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Publication Date

2019

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UNIVERSITY OF CALIFORNIA

Santa Barbara

Collectivism Moderates the Association Between Political Ideology and Social Attitudes

A Thesis submitted in partial satisfaction of the
requirements for the degree Master of Arts
in Psychological and Brain Sciences

by

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ABSTRACT

Collectivism Moderates the Association Between Political Ideology and Social Attitudes

by

Roxie Chuang

Much conflict in our society derives from the divide in people's political ideology, as ideology often predicts social attitudes. However, the strength of this relationship differs between people of different cultural value orientations. Four studies examined the moderating effect of collectivism on the association between political ideology and social attitudes. Study 1 examined people's xenophobic reactions to Ebola threat. Overall, more conservative people were more xenophobic. However, political ideology predicted xenophobia less strongly among high than low collectivists. Study 2 examined support for pro-environmental policies. More conservative people showed less pro-environmental support, and political ideology predicted pro-environmental support less strongly among high than low collectivists. Study 3 manipulated people's collectivistic and individualistic tendencies and examined their xenophobic responses to Zika threat. Exploratory analysis suggested that individualism increased xenophobia among highly conservative participants, whereas collectivism did not. It hinted at the role of individualism accentuating ideological polarization whereas collectivism attenuating it. Study 4 attempted to identify the mechanism underlying the attenuating effect of collectivism.

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Introduction

The latest 2019 government shutdown due to political impasse has become the longest one in the U.S. on record, dating back more than 40 years (Reklatis, 2019). Political polarization is at its widest in at least two decades. About a third of both Democrats and Republicans think the other party is a threat to the “nation’s well-being” (BBC, 2014; Pew Research Center, 2014). While the Democrats hold more consistently liberal ideologies, the Republicans hold more consistently conservative ideologies. These ideologies include attitudes toward government regulation, income inequality, immigrants and environmental laws (Pew Research Center, 2014). The consequence is not just polarized politics, but a divided society, where liberals and conservatives prefer to live apart, and would be unhappy if their children married someone with a different political view (Pew Research Center, 2014). The more people allow their political ideology to determine their attitudes and behaviors, the stronger the partisan divide. This divide often drive support for highly controversial policies, such as travel bans, separating refugee children and their parents, and building a wall on the U.S.-Mexico border (Levin, 2018; Talton, 2018). Thus, understanding how people’s political ideologies drive their attitudes and behaviors is timely and crucial.

Although people’s ideologies often predict their attitudes and behaviors, not everyone’s action is guided by their personal ideology to the same extent. The association between political ideology and actions differ between people of varying socio-cultural backgrounds (e.g. Gelfand, Nishii, & Raver, 2006; Heine & Lehman, 1997). That is, there could be factors that may weaken this association. The present research aims to examine the role of one of these factors — collectivism — in driving the relationship between political ideology and social attitudes, as well as the mechanisms underlying this effect.

Political Ideology and Policy Support

When someone identifies as a conservative, it is likely that they reveal more than just their political ideology. Often, political ideology reflects people's beliefs about humanity and society (Feldman 1988; Kinder 1998; Rokeach 1973). For example, political ideology predicts people's attitudes about limited government, rights to abortion and gun ownership (e.g. Feldman 1988; Kinder 1998; Rokeach 1973; Devine, 1997; Chandler & Tsai, 2001). Identifying as a democrat and republican also predicts one's values of equal opportunity, openness to new experiences, moral tolerance, beliefs regarding sexual assault, and concern for the environment (Goren, 2005; Kish, Netterberg, & Leahy, 1973; IPSOS, 2018; Buttel & Flinn, 1978). Research has examined this relationship systematically. For example, a model was developed to establish the relationship between threats and endorsement of inequality with conservatism as motivated social cognition. The core of conservatism, motivated by the need to address uncertainty and threat, emphasizes resistance to change and justifies inequality (Jost, Glaser, Kruglanski, & Sulloway, 2003).

These values and attitudes predicted by ideology may translate into social behaviors, such as church attendance, stimulus-seeking, support for restrictive immigration policies and support for environmental reform (Bagley & Boshier, 1972; Kish, Netterberg, & Leahy, 1973; Chandler & Tsai, 2001; Boven, Ehret, & Sherman, 2018). This research focuses two behavioral outcomes associated with political ideology that are highly debated under President Trump's administration — pro-environmental support and xenophobic tendencies.

Cultural Variation in the Belief - Behavior Consistency

Although political ideology and party identification have been found to predict a

variety of social attitudes and behaviors, the strength of this relationship may differ between people of different cultural backgrounds. A stronger cultural value of collectivism diminishes the relative importance of internal attributes, such as personally held ideologies and preferences, in driving individuals' behaviors (Heine & Lehman, 1997; Kashima, Siegal, Tanaka, & Kashima, 1992; Savani, Markus, & Conner, 2008).

Cross-national research suggests that the consistency between attitudes and behavior is weaker among people from collectivistic cultures than individualistic cultures (i.e. Japanese relative to Australians) (Kashima et al., 1992). Another study showed that compared to Americans, Indians are less likely to make choices according to their personal preference and less motivated to express their preferences in choices (Savani et al., 2008). A mechanism has been proposed to explain this difference. As opposed to Americans who reflect a disjoint model of agency, the belief that people should choose on the basis of their preferences, Indians reflect a conjoint model of agency, which may require restraining own preferences to respond to the expectations of close others (Savani et al., 2008).

These differences have also been explained by cultural variation in collectivistic and individualistic societies. In examining self-affirmation theory, researchers found that Canadians engage in dissonance reduction similarly to Americans ; whereas Japanese do not show dissonance reduction. The authors suggests that this may be due to the fact that the threat of free choice also threatens aspects of the independent self, but does not threaten the interdependent self (Heine & Lehman, 1997). This explanation is based on self-construal theory which stated that the core of independent self is internal attributes, whereas the core of interdependent self is social attributes (Markus & Kitayama, 1991; Kanagawa, Cross, & Markus, 2001). Furthermore, more collectivistic cultures place less value on the self-

expression of internal attributes. East Asian Americans place less emphasis on self-expression than European Americans did. This explains why when asked to choose their preferred pen among several, and then to evaluate the unchosen pens, European Americans (but not Asian Americans) derogate their un-chosen pen. In other words, the expression of choice led European Americans (but not Asian Americans) to be more invested in their choices (Kim & Sherman, 2007). Taken together, these considerations suggest that the behaviors of people from more collectivistic backgrounds (interdependent construal of self) should follow less strongly from their beliefs than those who are from more individualistic backgrounds (independent construal of self).

Consistent with these explanations, recent studies have also examined how cultural background moderates the relationship between specific beliefs and behaviors. Personal beliefs or concerns about climate change predicts pro-environmental behavior less strongly among people from collectivistic than individualistic cultures, tighter than looser cultures (Eom, Kim, Sherman, & Ishii, 2016; Gelfand, Nishii, & Raver, 2006; Tam & Chan, 2017). As apposed to examining people's specific belief about an issue, we measured people's general political ideology and expected to find similar results.

The present studies examined how collectivism may shape the extent to which political ideology predicts social behaviors such as xenophobia and pro-environmental support. We examined xenophobia and pro-environmental support as outcome variables, which are highly relevant in the current political climate. Drawing from previous research, we expected that those who were more conservative would show stronger xenophobia and less pro-environmental support. However, these relationships would be weaker among high than low collectivists.

Study Overview

The purpose of this research is to first investigate whether collectivism moderates the association between ideology and social attitudes. Second, identify psychological mechanisms for this moderation. A set of four studies examined how political ideology and collectivism interact to predict various social attitudes and behaviors. We wanted to measure the phenomenon across different types of polarized issues, such as rejection of out-group members and pro-environmental support. Study 1 examined people's xenophobic response to the threat of Ebola. We expected that overall, those who were more conservative would be more xenophobic. However, the association between political ideology and xenophobia would be weaker among high than low collectivists. For Study 2, we examined an outcome variable in a completely different domain — pro-environmental support — in order to generalize the pattern established in Study 1. We expected that those who were more conservative would show less pro-environmental support, and this relationship would be weaker among high than low collectivists. Given the correlational nature of Studies 1 and 2, we wanted to test the causal role of collectivism in Study 3. We conducted an experiment where we manipulated people's collectivistic and individualistic tendencies and measured their xenophobic response to Zika threat. We aimed to establish the causal effect of collectivism on attenuating people's ideology-attitude association. In Study 4, we investigated the mechanism underlying the attenuating effect of collectivism. We measured people's pro-environmental support and importance of political ideology to self-identity (identity centrality). We expected to replicate the findings of Study 2 and test whether the

collectivism moderation could be partially explained by the lower identity centrality among high than low collectivists.

Study 1

Study 1 examined how political ideology and collectivism interactively predicted participants' xenophobic responses to Ebola threat. Xenophobia is a type of defensive response that is associated with disease threats (Faulkner, Schaller, Park, & Duncan, 2004; Navarrete & Fessler, 2006). People in regions where pathogens are prevalent exhibit more behaviors such as conformity and avoidance of out-group members (Faulkner et al., 2004; Murray, Trudeau, & Schaller, 2011; Schaller, Murray, & Bangerter, 2015).

In the United States, xenophobia is strongly associated with conservative ideology (Chandler & Tsai, 2001). Therefore, overall, we expected more conservative people to be more xenophobic. However, collectivism weakens the role of political ideology in driving individuals' actions (Heine & Lehman, 1997; Kashima, Siegal, Tanaka, & Kashima, 1992; Savani, Markus, & Conner, 2008), so we expected the association between political ideology and xenophobia to be more pronounced among low versus high collectivists. We anticipated the opposite pattern for individualism, such that the association would be weaker among low versus high individualists.

