, the generalization of the results requires further research.

Conclusion

We observed significant but weak negative associations between individual-level creativity and individual-level conservatism. The study addressed a clear gap in the field of creativity psychology, which has mainly focused on American and, to a lesser extent, Chinese samples, but largely neglected other nations (Wang & Leung, 2016). We show that when an international sample is considered, demographics, prevalence of parasitic disease, and ideologies account only for a small share of the variance in creativity. Individual differences remain far more influential than does country-level variance in predicting creativity.

Declaration of Conflicting Interests

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Supplemental Material

Supplemental material for this article is available online.

Notes

1. We acknowledge that this reliability threshold is relatively low. As a robustness check, we conducted an additional analysis with reliabilities below .6 (excluding additionally China, Indonesia, Colombia, Malaysia, and Russia). Crucially, the results of these analyses are the same as those presented in the main text. They are also congruent with the results based on analyses conducted on the entire sample. For these supplementary results, see Table S5 in the Supplementary Online Materials.
2. To obtain standardized coefficients, we used the "standardize = refit" argument in the "model_parameters" function of the "performance" package in R.

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