

Fear of Ebola: The Influence of Collectivism on Xenophobic Threat Responses



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Abstract

In response to the Ebola scare in 2014, many people evinced strong fear and xenophobia. The present study, informed by the pathogen-prevalence hypothesis, tested the influence of individualism and collectivism on xenophobic response to the threat of Ebola. A nationally representative sample of 1,000 Americans completed a survey, indicating their perceptions of their vulnerability to Ebola, ability to protect themselves from Ebola (protection efficacy), and xenophobic tendencies. Overall, the more vulnerable people felt, the more they exhibited xenophobic responses, but this relationship was moderated by individualism and collectivism. The increase in xenophobia associated with increased vulnerability was especially pronounced among people with high individualism scores and those with low collectivism scores. These relationships were mediated by protection efficacy. State-level collectivism had the same moderating effect on the association between perceived vulnerability and xenophobia that individual-level value orientation did. Collectivism—and the set of practices and rituals associated with collectivistic cultures—may serve as psychological protection against the threat of disease.

Keywords

Ebola, collectivism-individualism, threat, xenophobia, risk perceptions, open data, open materials

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Health officials leading the fight against Ebola in Sierra Leone say fear, fatigue and denial are allowing the virus to continue to spread. (BBC News, 2015)

In July 2015, less than a year after the Ebola outbreak in Western Africa, officials in Sierra Leone described the role of psychological factors in preventing eradication of the disease. Among both people on the front lines of the Ebola outbreak in West Africa and those in low-risk areas, such as the United States, news of the outbreak, accompanied by truly gruesome images, sowed much fear, xenophobia, and social division. With the progress of globalization and the increasing interconnectedness of human populations, infectious diseases such as Ebola are increasingly likely to emerge (Institute of Medicine Forum on Microbial Threats, 2009), so there is a need to understand how people respond psychologically and behaviorally to the fear of disease.

Although it makes obvious sense to increase one's vigilance and engage in self-protective health behaviors when one is facing such potential health risks, most health experts maintained that outside of the directly affected regions in West Africa, the actual risk of contracting Ebola was extremely low (Centers for Disease Control and Prevention, CDC, 2014b). Nonetheless, the degree to which people responded to the news was vastly disproportionate to the actual risk. In low-risk parts of the world, the cost of Ebola was not directly due

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to the disease itself, but rather arose from its negative psychological and behavioral effects incited by fear.

Risks from the environment are omnipresent for all living organisms; thus, psychological research has extensively investigated threat responses to both social and nonsocial kinds of risks. People have predictable threat responses, including psychological defensiveness (Howell & Shepperd, 2012; Maddux & Rogers, 1983; Sherman, Nelson, & Steele, 2000) and xenophobic tendencies (Faulkner, Schaller, Park, & Duncan, 2004; Murray, Schaller, & Suedfeld, 2013; Navarrete & Fessler, 2006). However, not everyone responds in the same manner, and psychological factors, such as the personal relevance of a health risk (Lieberman & Chaiken, 1992) and self-esteem (Harmon-Jones et al., 1997), shape people's threat responses.

In this article, we examine how individualistic-collectivistic orientation moderates xenophobic responses to perceived vulnerability to Ebola. Collectivism is a cultural orientation in which individuals' needs are subordinated to those of the group, and individualism is a cultural orientation in which individuals' needs are prioritized over those of the group (Triandis, 1989). We examine this moderator as both an individual difference factor and a sociocultural factor (i.e., state-level collectivism; Vandello & Cohen, 1999).

The present work builds on the pathogen-prevalence hypothesis, which addresses the link between collectivism and disease threat. It posits that people who live in regions where pathogens are prevalent show increased collectivistic, group-protective behaviors. In such regions, compared with those where pathogen prevalence is low, there is greater conformity and xenophobia (i.e., fear or hatred of strangers and foreigners), manifested in avoidance of social or romantic interactions with out-group members and adherence to cultural traditions, such as food-preparation or hygiene rituals (Faulkner et al., 2004; Murray et al., 2013; Murray, Trudeau, & Schaller, 2011; for a review, see Schaller, Murray, & Bangerter, 2015). These group-protective practices associated with collectivism are theorized to protect people in a community from the introduction of foreign pathogens and disease transmission (Faulkner et al., 2004; Murray et al., 2011).