Method

Sample

A sample of $N = 1000$ that reflected U.S. general population characteristics was constructed through YouGov (YouGov, 2015), a public survey research firm. YouGov used the full 2010 American Community Survey (US Census Bureau, 2014) as a sampling frame and matched respondents on gender (52% female), age ($M = 46.46$, $SD = 17.06$), race (70.3%

White, 11.1% Black, 9.7% Hispanic, 4.8% Asian, 4.1% Other), education, region, political ideology, and political interest (for more detailed description of the sample, see Kim, Sherman, & Updegraff, 2016).

Measures and Materials

Consenting participants completed an online survey on “Public Perception of Ebola” with measures in the following order:

Collectivism/individualism. Collectivism was measured using eight items (e.g., “Learning about the traditions, customs, values, and beliefs of my family is important to me.”) ($M = 4.49$, $SD = 1.08$, $\alpha = 0.81$). Individualism was measured using six items (e.g. “It is better for me to follow my own ideas than to follow those of anyone else.”) ($M = 5.41$, $SD = .90$, $\alpha = 0.76$). Participants responded to how much they agreed or disagreed with each statements on a 7-point scale anchored at 1 (*strongly disagree*) and 7 (*strongly agree*). Items for both collectivism and individualism were adapted from Oyserman, Coon, and Kimmelmeiser (2002) (see also Oyserman & Lauffer, 2002; Triandis & Gelfand, 1998). One might assume that collectivism and individualism were the opposite ends of the same construct, therefore negatively correlate with each other. However, at the individual level, individualism and collectivism were theorized to be two different constructs (Singelis, 1994), and we found them to be positively correlated, $r(998) = .33$, $p < .001$. Thus, for our study, individualism and collectivism were entered as separate factors simultaneously in our analyses.

Ebola information. Participants read a passage about basic information on Ebola, adapted from the Centers for Disease Control and Prevention (CDC, 2014b) web page. This step was included to ensure that participants were similarly informed about the disease. The

passage provided factual information about Ebola, including the symptoms, cause, as well as history of the disease.

Xenophobia. Xenophobia was assessed with three elements. Two elements assessed outcomes directly related to Ebola: 1) prejudice toward West Africans and 2) support for restrictive travel policies. In addition to Ebola specific xenophobic measures, the other element assessed more generalized xenophobia toward outgroup members: 1) prejudice toward undocumented immigrants.

To assess the prejudice toward West Africans and undocumented immigrants, participants rated their feelings toward the groups with 6 items, 3 were positive (e.g., acceptance, sympathy, and warmth) and 3 were negative (e.g., fear, disliking, and acceptance). The scales ranged from 0 (*I do not feel this emotion at all*) to 7 (*I feel this emotion strongly*) (Stephan, Ybarra, Martinez, Schwarzwald, & Tur-Kaspa, 1998). Prejudice was the average of the negative minus the average of the positive items; higher scores indicated greater prejudice toward the group (West Africans: $M = -2.49$, $SD = 2.77$, $a = 0.72$; undocumented immigrants: $M = -0.87$, $SD = 3.45$, $a = 0.81$).

Participants then indicated their support for five restrictive policies related to Ebola, such as travel ban and quarantine (e.g., “A travel ban so that no planes can enter the United States from nations with high risk of Ebola” and “Mandatory 21-day quarantine for people coming from Liberia, Sierra Leone, Guinea”). They were given three choices: 1) “No, I would not sign the petition”; 2) “I support the policy, but do not wish to sign the petition”; or 3) “Yes, I would sign the petition in support of the policy” that formed the measure of policy support ($M = 2.20$, $SD = 0.69$, $a = 0.91$), with higher numbers indicating more support for

restrictive policies. A xenophobia composite was created with the three elements standardized ($M = 0.00$, $SD = .79$, $\alpha = 0.70$).

Political ideology. Political ideology was assessed on a 5-point scale from 1 (*very liberal*) to 5 (*very conservative*). There were 91 participants who indicated “Not Sure”, which we assigned a 3 (*moderate*) score to for analytical purposes ($M = 3.02$, $SD = 1.07$).

Results and Discussion

First, we examined the simple correlations between political ideology, collectivism, individualism and xenophobia. Political ideology was positively correlated with xenophobic tendency, $r(998) = .46$, $p < .001$, suggesting that those who were more conservative had a stronger xenophobic tendency. Collectivism was positively correlated with xenophobic tendency, $r(997) = .16$, $p < .001$ and with political ideology, $r(998) = .21$, $p < .001$. That is, more collectivistic individuals tended to be more conservative and had a stronger xenophobic tendency. Individualism was not correlated with neither xenophobia, $r(998) = .001$, $p = .97$, nor with political ideology, $r(999) = -.01$, $p = .79$ (see Table 1 for descriptive and correlation of key variables).

Table 1.

Bivariate Correlations among Political Ideology, Collectivism, Individualism, Xenophobia, and Protection Efficacy

	<i>M (SD)</i>	1.	2.	3.	4.
1. Political ideology	3.02 (1.07)	—			
2. Collectivism	4.49 (1.08)	.21***	—		
3. Individualism	5.41 (0.90)	-.01	.33***	—	
4. Xenophobia	0.00 (0.79)	.46***	.16***	.00	—

$N = 1000$

Note. *** $p < .001$.

Then, a bootstrapping analysis using PROCESS macro in SPSS (Hayes, 2012) with 2,000 resamples was conducted to examine the moderation effect of collectivism on the relationship between political ideology and xenophobia, controlling for age, gender, income, education and individualism. As expected, the moderation model was significant, $R^2 = .27$, $F(8, 868) = 40.17$, $p < .001$, and there was a significant interaction between collectivism and political ideology on xenophobia response, $b = -.12$, $95\% \text{ CI} = [-.12, -.04]$. Simple effects of ideology on xenophobia showed that although higher conservatism was associated with higher xenophobia in both high and low collectivism groups, political ideology more strongly predicts xenophobia in low collectivism group, $b = .39$, $S.E. = .03$, $t(867) = 13.01$, $p < .001$, $95\% \text{ CI} = [.33, .45]$, than in high collectivism group, $b = .21$, $S.E. = .03$, $t(867) = 7.15$, $p < .001$, $95\% \text{ CI} = [.15, .27]$ (see Fig. 1). We also examined the simple effects of collectivism on xenophobia for liberals (-1 SD political ideology) and conservatives (+1 SD political ideology). Collectivism predicted xenophobia among liberals, $b = .12$, $S.E. = .03$, $t(867) = 4.18$, $p < .001$, $95\% \text{ CI} = [.07, .18]$, but not among conservatives, $b = -.05$, $S.E. = .03$, $t(867) = -1.73$, $p = .085$, $95\% \text{ CI} = [-.08, -.11]$. This suggests that among liberals, more collectivistic people were more xenophobic, whereas collectivism did not predict xenophobia among conservatives.

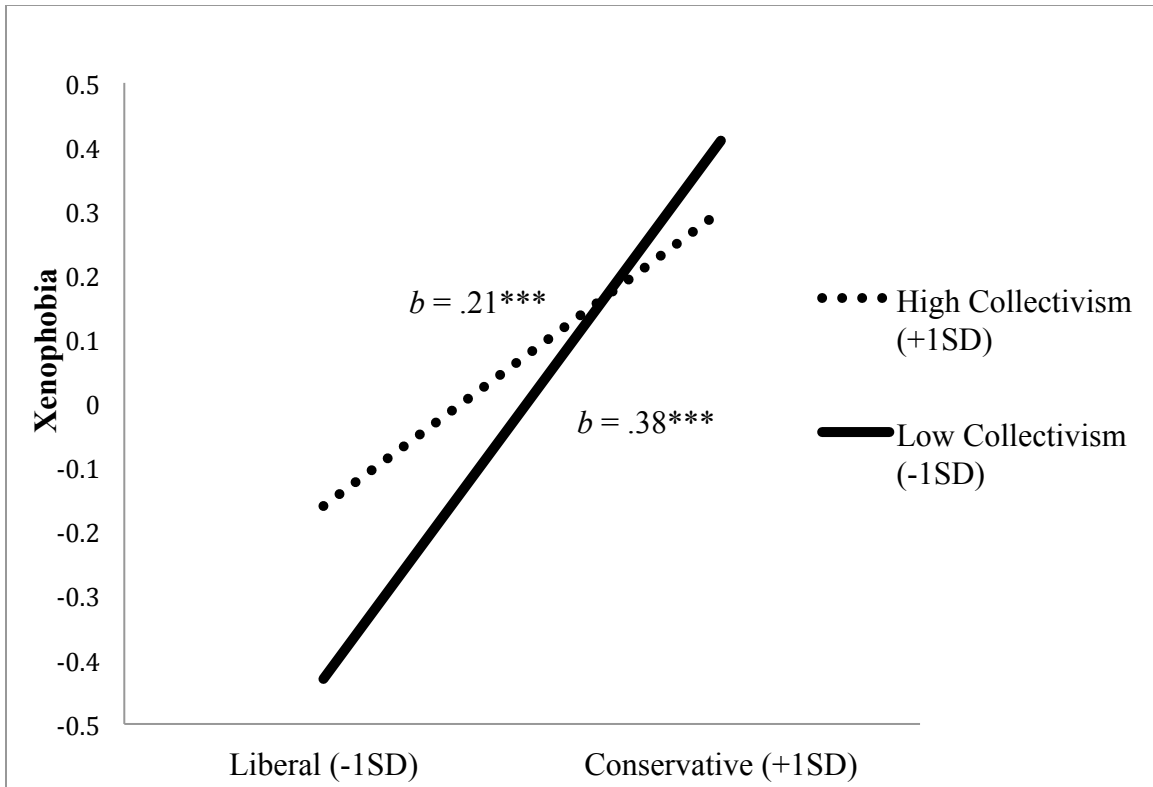


Figure 1. Political ideology predicting xenophobic responses moderated by collectivism when primed with Ebola threat. Low collectivistic group shows a steeper slope, suggesting political ideology predicts xenophobic responses more strongly in low collectivistic than high collectivistic individuals. $***p < .001$

We ran the same moderation model with individualism as the moderator, controlling for the same demographic variables and collectivism. There was no significant interaction between individualism and political ideology on xenophobia, $b = .0006$, $S.E. = .02$, $t(867) = -.02$, $p = .980$, $95\% \text{ CI} = [-.05, .05]$. The level of individualism did not influence the association between political ideology and xenophobia.

