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Northerners and Southerners Differ in Conflict Culture

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Keywords

conflict culture, Northerners, Southerners, biogeography, climato-economic, pathogen prevalence.

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Abstract

The present study uses regression analysis of existing cross-national data sets to demonstrate that ingroup–outgroup discrimination and intergroup conflict management vary more along the north–south (latitudinal) axis than along the east–west axis of the Earth. Ingroup favoritism, outgroup rejection, political oppression, legal discrimination, and communication bullying are all less prevalent among Northerners than among Southerners in the Northern Hemisphere, but more prevalent among Northerners than among Southerners in the Southern Hemisphere. These findings provide a rich source for further research into how social conflicts are habitually experienced and handled by residents of northern versus southern habitats. A supplementary analysis specifies the extent to which ecological stressors—thermal stress, hydraulic stress, pathogenic stress, and subsistence stress—help explain why there are oppositely sloping north–south gradients of conflict culture above and below the equator. Taken in total, these results demonstrate the importance of considering latitude in forming a deeper understanding of conflict management and negotiation.

Does this Special Issue on *Culture and Communication in Negotiation and Conflict Management* offer business as usual? We consider that to be the case if, as is customary, much more attention is paid to conflict issues and behaviors as proximal fruits of culture, and to proximal roots of culture such as institutions and economic circumstances, rather than to distal roots of culture such as geography, climates, and pathogens. For example, three well-known handbooks in the field of culture and conflict (Ayoko, Ashkanasy, & Jehn, 2014; Gelfand & Brett, 2004; Oetzel & Ting-Toomey, 2013) contain 31 chapters addressing the direct fruits and immediate roots of culture, and only a single chapter addressing the really remote roots of culture (Van de Vliert & Einarsen, 2014).

For two reasons, this focus on proximate causes and consequences offers an incomplete and inaccurate understanding of conflict culture—the shared pattern of social frustrations, spontaneous or strategic behaviors, and (de-)escalative consequences (Van de Vliert, 1998). First, proximate explanations of conflict in terms of culture tend to hide more distant and thus more fundamental explanations of the prevalence and management of social frustrations (Carleton & Hsiang, 2016; Hsiang, Burke, & Miguel, 2013). Second, cultures “can be found in certain geographic regions during a particular historic period” (Triandis, 1995, p. 43), with the consequence that more fundamental explanations of present-day conflict may

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be related to larger and more distal characteristics such as spatial and temporal positioning. These considerations suggest that if we want to fully understand the relation between culture and conflict management at a deeper level, we need to better comprehend the geography-related roots of culture.

To aid this understanding, the main aim of the present paper is to explore a large-scale geographical distinction that is surprisingly understudied: The physical position of a given culture's location on the north–south and east–west axis of the Earth. We start with a discussion of our geographical lens including associated hypotheses and discussions of prior work and the need for our present study. The empirical part of this article consists of a main study and a supplementary analysis. The main study showcases six tests of the novel geographical explanations, using regression analyses of conveniently available cross-national data sets on ingroup–outgroup discrimination and intergroup conflict. Our primary aim is to test a model around the primary importance of latitude—and not longitude—in explanations of conflict culture. In the supplementary analysis, we aim to better understand the specific ecological mechanisms of these effects by evaluating the degree that ecological stressors—environmental conditions that frustrate the satisfaction of basic needs for thermal comfort, nutrition, and health—help us understand the importance of latitude and its inherent conditions.

A Geographical Lens

In our drive to understand conflict-based communication, why study the global positioning of a given culture at all? The reason is simple yet important: At a large level, one of the most fundamental things that can describe any culture is where it falls on the globe (Hofstede, 2001; Triandis, 1995). Attempting to understand cultures without examining the potential impacts of this large-scale context is analogous to attempting to understand differences between fish and cats without understanding differences between water-based and atmosphere-based environments. In the same way that differences in environments might impact the evolutionary trajectory of species, large-scale differences in global positioning may exert vital effects on the emergence of conflict cultures.

The elements of geographical theory are latitude, longitude, their orthogonality (independent coordinates), and their asymmetry (unlike latitude, longitude does not have opposite poles and an equator). Compared to Southerners, Northerners are farther away from the south pole at -90° latitude and closer to the north pole at $+90^\circ$ latitude. The equator subdivides Northerners and Southerners into those residing above the equator (northern and southern “Abovers”) and those below the equator (northern and southern “Belowers”). Compared to Westerners, Easterners are residing farther away from -180° longitude west and closer to $+180^\circ$ longitude east of the Greenwich meridian. Our model expects that latitude, but not longitude, will predict conflict culture. Next, we elaborate on why we expect this to be the case. After that, we discuss evidence for the model thus far, and the unique value of our research study in light of that prior work.

Abovers versus Belowers

People at a certain latitude above the equator (“Abovers”) and those at the same latitude below the equator (“Belowers”) live in opposite global worlds. Northern Abovers, faced with seasonal cycles of cold, steady rain, and low pathogen prevalence, lead a completely different life than Northern Belowers and Southern Abovers, faced with seasonal cycles of heat, hydraulic stress, and high pathogen prevalence. Conversely, the same holds true for Southern Belowers versus Southern Abovers and Northern Belowers. By contrast, people left and right of the Greenwich meridian do not live in opposite worlds between an east pole and a west pole, and hardly face longitude-related differences in climate stress and pathogen prevalence. These considerations of livability have led to the following testable ideas about the spatial distribution of culture in the area of conflict:

Hypothesis 1: World citizens differ more in conflict culture along latitude in the Northern and Southern Hemispheres than along longitude in the Eastern and Western Hemispheres.

Hypothesis 2: Northerners and Southerners differ in conflict culture, but oppositely so in the latitudinal hemispheres above and below the equator.

A proper test of Hypothesis 2 requires a sample size with a sufficient number of latitudinal data points above and below the equatorial divide. Such a sample composition is not yet available for cross-cultural data on conflict communication (cf. Andersen, Lustig, & Andersen, 1990) or on honor-related conflict interaction (cf. Aslani et al., 2016; Leung & Cohen, 2011; Nisbett & Cohen, 1996). Within the broader model of CLimate, Aggression, and Self-control in Humans (CLASH; Van Lange, Rinderu, & Bushman, 2017), however, several distinct data sets dealing with ingroup–outgroup discrimination and intergroup conflict allow independent tests of the appropriateness of our novel geographical perspective that highlights the bipolarity and equatoriality of latitude instead of longitude.

So far, scholars have been almost hypnotically concentrated on either thermal climate or pathogen prevalence as a catch-all precursor of culture including conflict culture, while implicitly treating the existence of a Northern and a Southern Hemisphere as an irrelevant fact. Hofstede (2001) even used latitude as a proxy for thermal climate to predict individualism–collectivism, power distance, uncertainty avoidance, and masculinity–femininity. However, such unqualified direct and indirect effects of thermal climate on culture and communication come dangerously close to the fallacy of climatic determinism (Van de Vliert, 2017a). In reality, our ancestors have created a rainbow of counteractions against climatic and pathogenic problems and difficulties, and especially valuable property and money as tools that can help construct our own niches of cultural artifacts, mindsets, and practices.

Livability is most seriously under threat for those Abovers and Belowers living close the equatorial divide of the Earth. Although cold stress increases toward the poles, heat stress (Van Lange et al., 2017), hydraulic stress due to too little or too much rain (Van de Vliert, Welzel, Shcherbak, Fischer, & Alexander, 2018), pathogenic stress because of human-to-human transmitted diseases (Cashdan, 2014), and subsistence stress manifested in poor wealth resources (Parker, 2000; Sachs, 2000; Theil & Galvez, 1995), all increase toward the equator. Building on a limited CLASH commentary (Van de Vliert & Daan, 2017), here we propose for the first time that the entire cumulation of climatic, pathogenic, and economic stresses at lower latitudes is associated with greater discrimination and conflict between groups:

Hypothesis 3: Ingroup–outgroup discrimination and intergroup conflict are less prevalent among Northerners than among Southerners in the Northern Hemisphere, but more prevalent among Northerners than among Southerners in the Southern Hemisphere.