These studies testing the pathogen-prevalence hypothesis primarily examined collectivistic tendencies as outcomes of the risk of diseases. In the present research, we investigated how collectivism, once established, influences individuals' responses to disease risks. Given that xenophobic behaviors characterize collectivists' normative behavioral pattern, it is possible that collectivists would respond to acute vulnerability to deadly disease with particularly strong xenophobia. However, it is also possible that collectivism serves as a psychological buffer against disease threats. Because collectivism offers a behavioral mechanism to cope with potential risks of foreign pathogens,

when people feel vulnerable to diseases, such as Ebola, collectivists may feel that they (and their group) possess greater ability to protect themselves than noncollectivists. Collectivistic orientations may fulfill psychological needs for control that arose in response to perceived disease risks. According to this idea of collectivism serving as a buffer, although it is typically associated with group-protective xenophobic behaviors (Faulkner et al., 2004), collectivism may paradoxically reduce xenophobic *reactivity* to perceived vulnerability. Thus, the association between the extent to which people perceive themselves as vulnerable to threatening diseases and the extent to which they exhibit xenophobia toward outsiders may be weakened among collectivists. By contrast, individualists tend to distance themselves from their group by highlighting their uniqueness and separateness from other people (Kim & Markus, 1999; Triandis & Gelfand, 1998). Thus, people with individualistic orientations may lack such a psychological buffer, and when they feel highly vulnerable to disease, they may respond with a greater increase in xenophobia than less individualistic people do, because individualism does not equip them with the same group-protection efficacy.

The Ebola outbreak in 2014 offered a unique opportunity in the United States to develop and test a model linking cultural orientation and perceived vulnerability to disease with defensive responses. First, Ebola was a risk that evoked intense fear and threat responses around the world, and public awareness was spread fairly evenly across the United States as a result of the worldwide media attention (Kumarak, 2014). Second, the Ebola outbreak had a relatively clear origin and consequently was viewed, by Americans, as a danger emanating from a foreign origin (CDC, 2014b), which allowed for self-justification of xenophobic responses, such as imposing travel bans to limit contact with out-group members.

We drew on health psychology to formulate a theoretical model of psychological responses to Ebola. According to protection-motivation theory (Rogers & Prentice-Dunn, 1997), which is built on stress-appraisal theory (Lazarus & Folkman, 1984), the perceived threat of a health risk depends on a number of psychological factors, including one's perceived vulnerability to that risk and ability to cope with it. Therefore, we measured individuals' perceived vulnerability to Ebola risk and their perceived *protection efficacy*—their belief that they and their groups could protect themselves from Ebola. Protection-motivation theory suggests that when people perceive that they have high vulnerability to a risk but low efficacy to protect themselves from it, they will experience psychological threat. Given that collectivism may promote the perceived efficacy to protect oneself from a disease such as Ebola, we considered protection efficacy as a mediator of xenophobic reactions to perceived vulnerability to Ebola.

We investigated the independent influences of individualism and collectivism at both the individual and the group levels. First, we investigated the influence of individual-level collectivism and individualism as assessed by self-report scales (Oyserman, Coon, & Kemmelmeier, 2002). Although the pathogen-prevalence hypothesis centers on group-level protection, the buffering influence of collectivism could extend to individually held collectivistic orientations. People often overestimate how much others share their beliefs and values (Ross, Greene, & House, 1977), and this false-consensus effect has been used to explain cultural consensus (Triandis, 1996). Thus, collectivists may assume that others in their community also engage in group-protective behaviors, independently of the actual tendencies of the community. We predicted that, overall, the participants in our study, regardless of their collectivistic and individualistic orientations, would show a positive association between perceived vulnerability to Ebola and xenophobic tendencies, but that this positive association would be attenuated for those with high levels of collectivism and for those with low levels of individualism. We also predicted that this relationship would be mediated by protection efficacy.

Second, we tested how the level of collectivism in one's cultural context moderates the relationship between vulnerability and xenophobia. Participation and engagement in a local cultural context profoundly affects how people feel, think, and behave, independently of their values and beliefs (Kitayama, 2002). The pathogen-prevalence hypothesis leads to the prediction that people's perceived susceptibility to infection is affected not only by their own behavior, but also by the behavior of others in their community. Therefore, psychological protection against infection may be offered—independently of one's own orientation—by being surrounded by other people who ascribe to collectivism and conform to traditions designed to protect the in-group, through a process similar to herd immunity (Murray et al., 2011). Living in a collectivistic cultural context in which other people engage in group-protective behaviors may provide psychological herd protection.