The results for collectivism were consistent with our hypotheses. When participants faced Ebola threat, more conservative individuals showed stronger xenophobia; political ideology predicted xenophobia more strongly among low than high collectivists. However, the result for individualism was inconsistent with our prediction. Individualism did not

moderate the relationship between political ideology and xenophobia. Given that Study 1 suggested collectivism (but not individualism) as a strong moderator, we focused on collectivism in Study 2, but continued to measure both constructs.

One limitation of measuring xenophobic responses in Study 1 was that both political ideology and collectivism were positively correlated with xenophobia, and hence, the interpretation of the pattern was somewhat ambiguous. In order to generalize this result, for the next study, we examined an outcome variable in a different domain that is also a politically polarized issue — support for pro-environmental actions. We expected that Pro-environmental attitude, unlike xenophobia, would be strongly associated with political ideology, but not with collectivism.

Study 2

Study 2 examined how political ideology and collectivism interactively predict American's pro-environmental support. In addition, we explored the interaction between perceived pro-environmental norm and collectivism in predicting personal pro-environmental support.

Overall, we expected more conservative people to be less supportive of pro-environmental policies and less likely to engage in pro-environmental behaviors; this relationship would be less pronounced among high than low collectivists. We also expected that perceived pro-environmental norm would predict personal pro-environmental support more strongly among high than low collectivists. This hypothesis was in line with a previous study which found that personal environmental concern predicted pro-environmental behavior among European Americans, while perceived norms about environmental behavior predicted pro-environmental action for Japanese (Eom et al., 2016). This could provide an

indirect explanation for why ideology would predict environmental support less strongly among high collectivist, as high collectivists' behaviors followed more strongly from group norms rather than their personal beliefs.¹

Method

Sample

A sample of $N = 422$ was recruited through Amazon Mechanical Turk. Sixty-four participants were excluded for failing the attention check. The data of $N = 358$ respondents was analyzed. Respondent characteristics were the following: gender (46% female), age ($M = 35.17$, $SD = 10.47$), race (71.2% Wh. Respondents' characteristics: ite, 12.3% Black, 5.9% Latinex, 4.5% Asian, 6.1% Other).

Measures and Materials

Given that one of the big factors that affect people's environmental support is their belief about climate change, we did not want to provide any information that would confirm or disconfirm their beliefs. Consenting participants completed an online survey on "Social attitudes" with the following measures:

Collectivism/individualism. Collectivism and individualism were measured using the same items described in Study 1 (collectivism: $M = 4.66$, $SD = 1.15$, $\alpha = .86$; individualism: $M = 5.45$, $SD = .84$, $\alpha = .77$; $r(357) = .43$, $p < .001$).

Pro-environmental support. Pro-environmental support was assessed with two elements: 1) support for environmental friendly policies and 2) behavioral measure of willingness to contribute to organizations combatting climate change.

¹ This study was pre-registered and can be viewed on Open Science Framework after July 31st, 2019 (see _____).

Participants indicated their support for six policies related to climate change adapted from Ding and colleagues (2011) such as signing an international treaty and increasing taxes on gasoline (e.g., “Signing an international treaty that requires the United States to cut its carbon dioxide emissions by 90% by 2050.” and “Increasing taxes on gasoline (by 25 cents per gallon) and returning the revenues to taxpayers by reducing the federal income tax.”) They were given four choices from 1 “strongly oppose” to 4 “strongly support” ($M = 2.99$, $SD = .60$, $\alpha = .81$) (Ding, Maibach, Zhao, Roser-Renouf, & Leiserowitz, 2011). Higher numbers indicated more support for policies.

The behavioral measure of willingness to contribute to pro-environmental organizations was asking participants whether they would be willing to help contribute to organizations combatting climate change by playing a game of Boggle, after the main survey had ended. Participants were told that for each word they created in Boggle, we would donate 5 cents to organizations such as Friends of the Earth. They were given two choices “yes” or “no” (yes: 49%). The number of words participants generated when playing Boggle was also coded (for those who generated at least one valid word, $M = 11.38$, $SD = 7.66$).

Perceived pro-environmental norm. Perceived norm of pro-environmental support was assessed with two items on a sliding scale ranging from 0% to 100%. Two items were: 1) “What percent of Americans do you think supports policies that help reduce climate change?” and 2) “What percent of Americans do you think are actively doing something to help reduce climate change? (i.e. reusing bags and cups, driving energy efficient vehicles, taking public transportations, buying eco friendly products, changing their diets etc...)” ($r(357) = .61$, $M = 52.58$, $SD = 18.93$).

Political ideology. Political ideology was assessed on a 5-point scale from 1 (*very liberal*) to 5 (*very conservative*) ($M = 2.83$, $SD = 1.14$).

Results and Discussion

We first examined simple correlations between political ideology, collectivism, individualism and support for pro-environmental policies. Political ideology was negatively correlated with support for pro-environmental policies, $r(357) = -.32$, $p < .001$, suggesting that those who were more conservative were less supportive of pro-environmental policies. Collectivism was positively correlated with support for pro-environmental policies, $r(357) = .11$, $p = .04$, and with political ideology, $r(357) = .33$, $p < .001$. That is, more collectivistic individuals tended to be more conservative and were more supportive of pro-environmental policies. As predicted, collectivism and political ideology differently predicted pro-environmental support. While more conservative people were less supportive of pro-environmental policies, more collectivistic people were more supportive. Individualism was positively correlated with support for pro-environmental policies, $r(357) = .15$, $p = .005$, and with political ideology, $r(357) = .18$, $p = .001$ (see Table 2 for descriptive and correlation of key variables).

Table 2.

Bivariate Correlations among Political Ideology, Collectivism, Individualism, and Policy Support

	<i>M (SD)</i>	1.	2.	3.	4.
1. Political ideology	2.83 (1.14)	—			
2. Collectivism	4.66 (1.16)	.33 ^{***}	—		
3. Individualism	5.45 (0.84)	.18 ^{**}	.43 ^{***}	—	
4. Policy support	0.00 (0.60)	-.32 ^{***}	.11 [*]	.15 ^{**}	—
<i>N</i> = 358					

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

Next, we examined the correlation between political ideology, collectivism, and pro-environmental action. Given that pro-environmental action was measured by willingness to play Boggle, a binary measure, we ran logistical regression tests. Logistical regression showed that there was no relationship between willingness to play boggle and political ideology ($\beta = .05$, $SE = .09$, $p = .560$). There was a positive relationship between willingness to play boggle and collectivism ($\beta = .36$, $SE = .10$, $p < .001$), such that more collectivistic people were more willing to play Boggle. Number of words generated was not correlated with either political ideology, $r(357) = -.05$, $p = .384$, or collectivism, $r(357) = .01$, $p = .853$. Since ideology did not predict pro-environmental action, we used support for pro-environmental policies as the outcome variable for the following moderation analysis.

A bootstrapping analysis using PROCESS macro in SPSS (Hayes, 2012) with 2,000 resamples was conducted to examine the moderation effect of collectivism on the relationship between political ideology and pro-environmental policy support, controlling for age, gender, income, education and individualism. As expected, the moderation model was significant, $R^2 = .23$, $F(8, 349) = 12.74$, $p < .001$, and there was a significant interaction

between collectivism and political ideology on pro-environmental support, $b = .08$, $S.E. = .02$, $t(348) = 3.84$, $p < .001$, 95% CI = [.04, .12]. The Simple effect of ideology on pro-environmental support showed that although higher conservatism was associated with lower pro-environmental support in both high and low collectivism groups, political ideology more strongly predicted pro-environmental support in the low collectivism group, $b = -.31$, $S.E. = .04$, $t(348) = -8.29$, $p < .001$, 95% CI = [-.38, -.24], than in the high collectivism group, $b = -.12$, $S.E. = .04$, $t(348) = -3.45$, $p < .001$, 95% CI = [-.19, -.05] (see Fig. 2). We also examined the simple effects of collectivism on pro-environmental support for liberals and conservatives. Collectivism predicted pro-environmental support among conservatives, $b = .18$, $S.E. = .04$, $t(348) = 4.18$, $p < .001$, 95% CI = [.10, .26], but not among liberals, $b = -.003$, $S.E. = .04$, $t(348) = -.07$, $p = .94$, 95% CI = [-.07, .07]. This suggested that among conservatives, those who were more collectivistic were more supportive of pro-environmental policies; however, collectivism was not associated with pro-environmental support among liberals.