Prior Evidence Related to the Latitude Model

Almost three decades ago, Andersen et al. (1990, p. 291) published “Changes in Latitude, Changes in Attitude,” proposing that “climate affects culture and communication in systematic ways.” Using data from 3,877 students at forty universities throughout the United States, they tested relationships between atmospheric climate (temperatures, rainfall, storms, humidity) and cultural measures of interpersonal arousal, interpersonal power, and interpersonal affect. Overall, in an additive model no less than 74% of the variation in these communication dimensions could be predicted at the areal level by latitude. Compared to Northerners, Southerners are characterized by communication that is (a) more dramatic and stimulating but more socially isolated and communication apprehensive; (b) more verbally dominant, opinionated, intolerant, and authoritarian; and (c) less touch avoidant, open, and confirming.

Andersen et al.’s (1990) findings are echoed in the theory about the southern culture of honor—a cognitive, affective, and conative mindset justifying competitive, coercive, and violent communications and

other interactions in defense of gendered honor and family reputation (Aslani et al., 2016; Leung & Cohen, 2011; Nisbett & Cohen, 1996; Shackelford, 2005). A more recent article has the same gist. The CLASH model (Van Lange et al., 2017) seeks to understand latitudinal gradients (i.e., slopes) of differences in communicational and physical fights between Northerners and Southerners. Higher temperatures and smaller seasonal variations in temperatures are thought to encourage aggression and violence by promoting a faster life strategy, a more pronounced orientation on the present, and a weaker focus on self-control. CLASH is partially supported by the existence of latitudinal gradients of bullying (Volk, 2017) and heat-induced societal aggression (Van de Vliert & Daan, 2017).

Need for the Present Study

This prior research using climate-related comparisons of Northerners and Southerners is important, but it leaves several unanswered questions. First, from a purely empirical perspective, these studies provide (at best) only a half-test of the ultimate roots of culture because they focus only on one hemisphere. This narrow focus offers potential confounds that might be unique to the hemisphere under scrutiny. To more fully provide support for any large-scale model, it is important to triangulate those results across many different types of samples (Conway et al., 2017; Kitayama, Conway, Pietromonaco, Park, & Plaut, 2010). The honor-culture theory and the CLASH model implicitly assume differences between Northerners and Southerners to be universal. Preferably, empirical claims about differential characteristics of Northerners and Southerners constructed in the Northern Hemisphere should be inversely cross-validated in the Southern Hemisphere. In the present study, we provide such comprehensive cross-validation tests across both hemispheres on identical variables simultaneously.

Second, Northerners and Southerners are compared cross-culturally without taking into account whether they are eastern or western Northerners, and eastern or western Southerners. Granted, preliminary evidence does suggest that latitude is more relevant than longitude for understanding the roots of cultural diversity (Diamond, 1997; Laitin, Moortgat, & Robinson, 2012), including language diversity in general (Nettle, 1998) and even specific frequency differences in the use of vowels and consonants (see the “airco of language”; Van de Vliert, 2009, pp. 12–14). However, it still needs to be quantitatively checked whether world citizens differ more culturally along latitude than along longitude. We are not aware of any previous study using degrees latitude and longitude to test a hypothesis similar to Hypothesis 1. This is an unfortunate lacuna because of the missed opportunity to interpret the absence of cultural differences along longitude as an indication of discriminant validity of the presence of cultural differences along latitude.

Finally, while there is much research discussing many of the presumed mediators of global positioning effects on conflict culture, there is less research that directly tests the importance of latitude and its interrelations with this ecology. Indeed, prior research and theory building has concentrated on the ecology of culture (Fincher & Thornhill, 2012; Gangestad, Haselton, & Buss, 2006; Georgas, Van de Vijver, & Berry, 2004; Oishi, 2014; Rentfrow, 2014; Rentfrow & Jokela, 2016; Van de Vliert, 2013a; Varnum & Grossmann, 2017), including conflict culture (Van de Vliert, 2011b; Van de Vliert & Daan, 2017; Van Lange et al., 2017). The elements of ecological theory are economy-related conditions that act as stressors to most people: cold, heat, drought, deluge, microorganisms, and parasites (Carleton & Hsiang, 2016; Cashdan, 2014; Hsiang et al., 2013).

The gradually broadened classic idea is that ecological stresses in the absence of economic resources of cash and capital are threatening and have adverse effects on societal functioning, whereas ecological stresses in the presence of such resources are challenging and have beneficial effects on societal functioning (Drach-Zahavy & Erez, 2002; Fischer & Van de Vliert, 2011; Lazarus & Folkman, 1984; LePine, LePine, & Jackson, 2004; Robbins, 2015; Skinner & Brewer, 2002; Tomaka, Blasovich, Kibler, & Ernst, 1997; Van de Vliert, 2009, 2013a, 2017a). While this research is important, it is equally important to better understand the conceptually farther-back predictive value of latitude and/or longitude in a more

comprehensive fashion, and then understand how the ecological stressors relate to these global positioning factors. In the present study, we attempt to do just that with respect to our understanding of conflict communication culture.

Main Study: Geographical Explanations

This section documents secondary analyses of publicly available country-level data on conflict culture. In order to increase the number of observations in the Northern, Southern, Eastern, and Western Hemispheres, we concentrated on data sets covering more than 80 countries spread over all continents. More importantly, we restricted ourselves to data sets on ingroup–outgroup discrimination and intergroup conflict because Van Lange et al.’s (2017) CLASH model predicts their latitudinality. For reasons elaborated below, these criteria enabled us to perform subsequent and independent regression tests of the hypotheses for the following expressions of conflict culture: ingroup favoritism, outgroup rejection, political oppression, legal discrimination, communication bullying, and their common factor.

Test 1: Ingroup Favoritism

Favoring one’s own group over other groups is a well-known antecedent of intergroup conflict (Brewer, 1999; Fisher, 1990; Halevy, Weisel, & Bornstein, 2012). Indeed, extolling and preferentially treating members of one’s own group can easily become the spark that ignites a conflict in the disfavored camp (Vanhanen, 1999). Such favoritism can also lead to conflict escalation as persons openly side with ingroup members in conflict with outsiders (Yang, Van de Vliert, & Shi, 2007). Escalating intergroup conflict, in turn, increases groupthink (Janis, 1982) characterized by overestimations of the power and morality of the ingroup, and urgent calls for loyalty and conformity (Fisher, 1990). Recent research (De Dreu et al., 2016) has even shown that defensive ingroup communication and coordination is a more effective conflict strategy than attacking an antagonistic outgroup. So, for all of these reasons, ingroup favoritism is crucially important for understanding the interface between culture and conflict.

Van de Vliert (2011a) studied preferential treatment of members of the nuclear family (familism), relatives at large (nepotism), and fellow nationals (compatriotism). Middle managers’ participative observations of values and practices of familism ($n = 17,370$ from 57 countries), top executives’ judgments of nepotism practices ($n = 10,932$ from 116 countries), and citizens’ self-reported norms of compatriotism ($n = 104,861$ from 73 countries) were analyzed. Familism, nepotism, and compatriotism are strongly reliably interrelated (Cronbach’s $\alpha = .89$) and have therefore been integrated into a 123-nation index of ingroup favoritism (Van de Vliert, 2011a). Supporting Hypothesis 1, ingroup favoritism measured in this way appears to vary by latitude, not by longitude (Table 1, row 1). In agreement with Hypothesis 2, there are oppositely sloping gradients of ingroup favoritism above and below the equator. Specifically, as predicted in Hypothesis 3, familism, nepotism, and compatriotism are weaker among Northerners compared to Southerners in the Northern Hemisphere ($r_{100} = -.40, p < .001$), but stronger among Northerners compared to Southerners in the Southern Hemisphere ($r_{23} = .41, p < .05$).