We operationalized cultural context as the U.S. state in which participants resided. The U.S. states vary in their level of collectivism (Vandello & Cohen, 1999), and we predicted that the increase in xenophobic reactions associated with increased perceived vulnerability to Ebola would be less pronounced among people residing in states with higher levels of collectivism than among those residing in states with lower levels of collectivism.

We tested our predictions with a nationally representative sample of U.S. residents during a heightened period of concern about Ebola, December 2014 (BBC News, 2014).

Method

Creation of a representative national sample

The commercial public-survey research firm YouGov (<https://today.yougov.com/>) was employed to construct a sample stratified to reflect characteristics of the U.S. general population from their large pool of opt-in participants during a 2-week period (December 11–23, 2014). The sample size was set a priori at 1,000. YouGov interviewed 1,134 respondents, who were then matched down to a sample of 1,000 using a sampling frame on gender, age, race, education, region, political ideology, and political interest. This frame was constructed by stratified sampling from the full 2010 American Community Survey (U.S. Census Bureau, 2014; see the Supplemental Material available online for a description of the sample).

Survey procedure

Participants indicated their consent to complete an online survey on “Public Perception of Ebola.” The questionnaires they completed appeared in the order in which they are described here (other measures included in the survey are described in the Supplemental Material).

Individualism and collectivism. The individualism and collectivism items were adapted from Oyserman et al. (2002; see also Oyserman & Lauffer, 2002; Triandis & Gelfand, 1998). Participants indicated how much they agreed or disagreed with 14 statements, using a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Six of these statements were drawn from scales assessing individualism ($\alpha = .76$; e.g., “It is better for me to follow my own ideas than to follow those of anyone else”). The other 8 statements were drawn from scales assessing collectivism ($\alpha = .81$; e.g., “Learning about the traditions, customs, values, and beliefs of my family is important to me”).

Ebola information. To ensure that participants were similarly informed about Ebola, after the first questionnaire we presented a passage with basic information on this disease (adapted from CDC, 2014a). The passage provided neutral, factual information about Ebola and its symptoms, cause, and history.

Perceived vulnerability to Ebola risk. Nine questions were adapted from the Perceived Risk of HIV Scale (Napper, Fisher, & Reynolds, 2012), which was designed to measure perceived risk of a contagious disease. The adaptations made the items specifically relevant to Ebola. Three sets of three items each assessed perceptions of personal risk (e.g., “I feel vulnerable to Ebola infection”),

perceptions of the local community's risk (e.g., "I feel that people in my local community are vulnerable to Ebola infection"), and perceptions of risk to the country (e.g., "I feel that my country is vulnerable to outbreak of Ebola").¹ All items were completed on 5-point scales, and we created a composite with higher numbers indicating greater vulnerability ($\alpha = .92$).

Perceived protection efficacy. Participants responded to six protection-efficacy items: two items assessing their perception of their personal protection efficacy (e.g., "I feel confident that I can protect myself from Ebola"), two items assessing their perception of their community's protection efficacy (e.g., "I feel confident that my local community can protect itself from Ebola"), and two items assessing their perception of the country's protection efficacy (e.g., "I feel confident that my country can protect itself from Ebola"). All items were completed on scales from 1 (*strongly disagree*) to 7 (*strongly agree*). We averaged scores to create a protection-efficacy composite ($\alpha = .82$).

Xenophobia. Xenophobia was assessed with four indicators. Two indicators assessed outcomes directly related to Ebola: (a) prejudice toward West Africans and (b) support for restrictive travel policies. The other two indicators assessed more generalized xenophobic tendencies: (c) prejudice toward undocumented immigrants and (d) ethnocentrism. Prejudice toward West Africans and undocumented immigrants was assessed by asking participants to rate their feelings (three negative, e.g., fear; three positive, e.g., acceptance) toward the groups on scales ranging from 0 (*I do not feel this emotion at all*) to 7 (*I feel this emotion strongly*; Stephan, Ybarra, Martinez, Schwarzwald, & Tur-Kaspa, 1998). Positive emotion items were reverse-scored, and then scores were averaged to form prejudice measures, so that higher scores indicated greater negativity ($\alpha = .72$ for prejudice toward West Africans and $\alpha = .81$ for prejudice toward immigrants). Participants then were asked to indicate how they would respond to petitions for five travel restrictions related to Ebola, such as a travel ban (see Table S1 in the Supplemental Material for all five items). 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*; 3 = *yes, I would sign the petition in support of the policy*. Responses to these items formed the composite score for policy support ($\alpha = .91$), with higher numbers indicating more support for restrictive travel policies. Ethnocentrism was assessed with two items ($r = .50$) from the American Ethnocentrism Scale (e.g., "People in the United States could learn a lot from people from other countries"; Neuliep & McCroskey, 1997).² The response scales ranged from 1 (*strongly disagree*) to 7 (*strongly agree*); ratings were reverse-coded and averaged to form the ethnocentrism composite.