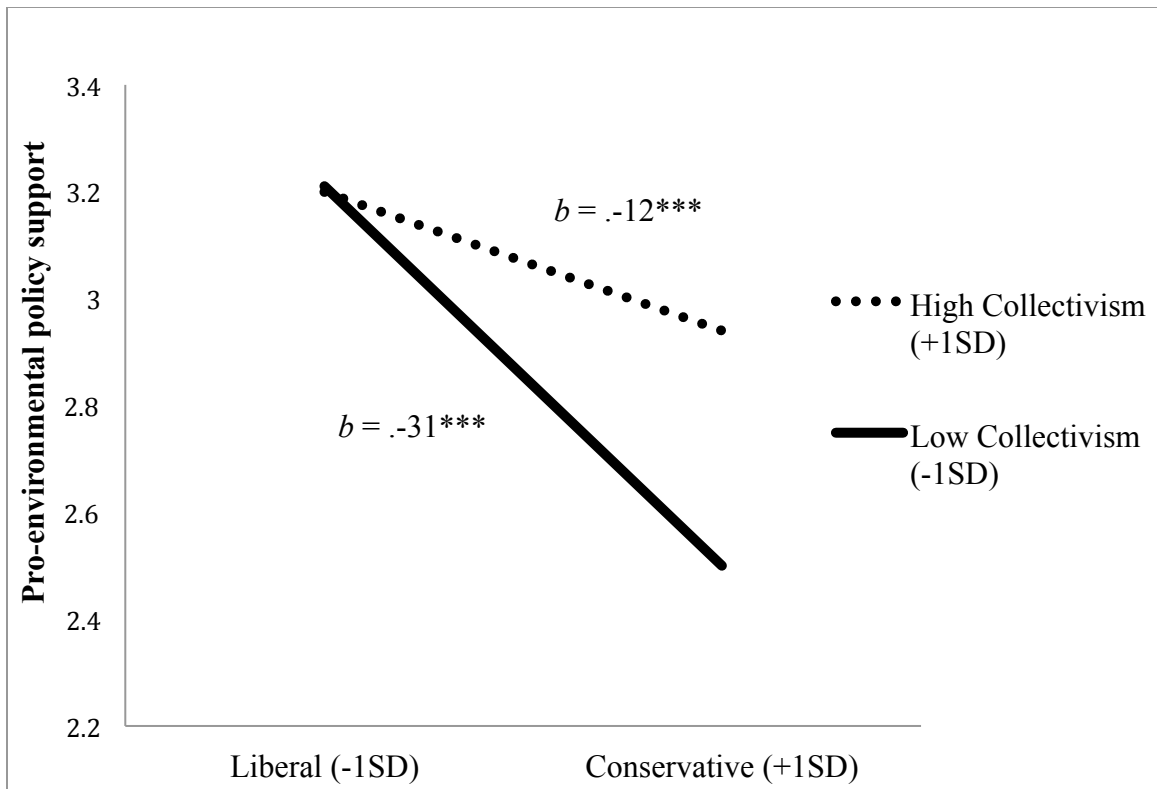


Figure 2. Political ideology predicting pro-environmental policy support moderated by collectivism. Low collectivism group shows a steeper slope, suggesting political ideology predicts support for pro-environmental policies more strongly in low collectivistic than high collectivistic individuals. *** $p < .001$

We ran the same moderation model as an exploratory analysis, with individualism as the moderator, controlling for the same demographic variables and collectivism. There was no significant interaction between individualism and political ideology on pro-environmental support, $b = .04$, $S.E. = .03$, $t(348) = 1.28$, $p = .200$, $95\% \text{ CI} = [-.02, .10]$.

Secondary Analysis: Perceived Pro-environmental Norm as Predictor

First, we established the correlations between perceived norm, collectivism and pro-environmental policies. Perceived pro-environmental norm was positively correlated with personal support for pro-environmental policies, $r(356) = .20$, $p < .001$, and collectivism, $r(356) = .40$, $p < .001$. Those who were more collectivistic perceived a stronger pro-

environmental norm, and those who perceived a stronger norm were more supportive of pro-environmental policies.

Then, a bootstrapping analysis using PROCESS macro in SPSS (Hayes, 2012) with 2,000 resamples was conducted to examine the moderation effect of collectivism on the relationship between perceived pro-environmental norm and personal pro-environmental policy support, controlling for age, gender, income, education and individualism. As expected, there was a significant interaction between collectivism and perceived norm on policy support, $b = .004$, $S.E. = .002$, $t(348) = 2.34$, $p = .019$, 95% CI = [.001, .01]. In line with previous findings (Eom et al., 2016), perceived norm predicted pro-environmental policy support in high collectivism group, $b = .01$, $S.E. = .002$, $t(348) = 4.06$, $p < .001$, 95% CI = [.005, .01], but not in low collectivism group, $b = .0002$, $S.E. = .003$, $t(348) = .07$, $p = .941$, 95% CI = [-.01, .01]. The findings indicated that among high collectivist, those who perceived a stronger pro-environmental norm were more supportive of pro-environmental policies; however, perceived norm did not predict environmental policy support among low collectivists.

As an exploratory analysis, we ran the same moderation test as above but with individualism as a moderator and swapping collectivism with individualism as a covariate. There was a significant interaction between individualism and perceived norm on policy support, $b = .005$, $S.E. = .002$, $t(348) = 2.46$, $p = .014$, 95% CI = [.001, .01]. Unexpectedly, perceived norm predicted pro-environmental policy support in the high individualism group, $b = .01$, $S.E. = .002$, $t(348) = 4.13$, $p < .001$, 95% CI = [.005, .01], but not in the low individualism group, $b = .001$, $S.E. = .003$, $t(348) = .29$, $p = .774$, 95% CI = [-.005, .01]. This suggested that among high individualists, those who perceived a stronger pro-environmental

norm were more supportive of pro-environmental policies; however, perceived norm did not predict environmental policy support among low individualists.

Using pro-environmental policy support as outcome variable, the main results of Study 2 were consistent with our hypotheses and successful in generalizing the patterns found in Study 1. More conservative individuals showed less support for pro-environmental policies; political ideology predicted pro-environmental support more strongly among low than high collectivists. The result for individualism was also consistent with Study 1, such that individualism did not moderate the relationship between political ideology and pro-environmental support.

In line with our secondary hypothesis, perceived norm predicted personal pro-environmental support among high collectivists but not among low collectivists. Although we did not directly test the mechanism underlying the moderating effect of collectivism on the relationship between political ideology and pro-environmental support, our secondary analysis revealed perceived norm as a potential factor guiding high collectivists' behaviors. High (but not low) collectivists allowed group norms to guide their behaviors, while low collectivists were more likely to act according to their personal ideology than high collectivists.

Different from what we expected, Boggle as a behavioral measure of support for environment was not predicted by political ideology. As almost half of the participants agreed to play Boggle, we suspected that they might have agreed to play Boggle for reasons other than wanting to support the environment. This could have caused boggle to be a poor measure for pro-environmental action.

The exploratory analysis with individualism moderating the link between perceived

norm and pro-environmental support yielded unexpected results. While one would expect the moderation pattern to be the opposite of collectivism, it was identical, such that perceived norm predicted pro-environmental support among high (but not low) individualists. We speculated that this could be due to high individualists exhibiting the false consensus effect (Park, 2012; Yamaguchi, Kuhlman, & Sugimori, 1995). The high individualists who were more pro-environmental, were more likely to think that others were just as pro-environmental as they were, which would result in a positive correlation between pro-environmental support and perceived pro-environmental norm among high individualists. Essentially, we suspected that the similar positive correlation between perceived norm and pro-environmental support among high collectivists and high individualists were due to different reasons. For high collectivists, as they perceived stronger pro-environmental norms, they were more likely to support pro-environmental policies; for high individualists, their level of support for pro-environmental policies guided their perceived pro-environmental norms due to false consensus effect. Additional experimental research would be needed to test the role of perceived norm in driving behaviors.

Studies 1 and 2 successfully established collectivism as a moderator between ideology and pro-environmental support. Given that our main findings were consistent across two correlational studies, we wanted to establish the causal effect of collectivism in Study 3. Therefore, we manipulated collectivism and individualism.

Study 3

Study 3 was an experimental study, examining the causal effect of collectivism on the association between political ideology and Americans' xenophobic responses to the threat of Zika. Drawing from the results of first two studies, we expected more conservative people to

be more xenophobic; this relationship would be less pronounced among those primed with collectivistic than individualistic tendencies.

Method

Sample

A sample of $N = 900$ that reflected U.S. general population characteristics was constructed through YouGov (YouGov, 2015). To assure our manipulation was in effect, 143 participants who took longer than 30 minutes to complete the survey were excluded from the analysis. Below are the respondents' characteristics: gender (55% female), age ($M = 47.84$, $SD = 16.50$), race (76.1% White, 9.9% Black, 8.3% Latinex, 1.8% Asian, 3.8% Other). This data was collected during the height of Zika Outbreak in 2016.

Measures and Materials

Consenting participants completed an online survey on "Social attitudes" with measures in the following order:

Collectivism/individualism manipulation. Participants were randomly assigned to three conditions: collectivism, individualism and control. They were given 45 seconds to read a passage, and then instructed to reframe the passage in their own words by typing two to three sentences in a textbox. To manipulate collectivistic orientation, participants read "My family and I have a number of interesting stories to tell. Although I can barely remember some of these, there are many I can recall quite clearly. In fact, I can often remember details such as conversations that took place between my family and me or the things they thought were important for me to know. Looking back, I can see to what extent my family and I share many of the same important memories." To manipulate individualistic orientation, they read "I have a number of very personal experiences and stories in my life. Although I can barely

remember some of these, there are many I can recall quite clearly. In fact, I can often remember details such as the way I insisted that the only way I could be happy was to make my own decisions. Looking back I can see to what extent my personal freedom has been important to who I am.” Those in the control group read about a furniture store.

Zika information. Participants read a passage about basic information on Zika. The passage included causes, ways of transmission, symptoms, and alerts issued (CDC, 2016). The information was presented to the participants to ensure that they were similarly informed about Zika.

Xenophobia. Xenophobia was assessed with three elements. Two elements assessed outcomes directly related to Zika: 1) prejudice toward people from regions with high risk of Zika (e.g. South or Central America) and 2) support for restrictive policies. In addition to zika specific xenophobic measures, the other element assessed more generalized xenophobia toward outgroup members: 1) prejudice toward refugees from the Middle East.