Test 2: Outgroup Rejection

Ingroup love does not necessarily, let alone automatically, go hand in hand with outgroup hate (Brewer, 1999; Halevy et al., 2012). Rather, ingroup favoritism and outgroup derogation are distinct components of conflict culture, as evidenced by a moderately strong cross-cultural relationship between ingroup favoritism and outgroup discrimination ($r_{85} = .57, p < .001$; Van de Vliert & Yang, 2014). Here, we use a country-level measure of outgroup rejection derived from the World Values Surveys (www.worldvaluesurvey.org). Interviewers asked at least 1,000 adults per country, “On this list are various groups of people. Could you please sort out any that you would not like to have as neighbors? . . . People of a different

Table 1
Gradients of Conflict Culture Along Latitude and Longitude

Gradient	North–south†		East–west‡	
	Northern Hemisphere	Southern Hemisphere	Eastern Hemisphere	Western Hemisphere
Half of the Earth				
1. Ingroup favoritism	$r_{100} = -.40^{***}$	$r_{23} = .41^*$	$r_{89} = .10$	$r_{34} = -.13$
2. Outgroup rejection	$r_{76} = -.33^{**}$	$r_{14} = .67^{**}$	$r_{67} = .22$	$r_{23} = .09$
3. Political oppression	$r_{148} = -.35^{***}$	$r_{41} = .41^{**}$	$r_{134} = .06$	$r_{55} = .09$
4. Legal discrimination	$r_{171} = -.63^{***}$	$r_{56} = .37^{**}$	$r_{146} = .13$	$r_{81} = -.06$
5. Communication bullying	$r_{129} = -.44^{***}$	$r_{35} = .46^{**}$	$r_{121} = .29^{***}$	$r_{43} = -.21$
6. Overall conflict culture¶	$r_{172} = -.46^{***}$	$r_{56} = .41^{**}$	$r_{147} = .06$	$r_{81} = -.08$

Notes. †Each country’s north–south location is measured as the distance between the country’s midrange latitude and the south pole.

‡Each country’s east–west location is measured as the distance between the country’s midrange longitude and 180° longitude west of the Greenwich meridian.

¶Overall conflict culture is the average of the standardized indices of ingroup favoritism (1), outgroup rejection (2), political oppression (3), legal discrimination (4), and communication bullying (5).

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

race . . . Immigrants/foreign workers . . . Homosexuals . . . People who have AIDS . . . People with a criminal record” (0 = *not mentioned*, 1 = *mentioned*).

The face-to-face responses resulted in five proportions of a country’s inhabitants who saw people of a different race, immigrants, homosexuals, AIDS patients, and criminals as outcasts (Van de Vliert, 2013a). These five proportions were standardized across the 90 sample countries (Cronbach’s $\alpha = .79$) and then averaged to represent verbal outgroup rejection. As can be seen in row 2 of Table 1, just like the favoritism shown to members of ingroups, the discrimination of members of outgroups also tends to be unevenly distributed across the globe. In agreement with our geographical perspective and hypotheses, the north and south poles stand out as extreme points of reference, and the equator rather than the Greenwich meridian as a cultural turning point. Outgroup rejection is weaker among Northerners compared to Southerners in the Northern Hemisphere ($r_{76} = -.33, p < .01$), but stronger among Northerners compared to Southerners in the Southern Hemisphere ($r_{14} = .67, p < .01$).

Test 3: Political Oppression

Just like conflict between individuals (Van de Vliert, 1981, 1997; Yang et al., 2007), conflict between groups can be managed by seeking to (a) integratively reconcile the parties’ underlying interests, (b) distributively determine who is more right, and/or (c) distributively determine who is more powerful (Ury, Brett, & Goldberg, 1988). Democratic political systems aim to manage conflicts primarily on the basis of interests and rights, whereas autocratic systems tend to involve a leading elite that overpowers and oppresses dissidents and critics of the authoritarian regime. This broad cultural dimension of political conflict management, ranging from problem solving and compromising through nonconfrontation to fighting and oppressing, has been validly assessed with a wide range of subindices.

Specifically, Pemstein, Meserve, and Melton (2010) used a Bayesian latent variable approach to integrate measures of participation, inclusiveness, competitiveness, and coerciveness (Arat, 1991); political liberties, competitive elections, inclusive participation, civilization supremacy, and sovereignty (Bowman, Lehoucq, & Mahoney, 2005); political liberties and sovereignty (Bollen, 2001); political rights and civil liberties (Freedom House, 2007); elections and political freedoms (Hadenius, 1992); executive elections, legislative elections, and party competition (Przeworski, Alvarez, Cheibub,

& Limongi, 2000); competitiveness of participation and executive recruitment, openness of executive recruitment, and constraints on the executive (Marshall, Jagers, & Gurr, 2006); fair elections, freedom of organization and expression, and pluralism of the media (Coppedge & Reinicke, 1991); competitiveness, inclusiveness, and political liberties (Gasiorowski, 1996; Reich, 2002); and competition and participation (Vanhanen, 2003). We chose this index of political oppression versus freedom over other indices for its careful development, the breadth of its domain, and its reduction in measurement error.

So far, Pemstein et al.'s comprehensive index of political freedom versus oppression has not been projected on the geographic axes of the Earth. Thus, again confirming Hypothesis 1, the coefficients in row 3 of Table 1 reveal for the first time that populations differ more in political oppression along latitude than along longitude. Political freedom, too, can be used as a kind of compass that tells where the north–south and east–west coordinates run, given that differences between Northerners and Southerners dwarf differences between Easterners and Westerners in how conflict issues are experienced and handled by political leaders and followers. Specifically, the coefficients in row 3 of Table 1 reveal that Northerners face less political oppression than Southerners in the Northern Hemisphere ($r_{148} = -.35$, $p < .001$), whereas Northerners face more political oppression than Southerners in the Southern Hemisphere ($r_{41} = .41$, $p < .01$). Consistent with Hypotheses 2 and 3, this suggests that the handling of political problems is more likely to be democratic—and less likely to end in aggression and oppression—the farther one gets from the equator moving either north or south.

Test 4: Legal Discrimination

Governments use laws to spell out and distribute their citizens' rights and obligations as well as their rewards and punishments. Laws can prevent and de-escalate, or ignite and escalate conflicts (Van de Vliert, 1998), especially by restricting the freedoms of categories or groups of citizens (Conway, Sexton, & Tweed, 2006; Conway et al., 2017). This can be particularly true when those laws are discriminatory in nature. We propose that legal discrimination takes place when the legislature imposes restrictions of freedom on a minority of the area's inhabitants. This form of formalized discrimination has been approximated by counting and coding laws pertinent to (a) abortion; (b) lesbian, gay, bisexual, and transgender (LGBT) rights; and (c) the death penalty as a restriction of criminals' right and freedom to stay alive. While most laws could *in theory* apply to all persons who have to live under the laws, they do not all have the same practical import. In this case, each of these forms of legal restriction targets a statistical minority group; that is, each law applies to only a small targeted percentage of the population (see Conway et al., 2017, for evidence of empirical validity).

A research team led by Conway (Conway et al., 2017) obtained and considered data for each of 227 independent countries and dependent territories. Laws speaking to abortion (worldabortionlaws.com) were ranked from 1 = *least restrictive* to 4 = *most restrictive*. LGBT-rights laws (http://en.wikipedia.org/wiki/LGBT_rights_by_country_or_territory) included bans on same-sex sexual activity, recognition of same-sex unions, same-sex marriage, legal adoption by same-sex couples, LGBT people allowed to serve openly in military, antidiscrimination laws concerning sexual orientation, and laws concerning gender identity (0 = *not restrictive*; 1 = *some not restrictive, some restrictive*). Death penalty laws, obtained from Amnesty International (www.infoplease.com/ipa/A0777460.html), were scored as follows: 1 = *death penalty not permitted*; 2 = *death penalty not permitted for ordinary crimes*; 3 = *de facto ban on the death penalty*; 4 = *death penalty enforced federally*. Each variable was converted to a z-score and then averaged into a single *legal discrimination index* (Cronbach's $\alpha = .67$).