Demographics. Finally, participants completed a limited number of demographic measures. Political ideology was assessed on a 5-point scale from 1 (*very liberal*) to 5 (*very conservative*). Participants could also indicate that they were "not sure"; rather than dropping the 91 participants who chose this option, we assigned them a score of 3 (*moderate*) for analytic purposes.

State-level variable

For our state-level analyses, we used Vandello and Cohen's (1999) collectivism index score (for other research using this index, see Allik & Realo, 2004; Harrington & Gelfand, 2014). Vandello and Cohen created an eight-item index score based on concrete state-level behavioral indicators of collectivism (e.g., percentages of people living alone and of households with grandchildren in them). The index score ranges from 31 (Montana) to 91 (Hawaii). We assigned index scores according to participants' states of permanent residence. This index is unidimensional and does not have an individualism counterpart.

Results

Applying exploratory and confirmatory factor analyses to the scores for prejudice against West Africans, prejudice against undocumented immigrants, American ethnocentrism, and policy support for out-group exclusion, we created a latent variable of xenophobic tendency (see the Supplemental Material for a description of the construction of this latent variable). This latent variable served as our outcome measure.³

Analyses with collectivism and individualism at the individual level

Individualism and collectivism measured at the individual level are theorized to be orthogonal (Singelis, 1994). In the present data set, however, these measures were positively correlated ($r = .33$), and thus entered simultaneously into our models as separate factors. Because collectivism has been associated with political conservatism, and individualism with political liberalism (Haidt, 2012; Talhelm et al., 2015), political ideology was included as a covariate in all analyses.⁴

We first examined the relationships of individualism and collectivism with perceived vulnerability to Ebola. We conducted a multiple regression analysis in which the dependent variable was the composite score for vulnerability to Ebola, and the two predictors were individualism and collectivism. Greater collectivism was associated with greater perceived vulnerability ($\beta = 0.30$; $b = 0.22$, 95% confidence interval, CI = [0.18, 0.27]; $p < .001$),

whereas greater individualism was associated with less perceived vulnerability ($\beta = -0.07$; $b = -0.06$, 95% CI = $[-0.002, -0.11]$; $p = .04$).

To test the main hypothesis, we then ran a structural equation model (SEM) with collectivism, individualism, perceived vulnerability, and the interactions of perceived vulnerability with collectivism and individualism as predictors, and the xenophobia latent variable as the outcome. First, we report results for collectivism. There was no significant main effect of collectivism on xenophobia ($\beta = -0.05$; $b = -0.06$, 95% CI = $[-0.14, 0.02]$; $p = .12$). There was a main effect of perceived vulnerability, such that greater perceived vulnerability predicted greater xenophobia ($\beta = 0.27$; $b = 0.44$, 95% CI = $[0.34, 0.54]$; $p < .001$), a result consistent with the pathogen-prevalence hypothesis. However, collectivism moderated this main effect, as indicated by a significant interaction of collectivism and perceived vulnerability on xenophobia ($\beta = -0.09$; $b = -0.12$, 95% CI = $[-0.20, -0.03]$; $p = .007$; see Fig. 1a). At low levels of collectivism (1 *SD* below the mean), greater perceptions of vulnerability predicted greater xenophobia ($\beta = 0.34$; $b = 0.47$, 95% CI = $[0.39, 0.55]$; $p < .001$). However, at high levels of collectivism (1 *SD* above the mean), the relationship between perceived vulnerability and xenophobia was attenuated ($\beta = 0.20$; $b = 0.27$, 95% CI = $[0.21, 0.34]$; $p < .001$). As Figure 1a illustrates, at high levels of perceived vulnerability (1 *SD* above the mean), participants with high collectivism scores showed significantly lower levels of xenophobia ($M = .19$, $SD = .04$, 95% CI = $[\.12, \.27]$) than those with low collectivism scores ($M = .45$, $SD = .05$, 95% CI = $[\.35, \.56]$), $t(993) = -3.98$, $p < .001$.⁵