Prejudice toward people from regions with high risk of Zika and Middle Eastern refugees were assessed and calculated as in Study 1 (Zika: $M = -2.64$, $SD = 2.62$, $\alpha = 0.68$; refugees: $M = -1.07$, $SD = 3.55$, $\alpha = 0.83$). Participants then indicated their support for five restrictive policies related to Zika, such as travel ban and ban on blood banks (e.g., “A travel ban so that no planes can enter the United States from nations with high risk of Zika virus.” and “A ban on blood banks accepting donated blood from people for 28 days if they have traveled to a country with a Zika outbreak.”). They were given three choices: 1) “No, I would not sign the petition.”; 2) “I support the policy, but do not wish to sign the petition.”; or 3) “Yes, I would sign the petition in support of the policy.” ($M = 1.66$, $SD = 0.67$, $\alpha = 0.84$).

Higher numbers indicated more support for restrictive policies. A xenophobia composite was created with the three elements standardized ($M = 0.02$, $SD = .76$, $\alpha = 0.60$).

Political ideology. Political ideology was assessed on a 5-point scale from 1 (*very liberal*) to 5 (*very conservative*) ($M = 2.95$, $SD = 1.12$).²

Results and Discussion

First, we established the relationship between two key measured variables: political ideology and xenophobia. Political ideology was positively correlated with xenophobia, $r(756) = .45$, $p < .001$, suggesting that those who were more conservative were more xenophobic.

Then, a bootstrapping analysis using PROCESS macro in SPSS (Hayes, 2012) with 2,000 resamples was conducted to examine the moderation effect of cultural orientation manipulations on the relationship between political ideology and xenophobia. In this model, there were two main comparisons: 1) individualism vs. control, and 2) collectivism vs. control condition. The overall moderation model was significant, $R^2 = .21$, $F(5, 751) = 38.87$, $p < .001$. After examining the interaction between ideology and manipulations on xenophobia, we found that there was a significant interaction between individualism vs. control and political ideology, $b = -.12$, $S.E. = .05$, $t(750) = -2.16$, $p = .031$, 95% CI = $[-.22, -.01]$, and a marginal interaction between collectivism vs. control and political ideology, $b = -.11$, $S.E. = .06$, $t(750) = -1.93$, $p = .054$, 95% CI = $[-.22, .001]$. We re-ran the moderation model, requesting the other comparison: 1 individualism vs. collectivism. Different from hypothesized, the interaction between collectivism vs. individualism and political ideology

² The analysis plan for this study was pre-registered and can be viewed on Open Science Framework after July 31st, 2019 (see <https://osf.io/bjydh/>).

was not significant, $b = .01$, $S.E. = .05$, $t(750) = .14$, $p = .89$, 95% CI = [-.10, .11]. To follow up on interactions, we compared the simple slopes of ideology predicting xenophobia for three manipulation groups. Political ideology predicted xenophobia more strongly among the control group, $b = .38$, $S.E. = .04$, $t(750) = 9.58$, $p < .001$, 95% CI = [.30, .46], than those primed with individualistic, $b = .27$, $S.E. = .04$, $t(750) = 7.30$, $p < .001$, 95% CI = [.19, .34], and collectivistic orientations, $b = .27$, $S.E. = .04$, $t(750) = 6.83$, $p < .001$, 95% CI = [.19, .35] (see Fig. 3).

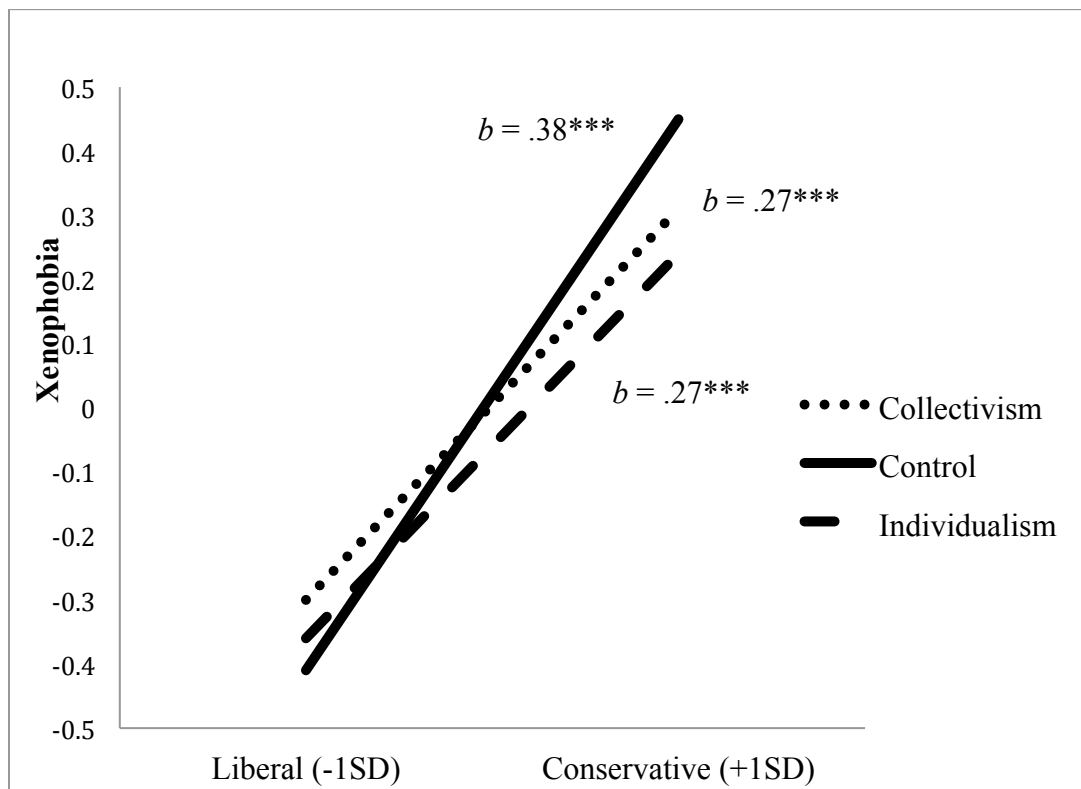


Figure 3. Political ideology predicting xenophobia moderated by manipulations. Control group shows a steeper slope, suggesting political ideology predicts support for pro-environmental policies more strongly in control than those who received the collectivistic and individualistic manipulations. *** $p < .001$

These results suggested that political ideology predicted xenophobia more strongly among the control group compared to people primed with collectivistic and individualistic

orientation. Moreover, there was no difference in the extent to which political ideology predicted xenophobia between those primed with collectivism and individualism. These results were inconsistent with our hypothesis, as we expected a weaker relationship between political ideology and xenophobia among those primed with collectivism than individualism.

Exploratory Analysis

To further understand how the manipulations influenced the associations between political ideology and xenophobia, we conducted descriptive analysis. It appeared that there might be evidence for curvilinear effects that we had not anticipated, especially for collectivism and individualism manipulations. They showed descriptive evidence of cubic trends, which were S-shaped for collectivism and Z-shaped for individualism (see Fig. 5). For control and collectivism conditions, the positive correlation between ideology and xenophobia tended to taper off as it got to high level of conservatism. However, for individualism condition, the positive correlation between ideology and xenophobia appeared to be strengthened at high level of conservatism. It also appeared that the people with the highest xenophobic responses were conservatives primed with individualism.

Building on our descriptive examination, we followed up with exploratory analysis accounting for the cubic and quadratic trends of the associations between political ideology and xenophobia. We hoped to further understand how the manipulations influence people's xenophobic responses.

Following procedures outlined by Aiken and West (1991), we conducted hierarchical regression analysis. Our main interest of comparison was between the collectivism and individualism conditions, so we dummy coded the three manipulations comparing: 1) individualism vs. collectivism, and 2) individualism vs. control. Dummy coded

manipulations and political ideology were entered on Step 1; manipulations X political ideology were entered on Step 2; quadratic term of political ideology and its interaction with manipulations were entered on Step 3; cubic term of political ideology and its interaction with manipulations were entered on Step 4.

On Step 1, manipulations and political ideology explained 20% of the variance in xenophobia, $F(3, 753) = 62.64, p < .001$. An inspection of the regression coefficients indicated that only political ideology was a significant unique predictor of xenophobia. On step 2, the interaction between manipulations and political ideology explained an additional 0.6% of the variance in xenophobia, which was marginal, $F(2, 751) = 2.77, p = .063$. Only control vs. individualism X political ideology was a significant unique predictor of xenophobia. On step 3, quadratic term of political ideology and its interaction with manipulations explained an additional 1.8 % of the variance in xenophobia, which was significant, $F(3, 748) = 5.85, p = .001$. Control vs. individualism X political ideology squared was a significant unique predictor of xenophobia. On step 4, cubic term of political ideology and its interaction with manipulations explained an additional 0.8 % of the variance in xenophobia, which was marginal, $F(3, 745) = 2.51, p = .058$. Both the cubic term of political ideology, and its interaction with individualism vs. collectivism were significant unique predictors of xenophobia. Overall, the four sets of predictors explained approximately 23% of the variance in xenophobia, $F(11, 745) = 20.41, p < .001$ (see Table 3).

Table 3.

Hierarchical Regression Analysis Predicting Xenophobia

<i>Variable</i>	R^2	ΔR^2	β	sr^2	r
<u>Step 1</u>	.200 ^{***}	.197 ^{***}			
Ideology	—	—	.304 ^{***}	.197	.445
D1	—	—	.067	.001	-.013
D2	—	—	.063	.001	.051
<u>Step 2</u>	.206 ^{***}	.006			
D1 X Ideology	—	—	.116 ^{***}	.100	.120
D2 X Ideology	—	—	.007	.010	.134
<u>Step 3</u>	.224 ^{***}	.018 ^{**}			
Ideology ²	—	—	.004	.015	.004
D1 X Ideology ²	—	—	-.104 ^{**}	.027	-.084
D2 X	—	—	-.076	.027	-.061
Ideology²					
<u>Step 4</u>	.232 ^{***}	.008			
Ideology ³	—	—	.055 [*]	.015	.065
D1 X Ideology ³	—	—	-.049	.027	-.039
D2 X Ideology ³	—	—	-.105 ^{**}	.027	-.088

Note: Dummy code: D1 = control vs. individualism, D2 = collectivism vs. individualism. Ideology = political ideology. DV = xenophobia.