By correlating this index with midrange latitude in the hemispheres above and below the equator, and with midrange longitude in the hemispheres right and left of the Greenwich meridian, we replicated the results for political oppression. That is, we confirmed Hypotheses 1–3 (in Table 1, row 4 is equivalent to

row 3). Just like political oppression, legal discrimination varies by distance to the equator, not by distance to the Greenwich meridian. Abortion restrictions, LGBT restrictions, and capital punishment are less common among Northerners than among Southerners in the Northern Hemisphere ($r_{171} = -.63$, $p < .001$), but more common among Northerners than among Southerners in the Southern Hemisphere ($r_{56} = .37$, $p < .01$).

Test 5: Communication Bullying

In many conflict cultures, free communication is not allowed. Press people are murdered, imprisoned, censored, threatened, or similarly harassed (Van de Vliert, 2011b). By reporting to *Reporters Without Borders* in Paris, journalists and media assistants help document where and when those in the press are killed, arrested, or physically attacked, and media outlets shut down or censored. Such severe mistreatment meets the criteria for bullying in that there are (a) at least two conflicting groups within a work setting, (b) formal or informal power differences between these groups, and (c) prolonged conflict processes initiated by the bullying group, who repeatedly and persistently victimizes the press group (Van de Vliert & Einarsen, 2014).

In 2007, partner organizations in all continents and a network of more than 130 journalists and correspondents answered 50 questions, including the following: How many journalists and media assistants were . . . murdered (5–15 points); murdered with the state involved (5 points per case); arrested or sent to prison (3–15 points); currently in jail and serving over a year of sentence for a media-related offence (3–20 points); physically attacked or injured (2–6 points); personally threatened (1–4 points)? How many media outlets were censored, seized, or ransacked (3–12 points)? How many cyber-dissidents or bloggers were . . . imprisoned (3–9 points); harassed or physically attacked (1–4 points)? After the square root of the country score was taken, the resulting bullying index approximated a normal distribution with excellent test-retest reliability after one or two years (2006–2007: $r_{155} = .96$, $p < .001$; 2005–2007: $r_{155} = .94$, $p < .001$).

Viewing this specific measure of communication bullying (Van de Vliert, 2011b) as a proxy for more general intergroup bullying, we ended up with three significant geographic gradients of national bullying, and an insignificant one (Table 1, row 5). In line with Hypothesis 1, a relationship with longitude has to be rejected because the rather flat east–west gradient in the Eastern Hemisphere ($r_{121} = .29$, $p < .001$) cannot be replicated in the Western Hemisphere ($r_{43} = -.21$, *ns*). In support of our three hypotheses, the two latitudinal gradients mirror each other and are even robust against controlling for longitude ($r_{129} = -.51$, $p < .001$ for the Northern Hemisphere; $r_{35} = .47$, $p < .01$ for the Southern Hemisphere). Thus, Northerners and Southerners differ in communication bullying but do so in oppositely sloping directions in the Northern and Southern Hemispheres.

Test 6: Overall Conflict Culture

Ingroup favoritism, outgroup rejection, political oppression, legal discrimination, and communication bullying are viewed here as components of intergroup discrimination and conflict. The empirical interrelations support that viewpoint (Table 2), allowing us to use the average of the five standardized measures as a single indicator of overall conflict culture ($R^2 = .72$, Cronbach's $\alpha = .87$). This index has a normal distribution (K-S statistic = .07, $df = 228$, $p < .01$); is minimal in Sweden (–2.03), Denmark (–1.89), and the Netherlands (–1.88); and peaks in North Korea (1.60), Iraq (1.67), and Myanmar (1.74). Its gradients along latitude and longitude, reported in row 6 of Table 1 and visualized in Figures 1 and 2, support the conclusion suggested throughout this article: Conflict culture is insignificantly related to longitude (Hypothesis 1), is less common among Northerners than among Southerners above the equator, and is more common among Northerners than among Southerners below the equator (Hypotheses 2 and 3).

Table 2
Correlations Among Components of Conflict Culture (1–5) and Overall Conflict Culture (6)

Conflict culture	<i>n</i>	1	2	3	4	5
1. Ingroup favoritism	123					
2. Outgroup rejection	90	.53***				
3. Political oppression	189	.54***	.56***			
4. Legal discrimination	227	.42***	.41***	.52***		
5. Communication bullying	164	.53***	.36***	.83***	.57***	
6. Overall conflict culture†	228	.77***	.71***	.89***	.79***	.86***

Notes. †Overall conflict culture is the average of the standardized indices of ingroup favoritism (1), outgroup rejection (2), political oppression (3), legal discrimination (4), and communication bullying (5).

*** $p < .001$.

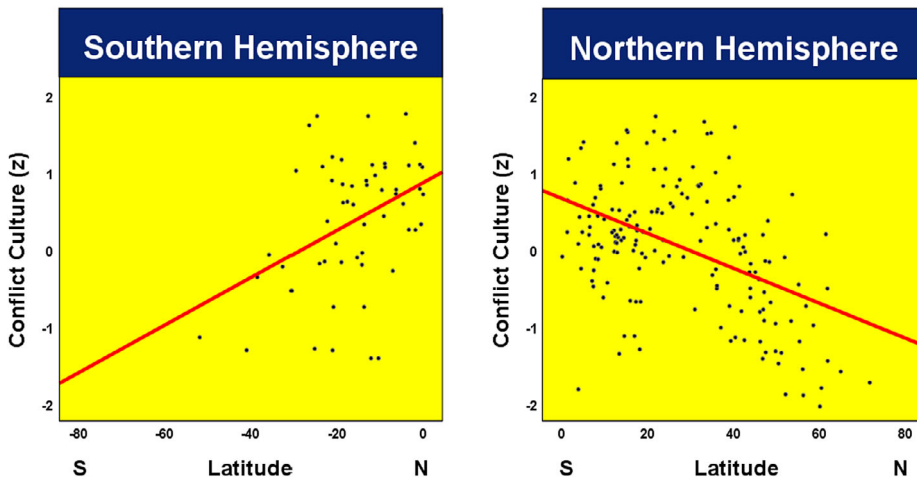


Figure 1. The distribution of conflict culture along latitude in the Southern Hemisphere below the equatorial divide and in the Northern Hemisphere above the equatorial divide.

Supplementary Analysis: Ecological Specifications

The preceding section demonstrates that conflict culture varies systematically between Northerners and Southerners rather than between Easterners and Westerners because latitude does, whereas longitude does not, have opposite poles and an equator. However, although it is important to provide comprehensive tests of spatial positioning to aid our understanding, it is also important to better understand the possible mechanisms of this effect (Van de Vliert, 2011b; Van de Vliert & Daan, 2017; Van Lange et al., 2017; Volk, 2017). Because conflict culture has oppositely sloping latitudinal gradients in the Northern and Southern Hemispheres, its ecological origins should also have oppositely sloping latitudinal gradients above and below the equator. With these criteria in hand, we compare the predictive power of four environmental conditions that have been proposed as precursors of societal culture.