Analyses of individualism revealed that it had a main effect ($\beta = -0.08$; $b = -0.12$, 95% CI = $[-0.21, -0.03]$; $p = .01$), such that lower individualism was associated with greater xenophobia. However, this main effect was qualified by a significant interaction between individualism and perceived vulnerability ($\beta = 0.06$; $b = 0.10$, 95% CI = $[0.002, 0.20]$; $p = .046$). The observed pattern was consistent with the results for collectivism: At high levels of individualism (1 *SD* above the mean), greater perceptions of vulnerability predicted greater xenophobia ($\beta = 0.32$; $b = 0.44$, 95% CI = $[0.36, 0.51]$; $p < .001$). At low levels of individualism (1 *SD* below the mean), the relationship between perceived vulnerability and xenophobia was attenuated ($\beta = 0.22$; $b = 0.30$, 95% CI = $[0.23, 0.37]$; $p < .001$; see Fig. 1b). Examining the estimated means, we found that among participants low in perceived vulnerability (1 *SD* below the mean), those with low individualism scores showed significantly greater xenophobia ($M = -.13$, $SD = .04$, 95% CI = $[-.23, -.05]$) than those with high individualism scores ($M = -.43$, $SD = .04$, 95% CI = $[-.51, -.35]$), $t(993) = 4.66$, $p < .001$. As Figure 1b indicates, the main effect of individualism on

xenophobia was driven by people who perceived low vulnerability. Among participants who perceived high vulnerability, those who scored high in individualism were just as xenophobic as those who scored low. Although participants with high levels of individualism were less xenophobic by default (i.e., when perceived vulnerability was low) than those with low levels of individualism, they responded to increased perception of vulnerability with a greater increase in xenophobic tendencies.

Next, we tested whether the interactions of (a) perceived vulnerability and collectivism and (b) perceived vulnerability and individualism on xenophobia were mediated by protection efficacy. A confirmatory factor analysis of the items measuring perceived vulnerability to Ebola and protection efficacy supported distinguishing them as two factors (see the Supplemental Material).

We conducted an SEM (see Fig. 2), which provided a generally acceptable fit to the data, comparative fit index = .94, root-mean-square error of approximation = .07, $\chi^2(21) = 130.68$, standardized root-mean-square residual = .04. This model revealed that lower perceptions of protection efficacy predicted greater levels of xenophobia ($\beta = -0.15$; $b = -0.15$, 95% CI = $[-0.23, -0.08]$; $p < .001$). In this model, the interactions between perceived vulnerability and collectivism and between perceived vulnerability and individualism each predicted xenophobia via two paths: one direct path and one indirect path mediated through protection efficacy. The total effect (direct plus indirect) of perceived vulnerability and its interaction with collectivism was significant, $\beta = -0.10$; $b = -0.12$, 95% CI = $[-0.20, -0.04]$; $p = .004$. The indirect path through protection efficacy significantly predicted xenophobia ($\beta = -0.02$; $b = -0.03$, 95% CI = $[-0.05, -0.01]$; $p = .001$), and the direct path was also significant ($\beta = -0.07$; $b = -0.09$, 95% CI = $[-0.17, 0.01]$; $p = .032$). Thus, the joint influence of perceived vulnerability and collectivism on xenophobia was partially mediated by protection efficacy. The total effect of perceived vulnerability and its interaction with individualism was significant ($\beta = 0.07$; $b = 0.10$, 95% CI = $[0.03, 0.20]$; $p = .044$). The indirect path mediated by protection efficacy was significant ($\beta = 0.02$; $b = 0.02$, 95% CI = $[0.01, 0.04]$; $p = .006$), and the direct path was not significant ($\beta = 0.05$; $b = 0.08$, 95% CI = $[-0.02, 0.17]$; $p = .13$). Thus, the overall joint influence of perceived vulnerability and individualism on xenophobia in this model including protection efficacy was significant, and this influence was significantly mediated by protection efficacy (for alternative mediational models, see the Supplemental Material).