* $p < .05$, ** $p < .01$, *** $p < .001$, two-tailed for R^2 , ΔR^2 and β .

These patterns suggested that the relationship between political ideology and xenophobia is nuanced. The cubic term of political ideology interacting with individualism vs. collectivism significantly predicting xenophobia hinted that at extreme ends of ideology,

individualism accentuated the relationship between ideology and xenophobia, while collectivism attenuated it(see Fig. 4). Although exploratory, these results provided interesting insight into how collectivism/individualism and political ideology interact to predict xenophobia.

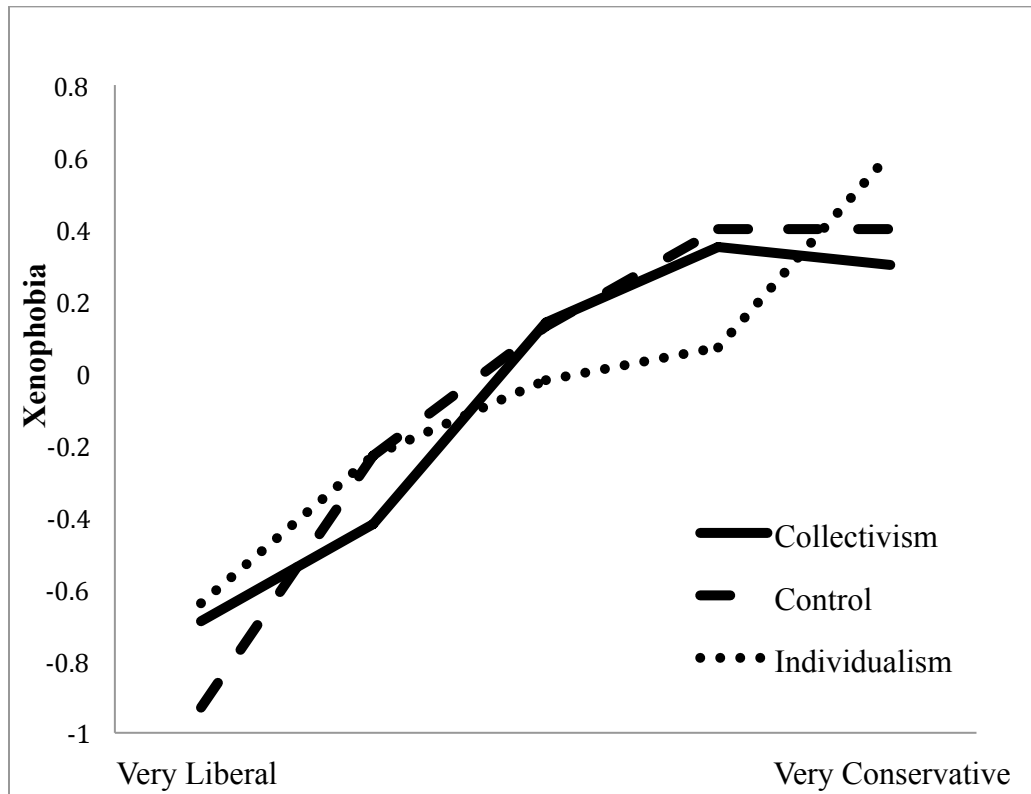


Figure 4. Political ideology at each level predicting xenophobia, separate by manipulation. The trend for collectivism group is S-shaped, while the trend for individualism group is Z-shaped.

So far, three studies have explored the moderating effect of collectivism on the association between political ideology and social attitudes. Two correlational studies showed that political ideology predicted social attitudes less strongly among high than low collectivists. An Experimental study hinted that extreme ends of political ideology, individualism accentuating political polarization while collectivism attenuating it. Next, we wanted to understand why collectivism has such effect.

Study 4

Study 4 aimed to replicate the findings of Study 2 and examine the mechanism underlying the attenuating effect of collectivism. We tested importance of political ideology to self-identity (identity centrality) as a mediator of the interactive relationship between political ideology and collectivism on pro-environmental support.

Research showed that partisan social identification accounted for bipolar partisan attitudes and behaviors above and beyond what was explained by partisan strength and ideology. In other words, the group-identity aspect of partisanship contributed to political actions and attitudes more than partisan strength and ideology did (Greene, 2004). In addition, People with more interdependent sense of self placed higher values on their relationship with others, whereas those with more independent sense of self valued discovering and expressing their inner attributes more (e.g. Markus & Kitayama, 1991). We theorized that collectivists would place less importance on their personal beliefs as their social connections provided them with a sense of identity, while individualists would feel the need to express their beliefs to establish their identity. We hypothesized that, as high collectivists have a tighter social network and a more interdependent construal of self (e.g. Hofstede, 1983; Markus & Kitayama, 1991), their political ideology would not play as crucial a role in their personal identity as it would for low collectivists. This difference in identity centrality would explain why political ideology predicted environmental support less strongly among high than low collectivists.

Method

Sample

A sample of $N = 483$ was recruited through Amazon Mechanical Turk. Sixty-four

participants were excluded for failing the attention checks. The data of $N = 419$ respondents were analyzed. Below were the respondents' characteristics: gender (40% female), age ($M = 34.33$, $SD = 10.95$), race (71.1% White, 7.9% Black, 8.1% Latinex, 6.7% Asian, 6.2% Other).

Measures and Materials

Consenting participants completed an online survey on "Social attitudes" with the following measures:

Identity centrality. Importance of political ideology to self-identity was measured with four items. These items were adapted from the importance to identity subscale in collective self-esteem scale (Luhtanen & Crocker, 1992). Participants indicated their agreement with items on a 7-point scale anchored at 1 (*strongly disagree*) and 7 (*strongly agree*) " (e.g., "My political ideology is an important reflection of who I am." and "Overall, my political ideology has very little to do with how I feel about myself.") ($M = 4.01$, $SD = 1.46$, $\alpha = .83$).

Collectivism/individualism (collectivism: $M = 4.54$, $SD = 1.16$, $\alpha = .86$; individualism: $M = 5.39$, $SD = .89$, $\alpha = .80$; $r(418) = .28$, $p < .001$), support for pro-environmental policies ($M = 2.98$, $SD = .65$, $\alpha = .82$), perceived pro-environmental norm ($r(418) = .50$, $M = 51.65$, $SD = 18.25$), and political ideology ($M = 2.79$, $SD = 1.21$) were measured with the same items as described in Study 2. ³

Results

First we examined the simple correlations between the key variables. Collectivism

³ This study was pre-registered and can be viewed on Open Science Framework after July 31st, 2019 (see _____).

was positively correlated with political ideology, $r(418) = .26, p < .001$, but not with pro-environmental policies support, $r(418) = -.01, p = .82$. That is, more collectivistic individuals tended to be more conservative. Political ideology was negatively correlated with support for pro-environmental policies, $r(418) = -.45, p < .001$, suggesting that those who were more conservative were less supportive of pro-environmental policies. It is important to note that collectivism was not associated with pro-environmental support while political ideology was. This suggested that although collectivism and conservatism were positively correlated, they were two distinct constructs. Individualism was positively correlated with support for pro-environmental policies, $r(418) = .17, p = .001$, but not with political ideology, $r(418) = .08, p = .123$ (see Table 4 for descriptive and correlation of key variables).

Table 4.

Bivariate Correlations among Political Ideology, Collectivism, Individualism, Pro-environmental support, and Identity Centrality

	<i>M (SD)</i>	1.	2.	3.	4.
1. Political ideology	2.79 (1.21)	—			
2. Collectivism	4.54 (1.17)	.26 ^{***}	—		
3. Individualism	5.39 (0.89)	.08	.28 ^{***}	—	
4. Environmental support	2.98 (0.65)	-.45 ^{***}	-.01	.17 ^{**}	—
5. Identity centrality	4.01 (1.46)	-.15 ^{**}	-.16 ^{**}	.04	.10 [*]

N = 1000

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

Next, a bootstrapping analysis using PROCESS macro in SPSS (Hayes, 2012) with 2,000 resamples was conducted to examine the moderation effect of collectivism on the relationship between political ideology and pro-environmental policy support, controlling the

same variables as in Studies 1 and 2. As expected, the moderation model was significant, $R^2 = .30$, $F(8, 408) = 22.27$, $p < .001$, and there was a significant interaction between collectivism and political ideology on pro-environmental support, $b = .08$, $S.E. = .02$, $t(407) = 4.22$, $p < .001$, 95% CI = [.04, .12]. A Simple effect of ideology on pro-environmental support showed that although higher conservatism was associated with lower pro-environmental support in both high and low collectivism groups, political ideology predicted pro-environmental support more strongly among low collectivists, $b = -.35$, $S.E. = .04$, $t(407) = -9.98$, $p < .001$, 95% CI = [-.42, -.28], than high collectivists, $b = -.16$, $S.E. = .03$, $t(407) = -5.17$, $p < .001$, 95% CI = [-.22, -.10] (see Fig. 5). This moderation replicated the findings of Study 2.