A sequence of potentially influential latitude-related stressors that has previously been associated with societal controversies and conflict management is expected to be relevant to our understanding of latitude effects: thermal stress, hydraulic stress, pathogenic stress, and subsistence stress, in this order. The latitude-related main effects of these ecological stressors on conflict culture, as well as the interaction

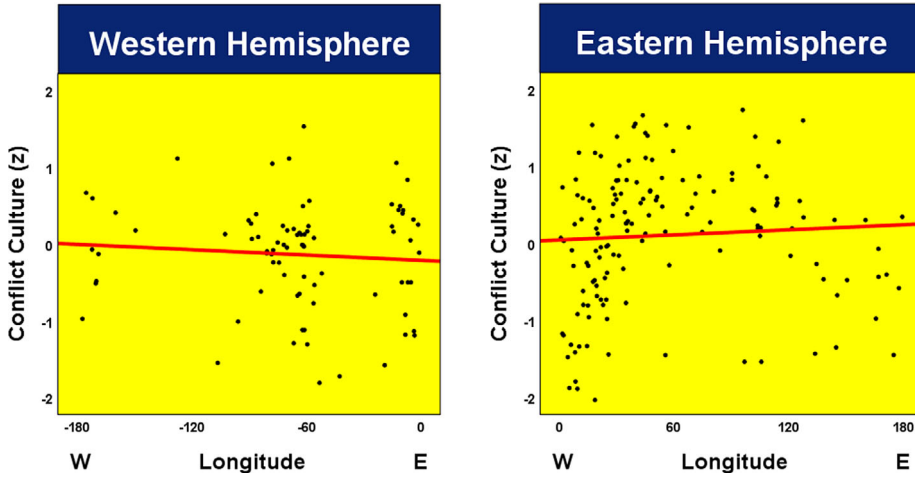


Figure 2. The distribution of conflict culture along longitude in the Western Hemisphere left of the Greenwich meridian and in the Eastern Hemisphere right of the Greenwich meridian.

effects of climatic stress and subsistence stress, are scrutinized next. Finally, the results are cross-validated by predicting and testing the prevalence of conflict culture in 38 Southern Hemisphere countries on the basis of the regression equation derived from the successful prediction of conflict culture in 143 Northern Hemisphere countries.

A Sequence of Ecological Stressors

The most fundamental ecological stressors are climates, made up of temperatures, precipitation, wind, humidity, pressure, and so on. To balance importance, parsimony, and accuracy, climates are nowadays measured using temperature extremes and precipitation extremes (Van de Vliert et al., 2018). We adopt that approach here as well because (a) there is no denying that cold and heat are at the beginning of the causal sequence, (b) cold and heat help determine whether hydraulic stress in the form of too little or too much precipitation will occur (Van de Vliert et al., 2018), (c) dry versus wet temperatures create degrees of pathogenic stress (Cashdan, 2014), and (d) all of them serve as antecedents of subsistence stress manifested in poor wealth resources (Sachs, 2000). Below, we discuss the stressfulness, measurement, and latitudinality of each step of this conceptual sequence of ecological predictors of conflict culture.

Thermal Stress

Average atmospheric temperature is an inaccurate determinant of ecological stress as it ignores the bipolarity of thermal livability. Clearly, 2 and 42 °C both pose existential problems, so that larger seasonal variations around the same mild average temperature have larger impacts on societal functioning. Also, higher latitudes have both lower averages and larger seasonal variations in temperature. These shortcomings of average temperature as a predictor of culture, which compromise much research on the relationship between heat and aggression (Anderson & Bushman, 2002; Van Lange et al., 2017), can be overcome by concentrating on temperature deviations from a thermal optimum.

Clement climates with rather warm winters and cool summers are relatively undemanding by offering pleasant temperatures, abundant nutritional resources owing to the rich flora and fauna, and comparatively healthy habitats (Van de Vliert, 2009, 2013a). Colder winters and hotter summers are more stressful as they require more and better clothing, shelter structures, warming or cooling systems, and

increasing investments of time and effort in the pursuit of water, food, and health. Nowadays, such thermal stress is assessed with a thermometer for livability that uses 22 °C (~72 °F) as a point of reference for minimal stress (Van de Vliert, 2017b; Wei et al., 2017). Accordingly, thermal stress is measured as the mean deviation from 22 °C in centigrade for the average (a) lowest temperature in the coldest month, (b) highest temperature in the coldest month, (c) lowest temperature in the hottest month, and (d) highest temperature in the hottest month.

To be more precise, thermal stress is measured across each country's major cities and weighted for population. Indices for cold and heat deviations from 22 °C, and for total temperature deviations from 22 °C, are available for over 200 independent countries and dependent territories (Van de Vliert, 2013b; <http://www.rug.nl/staff/e.van.de.vliert/projects>). Burundi, for example, with its warm winters ($|17^{\circ}\text{C} - 22^{\circ}\text{C}| + |20^{\circ}\text{C} - 22^{\circ}\text{C}|$) and cool summers ($|28^{\circ}\text{C} - 22^{\circ}\text{C}| + |31^{\circ}\text{C} - 22^{\circ}\text{C}|$), has a thermal stress score of $7 + 15 = 22$. By contrast, Mongolia with its cold winters ($|-44^{\circ}\text{C} - 22^{\circ}\text{C}| + |1^{\circ}\text{C} - 22^{\circ}\text{C}|$) and variable cold or hot summers ($|-6^{\circ}\text{C} - 22^{\circ}\text{C}| + |36^{\circ}\text{C} - 22^{\circ}\text{C}|$) has a thermal stress score of $87 + 42 = 129$. In the present context, it is important to know that Northerners experience more thermal stress than Southerners above the equator ($r_{172} = .91, p < .001$ for cold stress; $r_{172} = -.59, p < .001$ for heat stress), but less thermal stress than Southerners below the equator ($r_{56} = -.66, p < .001$ for cold stress; $r_{56} = .22, p = .108$ for heat stress).

Hydraulic Stress

Water is such a vital resource for daily drink and food, hygiene, and economic production, that dry seasons constitute an ecological threat to livability. Too much rain or snow, on the other hand, causes floods and landslides. Indeed, steady precipitation throughout the year is least stressful and both overly dry and overly wet periods cause hydraulic stress. Dry and wet extremes are exceptional in areas with cold winters and cool summers, and common in areas with warm winters and hot summers (Van de Vliert et al., 2018). Given the steeper latitudinal gradients for cold stress compared to heat stress, there tends to be a mutually exclusive relationship between thermal stress and hydraulic stress, and the thermal and hydraulic stressors might counteract each other's prediction of conflict culture.

Rain or snow falling on a country has a steadier rhythm to the extent that the monthly precipitation is constant and can therefore be measured as the minimal monthly precipitation in mm divided by the maximal monthly precipitation in mm (retrieved from Parker, 1997). Hydraulic stress, the inverse of this measure, is lowest on islands such as Bermuda (steady rain = $104/147 = .71$; hydraulic stress = $-.71$) and highest in countries with tropical rainy climates, such as Sierra Leone (steady rain = $3/902 = 0$; hydraulic stress = 0). Just like thermal stress, hydraulic stress also has a linear relationship with the latitudinal coordinate between the pole and the equator. This north-south gradient of hydraulic stress has a negative sign in the Northern Hemisphere ($r_{172} = -.50, p < .001$) but a positive sign in the Southern Hemisphere ($r_{56} = .28, p < .05$). That is to say, compared with Southerners, Northerners face less hydraulic stress above the equator, but more hydraulic stress below the equator.

Pathogenic Stress

Microorganisms and parasites, too, create environmental conditions that frustrate the satisfaction of basic needs for thermal comfort, nutrition, and health. In common with their hosts, pathogens that transmit diseases to humans tend to shun cold and hot habitats, where livability is problematic—arctic habitats at higher latitudes and desert habitats at lower latitudes (Cashdan, 2014). Specifically, temperature-based increases in infectious diseases exist away from the arctics, whereas rain-based increases in infectious diseases exist away from the deserts. It is therefore reasonable to assume that human infectious diseases serve, at least in part, as a mediating link between climatic circumstances and human functioning. As if anticipating such mediation, Thornhill and Fincher (2011) have already demonstrated that parasite stress promotes homicide and bullying of romantic partners and children.