In summary, at the individual level, high individualism and low collectivism independently served as aggravating factors driving xenophobic tendencies when people perceived high vulnerability to Ebola. Moreover, this

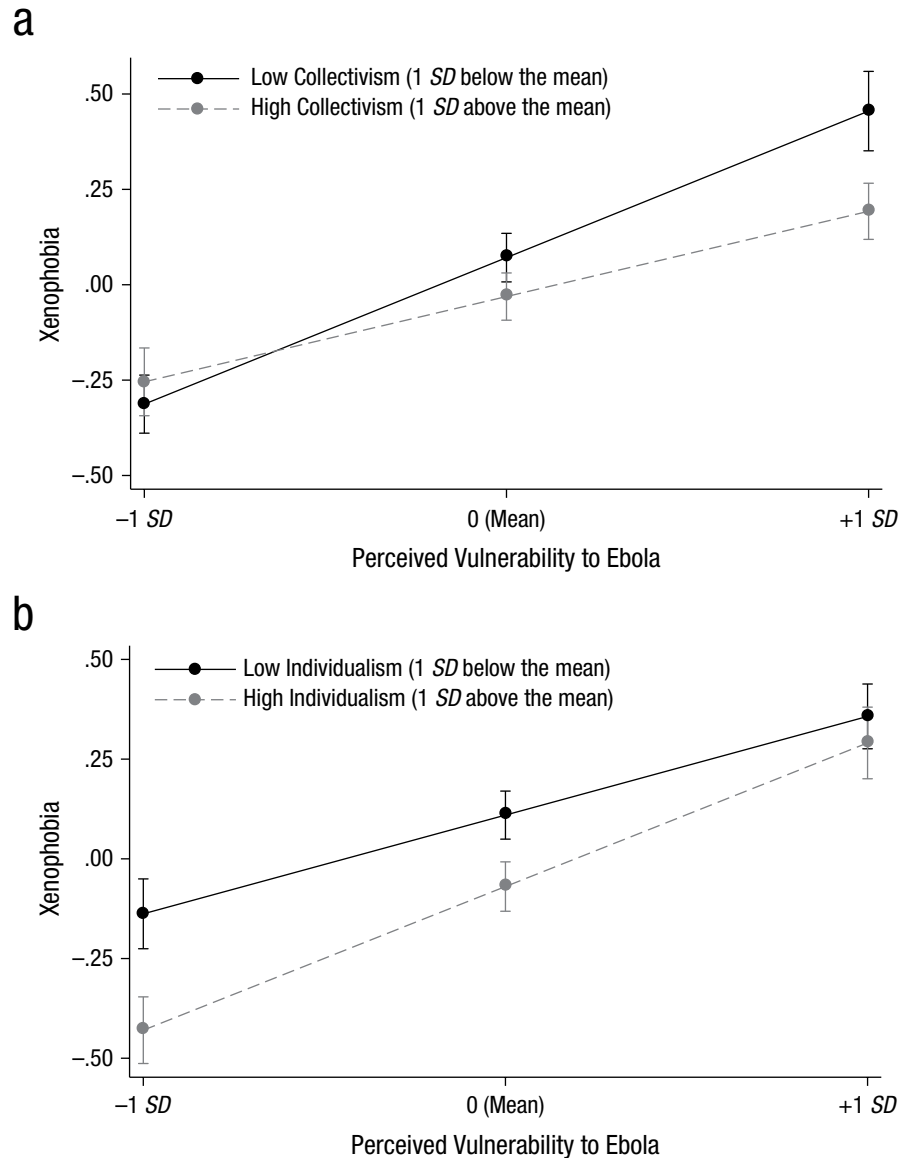


Fig. 1. Interaction of (a) perceived vulnerability and collectivism and (b) perceived vulnerability and individualism on xenophobia. These results are from the structural equation model of the individual-level data ($n = 984$). Error bars indicate 95% confidence intervals.

moderation was mediated by low protection efficacy, which suggests that xenophobia is a response of people who perceive that they have relatively low ability to protect themselves from the threat of contagious disease.

Analyses with the state-level collectivism index

We next operationalized cultural context as the particular state that participants resided in. We conducted analyses paralleling those of collectivism at the individual level, but with state-level collectivism scores entered into the model, along with individual-level collectivism scores. In

these models, participants were nested within states, so we report standard errors and significance tests that adjusted for the clustering of participants within states. Our first model predicted xenophobia from the interaction between perceived vulnerability and the collectivism index score of a participant's state of residence. As in our earlier models predicting xenophobia, we included political ideology as a covariate. There was no significant main effect of collectivism index score on xenophobia ($\beta = -0.01$; $b = -0.0002$, 95% CI = $[-0.0014, 0.0010]$; $p = .63$). As in our prior analyses, increased perceived vulnerability predicted increased xenophobia ($\beta = 0.28$; $b = 0.09$, 95% CI = $[0.06, 0.11]$; $p < .001$). This relationship