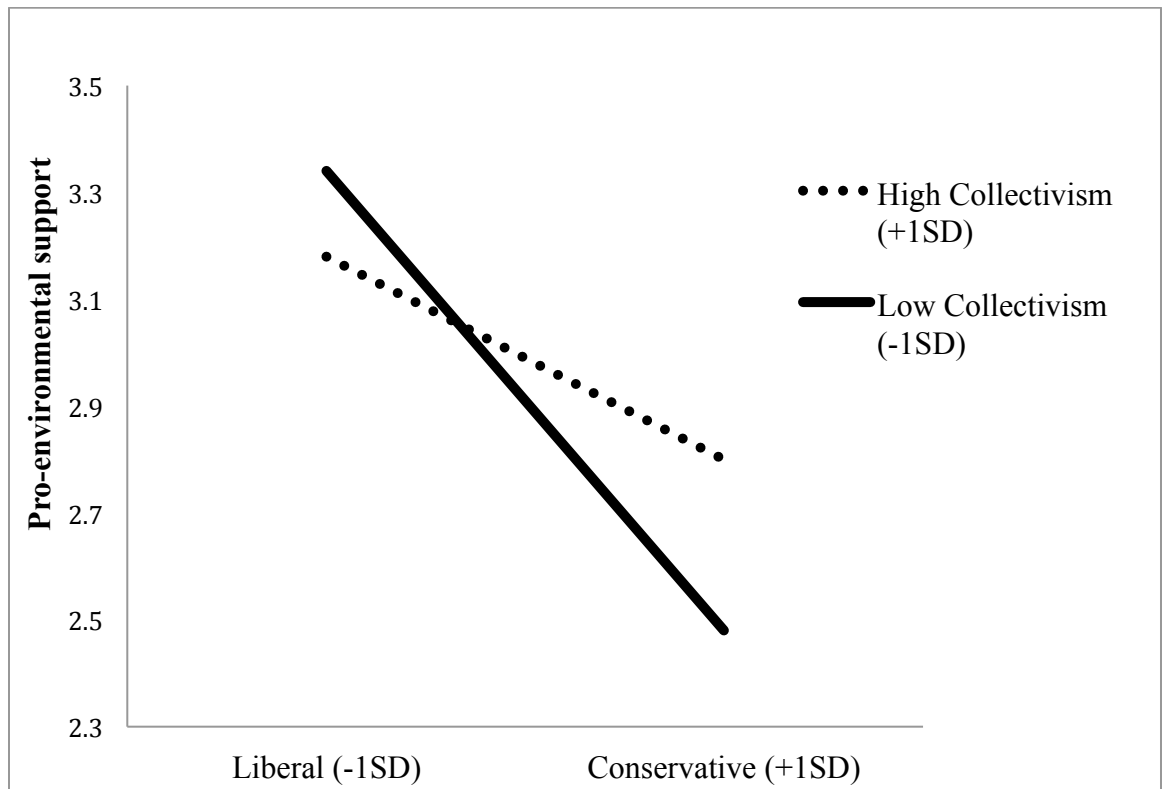


Figure 5. Political ideology predicting pro-environmental policy support moderated by collectivism. Low collectivism group shows a steeper slope, suggesting political ideology predicts support for pro-environmental policies more strongly in low collectivistic than high collectivistic individuals. *** $p < .001$

We also examined the simple effects of collectivism on pro-environmental support for liberals and conservatives. Collectivism positively predicted pro-environmental support more strongly among conservatives, $b = .13$, $S.E. = .04$, $t(407) = 3.58$, $p < .001$, 95% CI = [.06, .21], but negatively predicted pro-environmental support among liberals, $b = -.07$, $S.E. = .03$, $t(407) = -2.03$, $p = .04$, 95% CI = [-.13, .002]. This suggested that among conservatives, more collectivistic participants were more supportive of pro-environmental policies; among liberals, more collectivistic people were less supportive of pro-environmental policies. Overall, more conservative people were found to be less pro-environmental and more liberal people were more pro-environmental. However, at high level of conservatism (low pro-environmental support), high collectivists were more pro-environmental than low collectivists; at high level of liberalism (high pro-environmental support), high collectivists were less pro-environmental than low collectivists. This is in line with the exploratory findings of Study 3, which hinted that collectivism attenuated political polarization.

We ran the same moderation model as an exploratory analysis, with individualism as the moderator, controlling for the same demographic variables and collectivism. There was no significant interaction between individualism and political ideology on pro-environmental support, $b = .04$, $S.E. = .03$, $t(417) = 1.66$, $p = .098$, 95% CI = [-.01, .09].

These results were consistent with those found in Studies 1 and 2. There was a consistent pattern of collectivism weakening the association between political ideology and social attitudes. We wanted to examine the mechanism underlying the attenuating effect of collectivism.

Mediated Cultural Moderation Analysis: Identity Centrality as Mediator

First, we establish the correlation between identity centrality and key variables. Collectivism was positively correlated with identity centrality, $r(418) = .16, p = .001$. That is, more collectivistic people perceived political ideology to be more important to their identity, which was contrary to our prediction. Political ideology was negatively correlated with identity centrality, $r(418) = -.15, p = .002$, suggesting that those who were more conservative believed political ideology was less important to their self-identity. Identity centrality was positively correlated with support for pro-environmental policies, $r(418) = .10, p = .034$. People who believed political ideology was more important to their identity were more supportive of pro-environmental policies (see Table 2 for descriptive and correlation of key variables).

To examine the mediating role of importance of political ideology to self-identity (identity centrality), we conducted a mediated cultural moderation analysis, controlling for the same variables as the previous analysis (following the procedure outlined in Muller et al., 2005). Through the series of analysis, we tested whether identity centrality of political ideology varies along collectivism, and whether the interaction between identity centrality and political ideology mediates the interaction between collectivism and political ideology on pro-environmental support. The critical part of this analysis was to enter two interactions terms: (1) political ideology by collectivism and (2) political ideology by identity centrality on environmental support simultaneously in the model. This would allow us to test the hypothesis, which in statistical terms stated that when entered simultaneously, the original interaction involving collectivism (see the box with dark frame in Fig. 6) would become non-significant or weaker (see the box with dotted frame in Fig. 7), but the interaction involving

identity centrality would significantly predict environmental support (see the box with dark frame in Fig. 7).

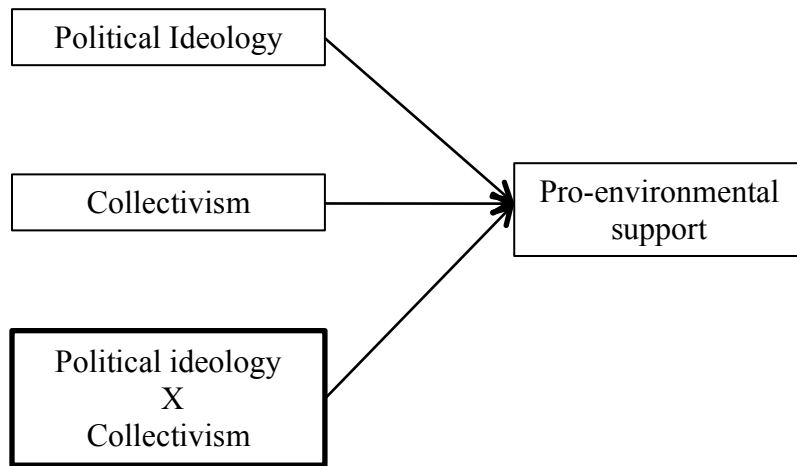


Figure 6. Regression model of original collectivism moderation on the relationship between political ideology and support for pro-environmental policies.

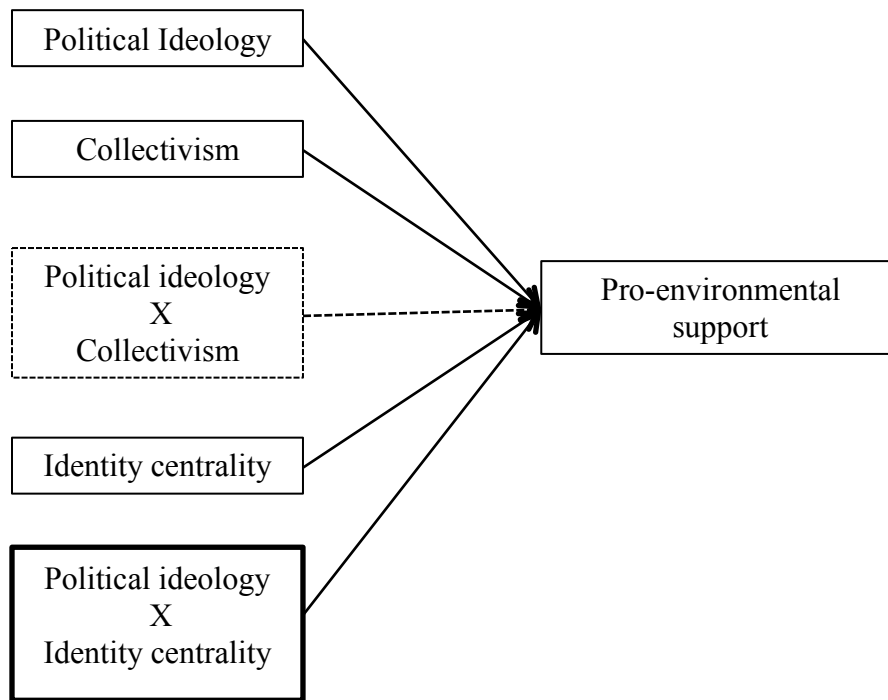


Figure 7. Regression model mediated cultural moderation. We expected that the interaction in dotted frame would be replaced (weakened) by the interaction in the dark frame.

In the first regression equation, environmental support was regressed onto ideology, collectivism, and their interaction. There was a main effect of political ideology, $\beta = -.48$, $b = -.26$, $SE = 0.02$, 95% CI = [-.30, -.21], $p < .001$, but not collectivism, $\beta = .06$, $b = .03$, $SE = 0.03$, 95% CI = [-.02, .09], $p = .190$. Replicating Study 2, the interaction was significant, $\beta = .18$, $b = .08$, $SE = 0.02$, 95% CI = [.04, .12], $p < .001$.