The most extensive index of human-to-human transmitted diseases (e.g., measles, cholera, leishmaniasis, and leprosy; Fincher & Thornhill, 2012) has been constructed by determining the number of cases of human-specific and multihost infectious diseases per country or territory ($N = 220$). Pathogenic stress thus measured has oppositely sloping distributions in the opposite Northern and Southern Hemispheres. Whereas Northerners have to cope with a lower pathogenic disease burden than Southerners above the equatorial divide ($r_{168} = -.63, p < .001$), they have to cope with a higher pathogenic disease burden than Southerners below the equatorial divide ($r_{52} = .43, p < .001$). This finding signifies that pathogenic stress does potentially deserve a place in the explanatory sequence from geographic latitude to thermal climate to conflict culture.

Subsistence Stress

Subsistence stress is painful economic poverty that frustrates the satisfaction of basic needs for thermal comfort, nutrition, and health, also because there are insufficient monetary means to compensate for thermal stress, hydraulic stress, and pathogenic stress (Sachs, 2000; Sen, 2001). The odds of living at subsistence level increase in places of residence where it is hard to eke out a living: places with colder winters or hotter summers (Burke, Hsiang, & Miguel, 2015; Carleton & Hsiang, 2016), too little or too much rain or snow (Cutter, Gall, & Emrich, 2008), or a greater burden of infectious diseases (Sachs, 2000). No wonder, then, that poverty and related misery peak in countries with high exposure to extreme heat, droughts, and floods, as well as flies, mosquitoes and mollusks (e.g., Chad, Central African Republic, and Nigeria; Parker, 2000; Sachs, 2000; Theil & Galvez, 1995). Wanting to use subsistence stress as a predictor of conflict culture, we estimated it with a considerable time lag (described next).

The best available way to capture the extent of subsistence stress in the world's countries is to compute the income per head in U.S. dollar terms (Sen, 2001; UNDP, 2003), and to then convert that figure to international dollars using purchasing-power-parity rates. To reduce skewness, we log-transformed the income per head for the years 2000, 2002, and 2004 (UNDP, 2002, 2004, 2006) and used the average. As previously alluded to, it is well known that subsistence stress peaks in the tropics, marked as it is by an equatorial turning point between a negative north-south slope in the Northern Hemisphere ($r_{143} = -.51, p < .001$) and a positive north-south slope in the Southern Hemisphere ($r_{38} = .57, p < .001$). Also, well known is the impact of tropical subsistence stress on a host of cultural features including education, emancipation, and subjective well-being (Sen, 2001; UNDP, 2002, 2004, 2006).

A Sequence of Main Effects

Table 3 shows that all ecological stressors are related to conflict culture. It catches the eye that, in agreement with the sequential model, the most proximate predictor has the strongest relationship with the dependent variable: Subsistence stress promotes conflict culture. By contrast, the most distant predictor has the weakest relationship: Thermal stress tends to counteract conflict culture. To capture the additive effects of the ecological stressors, we conducted a regression analysis, entering overall conflict culture as the dependent and ecological stressors as independent variables. In order to also do justice to the proposed sequence of the ecological stressors, it was necessary to supplement the hierarchical regression analysis with a conditional process analysis (Hayes, 2013, diagram 6 with 5,000 bootstrap samples for constructing bias-corrected confidence intervals).

The regression results in Table 4 refine the zero-order impressions from Table 3. Across the 181 countries for which data on subsistence stress are available, climatic stress accounts not only for 36% of the variation in conflict culture (models 1 and 2), but also for the initial impact of pathogenic stress (17%; model 3), and for 25% of the initial impact of subsistence stress (35%; model 4). Together, thermal stress, hydraulic stress, and subsistence stress are able to predict 46% of the variation in conflict culture. The conditional process analysis further reveals that thermal stress has no direct effect on conflict culture (Lower Limit Confidence Interval LLCI = $-.21$, Upper Limit Confidence Interval ULCI = $.01$). Rather,

Table 3
Correlations Among Ecological Stressors (1–4) and Overall Conflict Culture (5)

Ecological stressor	<i>n</i>	1	2	3	4
1. Thermal stress	228				
2. Hydraulic stress	227	-.31***			
3. Pathogenic stress	220	-.33***	.51***		
4. Subsistence stress	181	-.35***	.55***	.65***	
5. Overall conflict culture†	228	-.24***	.52***	.41***	.59***

Notes. †Overall conflict culture is the average of the standardized indices of ingroup favoritism (1), outgroup rejection (2), political oppression (3), legal discrimination (4), and communication bullying (5).
****p* < .001.

there is an indirect path leading from thermal stress via hydraulic stress and subsistence stress, in this order, to conflict culture (boot LLCI = -.13, boot ULCI = -.04). This confirms the idea of a stepwise series of influences shaping conflict culture but leaves open the question whether economic wealth resources both mediate and modify this sequence of influences.

Climato-Economic Interaction

The supplementary evidence so far indicates that (a) all ecological stressors have oppositely sloping latitudinal gradients above and below the equator, (b) all latitudinal gradients of ecological stress are predictive of the latitudinal gradient of conflict culture, (c) the effect of pathogenic stress on conflict culture is overruled by the effects of climatic stress and subsistence stress, and (d) thermal stress exerts its impact on conflict culture via hydraulic stress and subsistence stress. A remaining question is whether the ultimate root of thermal stress also exerts its impact in interaction with hydraulic stress, pathogenic stress, or subsistence stress. The following paragraph provides reasons for why we expect that especially thermal demands and economic resources will influence each other’s impact on conflict culture.

Nowadays, almost everyone everywhere handles the consequences of bitter winters or scorching summers through property-based operations—a climato-economic demands–resources interaction. Owning, earning, saving, and trading can help prevent and dispel discomfort, hunger, thirst, and illness in cold

Table 4
Effects of Ecological Stressors on Overall Conflict Culture Across 181 Countries

Regression model	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Thermal stress (T)†	-.31***‡	-.14**	-.12*	-.12*	-.09*	-.09	-.09
Hydraulic stress (H)		.39***	.35***	.26***	.18***	.14**	.15**
Pathogenic stress (P)			.08	-.09	-.03	-.02	.00
Subsistence stress (S)				.34***	.31***	.33***	.33***
T × S					.26***	.23***	.21***
H × S						-.07	-.05
P × S							-.06
Δ <i>R</i> ²	.16***	.20***	.00	.10***	.09***	.01	.00
Total <i>R</i> ²	.16***	.36***	.36***	.46***	.55***	.56***	.56***

Notes. †Predictors are standardized variables and products of standardized variables.
‡Shown are unstandardized regression coefficients. There is no multicollinearity (VIFs ≤ 2.36), and there are no outliers (Cook’s *D*s ≤ .17).
p* < .05. *p* < .01. ****p* < .001. Two-sided tests.

and hot areas and seasons. Money is particularly useful as it can be so flexibly moved across goods and services, buyers and sellers, places and times. Indeed, household income and cash can provide many necessities of life including heat and cold, food and drink, cure and care. Thus, it is anything but a speculation that the combination of climatic stress and poverty is threatening and has adverse effects on societal functioning, whereas the combination of climatic stress and wealth is challenging and has beneficial effects on societal functioning (Fischer & Van de Vliert, 2011; Robbins, 2015; Van de Vliert, 2009, 2013a, 2017a).

The interaction models 5–7 in Table 4 report the extent to which monetary resources compensate for climatic misery. Thermal stress and subsistence stress, represented by degree of poverty, clearly qualify and modify each other’s impact on conflict culture (model 5). Moreover, this climato-economic interaction effect is not confounded by similar effects of hydraulic stress (model 6) and pathogenic stress (model 7) on the consequences of poverty versus wealth for conflict culture. In Figure 3, the interaction from model 5 is plotted at ± 1 SD (for convenience, with conflict culture multiplied by 100). Horizontally viewed, Figure 3 tells that higher thermal stress increases conflict culture to the extent that subsistence stress is also higher (upper slope: $b = .17, p < .01$), but decreases conflict culture to the extent that subsistence stress is lower (lower slope: $b = -.36, p < .001$). Vertically viewed, the same picture tells that higher subsistence stress increases conflict culture negligibly if thermal stress is low (left gap between slopes: $b = .05, ns$), but increases conflict culture maximally if thermal stress is high (right gap between slopes: $b = .58, p < .001$).

The latitudinality of the main and interaction effects of ecological stressors on conflict culture was further corroborated by regressing the residual from model 5 in Table 4 onto the countries’ midrange latitude. As expected, latitude, initially accounting for considerable variation in conflict culture, failed to significantly account for the residual variation in conflict culture (a fall from $r_{143} = -.56, p < .001$ to $r_{143} = -.09, ns$ in the Northern Hemisphere; and from $r_{38} = .57, p < .001$ to $r_{38} = .28, ns$ in the Southern Hemisphere). This reduction in the predictive power of latitude implies that the geographical

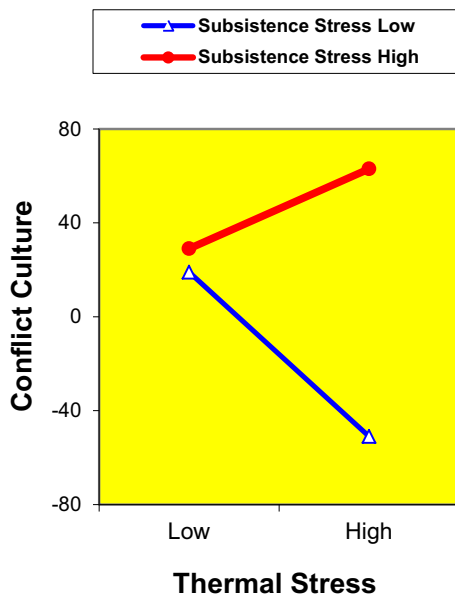


Figure 3. Joint effects of thermal stress and subsistence stress on conflict culture.

explanation of conflict culture can indeed be traced back to the joint effects of thermal stress and subsistence stress plotted in Figure 3.

Cross-Hemispheric Validation

The low number of only 38 observations below the equator does not allow for independent analyses in the two latitudinal hemispheres. Instead, this hemispheric sampling asymmetry provides the opportunity to examine whether the climato-economic roots of conflict culture above the equator can be validated against field data from below the equator. Predictions were based on the following regression equation, which results from applying model 5 in Table 4 to the Northern Hemisphere ($n = 143$): $PCC = (-.087 \times T) + (.181 \times H) + (.002 \times P) + (.284 \times S) + (.293 \times T \times S)$, where PCC is predicted conflict culture, T is thermal stress, H is hydraulic stress, P is pathogenic stress, and S is subsistence stress. The positive relationship between predicted conflict culture and measured conflict culture in the Southern Hemisphere ($r_{38} = .71, p < .001$), visualized in Figure 4, supports the ecological specification of the geographical explanation in terms of climato-economic conditions.

Discussion

The reported study corroborates the idea that conflict culture differs more between Northerners and Southerners than between Easterners and Westerners, and oppositely so above and below the equator (Table 1). This is a unique geographical perspective going beyond and enriching geographical psychology (Rentfrow, 2014; Rentfrow & Jokela, 2016), ecological psychology (Gangestad et al., 2006; Georgas et al., 2004; Oishi, 2014; Van de Vliert, 2013a; Varnum & Grossmann, 2017), and previous studies on both the latitudinality of conflict culture (Aslani et al., 2016; Leung & Cohen, 2011; Nisbett & Cohen, 1996; Shackelford, 2005; Van de Vliert & Daan, 2017; Van Lange et al., 2017; Volk, 2017) and the latitudinality of conflict communication (Andersen et al., 1990). The results, especially those in Table 1, indicate that the cross-cultural field of conflict management and negotiation may benefit from moving its concentration from the immediate fruits of culture and communication to the really remote roots of culture and communication.

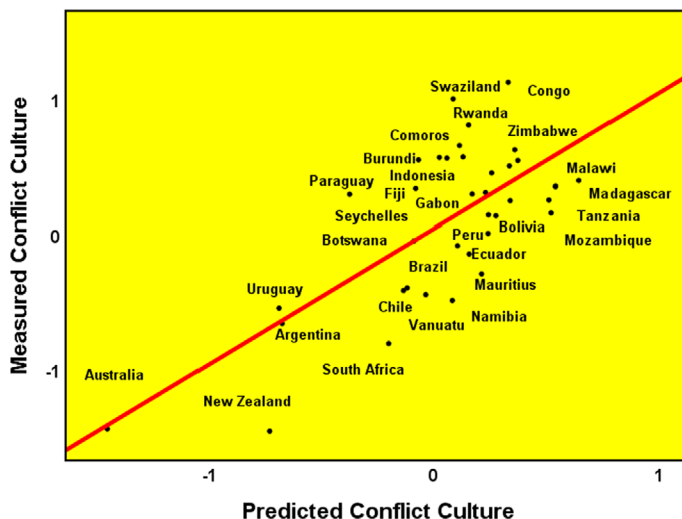


Figure 4. Correct prediction of conflict culture in the Southern Hemisphere on the basis of the climato-economic ecologies of conflict culture in the Northern Hemisphere.

Obvious the remotest root of culture, demonstrated here for ingroup–outgroup differentiation and intergroup conflict, is thermal stress. Relatedly, one of our most interesting findings is that thermal stress hides and disguises its influence. The influence is hidden because thermal stress exerts its impact on conflict culture via hydraulic stress and subsistence stress. The influence of thermal stress is also disguised because it is modified by subsistence stress: Conflict culture flourishes where thermal stress and subsistence stress are both high, and flounders where thermal stress is high while subsistence stress is low (see Figure 3). The hidden and disguised nature of climate–culture connections may have misled scholars into believing that cold winters and hot summers have next to nothing to say about how people fight or fight and cooperate or compete. What our field needs is a paradigm extension from theorizing about proximate causes to remote origins of negotiation and conflict management.

Such a paradigm extension is simultaneously a movement back to basics and back to the past. Ever since the ancient Greeks started to address the climate–culture conundrum, great thinkers have speculated about the link between thermal climate and local human functioning including conflict culture (for overviews, see Feldman, 1975; Parker, 1995; Sommers & Moos, 1976). Recently, a growing number of scholars have begun to turn these speculations into knowledge (Carleton & Hsiang, 2016; Van de Vliert, 2009, 2013a; Van Lange et al., 2017; Wei et al., 2017). As implied by its theoretical and empirical contexts, the reported study is not simply an extension of that recent trend but attempts to redirect and accelerate the ongoing work by placing both the ecological stressors and conflict culture in a farther-back geographic context. Of course, inevitably, our geographical lens and the accompanying research methods have inherent strengths and weaknesses.

Strengths and Weaknesses

The strength of emphasizing the latitudinality of ecological stressors and their downstream consequences for conflict culture comes with the weakness of geographical rather than psychological explanation. Although we have attempted to provide multiple psychological markers of conflict (Table 2), nonetheless analyses using whole countries as geographic units necessarily are not fine-grained. We have tried to trace the climato-economic roots of conflict culture (Figure 3) back to the gratification of basic needs for thermal comfort, nutrition, and health, but this comes with the weakness that the mediating appraisals of threatening versus challenging places of residence have not been measured and analyzed. Thus, while we can say with increasing confidence that (a) latitude is important to conflict culture and (b) the effect of latitude on conflict is largely a function of climato-economic factors (Table 4), the psychological mechanisms that underlie these relationships are often hard to specifically pin down. Future research would do well to combine this large-scale approach with more proximal psychological tests on individuals (Wei et al., 2017) to help better illuminate the exact mechanisms that lead to latitude-related effects.