In the second regression equation, identity centrality was regressed on ideology, collectivism, and their interaction. There were main effects of political ideology, $\beta = -.26$, $b = -.31$, $SE = 0.06$, 95% CI = [-.43, -.19], $p < .001$, and collectivism, $\beta = .27$, $b = .22$, $SE = 0.07$, 95% CI = [.14, .40], $p < .001$. The interaction was also significant, $\beta = .14$, $b = .15$, $SE = 0.05$, 95% CI = [.05, .25], $p = .003$. Contrary to our prediction, more collectivistic people perceived political ideology to be more important to their self-identity. The significant interaction suggested that people who were more conservative perceived political ideology to be less important to their self-identity, and this relationship was more pronounced among low collectivists than high collectivists.

Finally, in the third regression equation, pro-environmental support was regressed on ideology, collectivism, ideology by collectivism interaction, identity centrality, and ideology by identity centrality interaction. The results indicated that ideology by collectivism interaction was still significant, $\beta = .19$, $b = .09$, $SE = 0.02$, 95% CI = [.05, .12], $p < .001$, and the ideology by identity centrality interaction was also significant, $\beta = -.14$, $b = -.05$, $SE = 0.02$, 95% CI = [-.08, -.02], $p = .002$ (see Table 5 for regression table). This meant that our mediation cultural moderation model did not successfully explain the attenuating effect of collectivism. Given that more collectivistic people believed their political ideology was more important to their self-identity, as opposed to less important as we expected, it follows that

the mediated cultural moderation results did not support our hypothesis. Identity centrality did not explain the moderating effect of collectivism on the association between political ideology and pro-environmental support.

Table 5

Regression Results for Mediated Cultural Moderation

Predictor	Regression 1 criterion: Pro-environmental support		Regression 2 criterion: Identity centrality		Regression 3 criterion: Pro-environmental support	
	β (b)	t	β (b)	t	β (b)	t
Political ideology	.48 (-.26)	-10.72***	-.26 (-.31)	-5.13***	-.44 (-.23)	-9.23***
Collectivism	-.06 (-.03)	1.31	.22 (.27)	4.08***	.06 (.04)	1.36
Ideology X Collectivism	.18 (.08)	4.22***	.14 (.15)	2.98**	.19 (.09)	4.44***
Identity centrality					-.02 (-.01)	-.42
Ideology X Identity centrality					-.14 (-.05)	-3.18**

(following the procedure outlined in Muller et al., 2005; Kim & Sherman, 2007)

*p<.05, **p<.01, ***p<.001

General Discussion

Three studies found consistent patterns of political ideology and collectivism interactively predicting social attitudes. The more conservative people were, the stronger their xenophobic tendencies, and the less they supported pro-environmental policies. However, individual level collectivism shaped the extent to which political ideology predicted xenophobia and pro-environmental support. Political ideology predicted xenophobia and pro-environmental support more strongly among low collectivists than high collectivists. These patterns were in line with previous research, which found that a stronger collectivistic value weakened the importance of personal ideologies and preferences in shaping individuals' actions (Heine & Lehman, 1997; Kashima, Siegal, Tanaka, & Kashima, 1992; Savani, Markus, & Conner, 2008).

The secondary analysis in Study 2 (perceived norm X collectivism on pro-

environmental support) revealed that perceived pro-environmental norm predicted personal pro-environmental support among high collectivists but not among low collectivists. This pattern was in line with previous research, which found perceived norm predicted individual behavior among people from collectivistic (but not individualistic) cultures, (Eom et al., 2016). Although this was not a direct test of the mechanism underlying the weaker relationship between ideology and attitudes among high than low collectivist, it suggested perceived norm as a potential factor that drove high collectivist' behaviors more strongly than low collectivists'.

Although our predicted analysis in Study 3 (manipulated collectivism and individualism) did not support our hypothesis, the exploratory analysis provided an interesting perspective on how collectivism and individualism independently influenced the association between political ideology and xenophobic responses. It unveiled the nuanced difference in how ideology predicted xenophobia at varying levels of conservatism/liberalism and hinted at the role of individualism accentuating ideological polarization whereas collectivism attenuating it.

Our attempt to identify the mechanism underlying the attenuating effect of collectivism in Study 4 was unsuccessful. Identity centrality did not explain the key moderation. Contrary to our prediction, more collectivistic people perceived political ideology to be more important to their self-identity. Perhaps within America, high collectivism at an individual level functioned differently from cultural level collectivism/interdependence. Thus, our assumption of political ideology being less central to high collectivists' self-identity due to their more interdependent construal of self was not supported. In addition, our identity centrality measure might not have been ideal. It was a

subscale of collective self-esteem scale, which might have measured centrality of party affiliation rather than centrality of political ideology. Perhaps measuring relative salience or relative importance of political ideology to self-concept would better capture our construct of identity centrality.

This set of studies found a consistent relationship between political ideology, collectivism, and social attitudes. It examined political ideology as a general form of personal belief, adding to previous research which found similar pattern for specific beliefs, like environmental concern, predicting specific behaviors, like environmental support (Kim et al., 2016). While country level collectivism was found to moderate the relationship between personal beliefs and behaviors (e.g. Heine & Lehman, 1997; Kashima et al., 1992), we found that individual level collectivism served a similar function. Our main hypothesis — there would be a weaker association between political ideology and social attitudes among high than low collectivists — was replicated across different outcome domains and samples of varying characteristics.

Limitations and Future Directions

While people often think about collectivism and individualism as two opposite ends of a spectrum, at an individual level, they are actually two concepts that are somewhat related to each other (Singelis, 1994). Indeed, these studies found that at an individual level, collectivism and individualism positively correlated with each other. One way we addressed this limitation was by controlling for individualism in the moderation analyses. We analyzed whether individualism would moderate the relationships between political ideology and attitudes, and found that it did not. This suggested that low collectivism is not the equivalent of individualism. Being less interdependent and placing less emphasis on others might not be

the same as being more independent and emphasizing personal agency. These two images of self coexist in individuals and are considered as two distinct constructs (Singelis, 1994). One group being more individualistic than others does not mean that group is also less collectivistic than others (Oyserman, Coon, & Kemmelmeier, 2002). Perhaps the results of this study would differ depending on the specific measures we used for collectivism and individualism. It is likely that at the cultural level, where individual and collectivism are measured as a unidimensional concept, both collectivism and individualism moderations would yield expected patterns. Future research could explore the concept of low collectivism and how it differs from individualism.

Another limitation of this research was that in Study 2 (perceived norm X collectivism on pro-environmental support), the behavioral measure Boggle was not predicted by political ideology. Half of the participants agreed to play Boggle, which was more than we had expected. This might be due to people agreeing to play Boggle for reasons other than wanting to support the environment. They could be playing out of curiosity or boredom. Future research could develop other forms of behavioral measure, for example, whether people would agree to donate the amount they earned from participating in this study to a pro-environmental organization, or whether people would sign up to receive information from certain organizations. These behavioral measures could be more direct and representative.

One limitation for Study 3 (manipulated collectivism and individualism) was that our manipulation of collectivism/individualism might not have been very effective. Without manipulation check, we were unable to conclude whether the manipulations actually influenced what we intended. The fact that the association between ideology and xenophobia

was the strongest in the control compared to the collectivism and the individualism conditions could suggest that simply priming people, with either collectivism or individualism, attenuated their ideology-attitude consistency. This might have meant that our manipulation did not prime participants with the orientations we had intended to. Future studies could apply other forms of manipulations. Instead of asking participants to rephrase a paragraph, having participants read an article and then answer questions about it, allowing only those who answered correctly to continue might be a more effective form of manipulation.

In addition to collectivism, future research could also examine other socio-cultural factors that might drive the extent to which personal beliefs predicts behaviors and attitudes. For example, a study with U.S. nationally representative data showed that personal beliefs about climate change predicted support for pro-environmental policies more strongly among individuals with a higher, compared to lower socioeconomic background (Eom, Kim, & Sherman, 2018). Factors such as educational status could be explored. I expected that personal ideology would predict actions more strongly among those with higher compared to lower levels of education.

Given that our attempt to uncover the mechanism underlying the moderating effect of collectivism was unsuccessful, we are unable to explain why collectivism weakens the association between political ideology and social attitudes. Future research should investigate other potential mediators to understand why collectivism has such effect.

Implications

When was the last time someone who identified with the other political party agreed with your political view? Political polarization is at its widest in at least two decades in the

United States. With the surge of war refugees, threats of terrorism and contagious diseases, new restrictive travel and immigration policies have been proposed periodically. These proposals were met by much support and disagreement, which often yielded heated debates between liberals and conservatives (Dawsey, 2018; Levitt, 2018; Talton, 2018; Yancey-Bragg, 2018). These bipartisan divide often lead to serious consequences in many domains. For example, the divide on climate change policies might have contributed to the U.S. withdrawing from the Paris Agreement (Van Boven, Ehret, & Sherman, 2018).

Although political ideology is one belief that seems to divide Americans, there might be other crucial factors between individuals that influence their attitudes and behaviors. Past research found beliefs predicted behaviors more strongly among higher than lower socioeconomic status individuals (Eom et al., 2018), and much psychological research has been conducted with participants of relatively high socioeconomic status (Henrich, Heine, & Norenzayan, 2010). Analogously, the present set of studies found that ideology predicted attitudes more strongly among low than high collectivists, and much psychological research has been conducted in Western (high individualism) cultures (Henrich, Heine, & Norenzayan, 2010). As a result, researchers might have overemphasized the role of ideology and neglected other individual or cultural differences in predicting people's attitudes and behaviors.

This research provided a glimpse into how people of varying political beliefs differed in their attitudes, and how individual differences in collectivism could change the way people's beliefs guide their attitudes. It also highlights the importance of understanding collectivism and conservatism as two separate constructs. We hope that this knowledge could be used to resolve conflicts between people with different political beliefs, and create

interventions that match people's cultural orientations to promote pro-environmental and pro-social behaviors.

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