Similarly, the strengths of going beyond climatic and economic determinism (Figure 3) and cross-validating the results in an independent hemisphere (Figure 4) come with the weakness of only cross-sectional support for the latitude-related origins of ingroup–outgroup differentiation and intergroup conflict. Although in the case of climate, it is reasonable to assume that the causal direction goes from climate to culture and communication (it is highly unlikely that conflicts alter regional temperatures), nonetheless all the data presented here are cross-sectional. Finally, the strength of comparing Northerners and Southerners in the Northern and Southern Hemisphere comes with the weakness that all comparisons were made between countries, not within countries. We return to this issue below in our discussion of implications for north–south thinking in theory building and designing research.

Implications: Easterners versus Westerners

At first sight, it is perhaps surprising that 11 out of the 12 east–west gradients of ingroup favoritism, outgroup rejection, political oppression, legal discrimination, communication bullying, and overall conflict

culture in Table 1 do not reach significance. However, it is worth remembering that, unlike latitude, longitude does not have an equator between opposite poles, so that the Greenwich meridian has no role to play as a signpost toward longitude-related explanations of conflict culture.

Although the east–west dichotomy is often employed to describe differences in conflict management and negotiation (Ting-Toomey & Oetzel, 2001), we are not aware of any study quantifying such differences using longitude as a yardstick. This gap in the literature is surprising for the simple reason that the flatness versus steepness of east–west gradients of conflict culture has scientific merit. The steeper the gradient, the greater the risk to falsely claim generalizability of effects of investigations or interventions across cities, counties, or countries differing in distance along the east–west axis. This sheds new light on the gradients of conflict culture in Table 1: that differences between Northerners and Southerners dwarf differences between Easterners and Westerners implies the greater applicability of research results along the east–west axis than along the north–south axis of the Earth. In fact, conflict knowledge has this east–west dissemination bias in common with other cultural products (Diamond, 1997; Laitin et al., 2012; Nettle, 1998).

Intriguingly, a large set of differences exists between cultural worlds that is often described in the geographic terms “East” and “West.” Notably, there is a body of research describing differences in Asian (“Eastern”) and North American (“Western”) populations (see, Henrich, Heine, & Norenzayan, 2010; Nisbett, 2003); and even within continents, cultural differences are often discussed in east–west terms (Kitayama et al., 2010). The typical method is to pit one country or region against one or more others—a nominal rather than ordinal approach to measurement. Indeed, none of these east–west comparisons uses longitude as a yardstick, let alone that the comparisons have been replicated on a different range of degrees of longitude. As a case in point, compared to Chinese and Japanese in the far east, Americans and West Europeans have lower levels of ingroup favoritism and outgroup rejection (Hofstede, 2001; Triandis, 1995), but these nominal differences cannot be systematically replicated across longitude (Table 1, rows 1 and 2).

Of course, that is not to say that east–west ecological factors may turn out to be completely irrelevant. Indeed, it is worth noting that longitude, described in absolute terms, does not directly capture potential continental differences between east and west at a local level. Although there is no clear reason to expect large climato-economic differences across various gradients of longitude at a global level, many ecological stressors are likely directly affected by their east–west proximity from the center of a large land mass (cf. Diamond, 1997). It is possible, for example, that one could construct a measure for each continent that parallels our larger latitude measurement—such as the distance from the midrange longitude of each continent. Because inland climates differ systematically from coastal climates, this measurement may yield results showing that longitude matters at a more local level. This interplay could be tested in future research.

Implications: Northerners versus Southerners

In *The spirit of the laws*, Montesquieu (1748/1989) speculated about regional variation in emotional expressiveness and aggression, concluding that cultural differences between Northerners and Southerners in the Northern Hemisphere should, in theory, be reversed for people residing in countries in the Southern Hemisphere. Pennebaker, Rimé, and Blankenship (1996) have put Montesquieu’s speculations to a preliminary test using within-country north–south stereotypes. Northerners are viewed as less emotionally expressive than Southerners in the Northern Hemisphere ($n = 20$ countries), but as neither less nor more emotionally expressive than Southerners in the Southern Hemisphere ($n = 6$ countries). Our current study on ingroup favoritism, outgroup rejection, political oppression, legal discrimination, and communication bullying goes broader and deeper than a single stereotype, covers many more countries in both hemispheres, and generates much more support for Montesquieu’s hypotheses, but awaits within-country tests.

Indeed, across-country and within-country tests have complementary strengths and weaknesses. While across-country tests such as those provided here are by definition more expansive and inclusive, within-country tests help control for factors (e.g., differential spread of religious beliefs) that might otherwise account for differences between countries (see Conway et al., 2017; Van de Vliert, Yang, Wang, & Ren, 2013), and yet have little to do with geography and geography-related ecology directly. Thus, it is important to provide within-country tests to complement the tests performed here. To showcase how this can be done, we used available data to explore a within-country test of the north–south perspective on one of the markers of conflict attitudes used in our cross-national analyses: legal discrimination.

Conway et al. (2017) produced markers of legal discrimination for each U.S. state that were parallel to those used across nations. We used the median latitude and median longitude in each state to predict this marker of legal discrimination within the United States. Because all U.S. states are in the Northern Hemisphere, if the within-country pattern was to be the same as our prior analyses revealed across countries in the Northern Hemisphere (as seen in Table 1), we would expect that as latitude increases further north, legal discrimination would decrease. Indeed, as predicted, latitude was negatively predictive of legal discrimination for U.S. states ($r_{50} = -.27$, $p = .029$, one-tailed), while longitude was essentially nonpredictive ($r_{50} = .01$). The effect of latitude on legal discrimination was appreciably larger when removing cultural and geographic outliers Hawaii and Alaska ($r_{48} = -.46$, $p < .001$ for latitude; $r_{48} = -.17$, $p > .20$ for longitude), suggesting that other factors in those states might be suppressing the effect of latitude on legal discrimination (but at the least were not causing an effect to artificially emerge).

These data importantly validate the across-nation data on latitude and longitude using a within-country sample, yet they are incomplete. Several areas require further attention. First, to more fully validate the perspective offered here, parallel within-country tests should be run for large land area nations in the Southern Hemisphere. We would predict that the pattern found for the United States would reverse in the Southern Hemisphere as in Table 1. Second, legal discrimination is just one marker related to conflict. A broader set of within-country variables, paralleling and extending the variables in Table 1 for nations, would reveal a larger and more complete picture. Third, to better understand north–south versus east–west influences on conflict culture, we need to capture east–west differences, not only in terms of longitude, but also in terms of longitude relative to the center of the continent of residence.

Coming back to Andersen et al.'s (1990) "Changes in Latitude, Changes in Attitude" and to the southern culture of honor (Nisbett & Cohen, 1996), we believe it is especially important moving forward to test the latitudinality of competitive, coercive, and violent communications within Southern Hemisphere countries like Chile, Argentina, and Australia. Such research could also inversely cross-validate Van Lange et al.'s (2017) CLASH model if residents are sampled from both latitudinal hemispheres. One could, for example, test the following geography-related hypothesis: Compared to conflicting Northerners, conflicting Southerners use more aggressive communication above the equator but less aggressive communication below the equator. Research locations could be cities, counties, or smaller countries from both latitudinal hemispheres, and care should be taken that the investigated participants grew up in the targeted places of residence (Wei et al., 2017).

Coda

Latitude-related differences in livability are relatively fundamental and seminal. These ecological differences can help clarify why, where, and how a habitat's inhabitants evolve distinct habits of conflict management and negotiation.

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