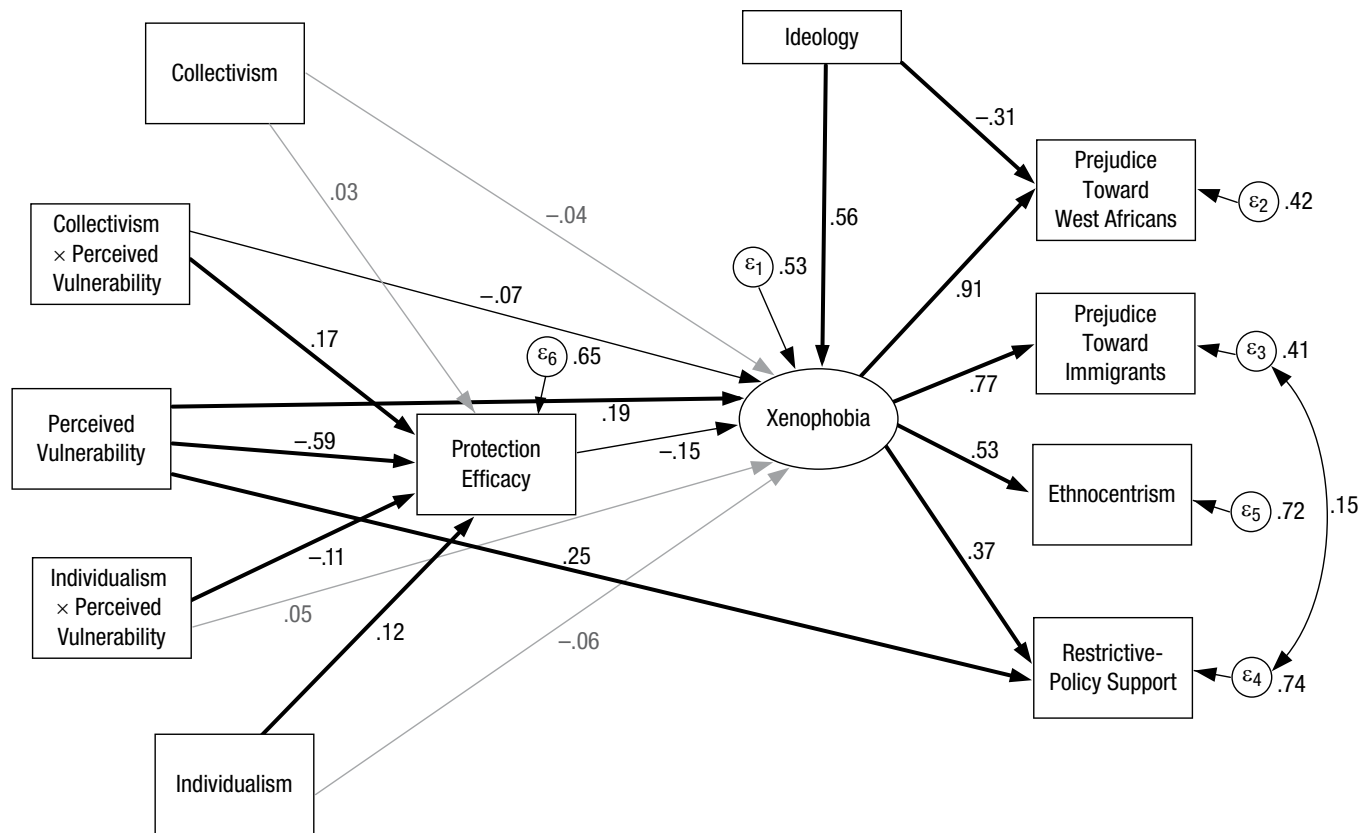


Fig. 2. Structural equation model examining whether the interactions between perceived vulnerability and cultural orientations on xenophobic tendencies are mediated by protection efficacy ($n = 983$). Note that three theoretically justified paths were added to improve overall model fit: a path predicting support for restrictive travel policies directly from perceived vulnerability, a path predicting prejudice toward West Africans directly from political ideology, and correlated errors between prejudice toward undocumented immigrants and support for restrictive travel policies. The values shown are standardized path coefficients; black lines represent significant paths (bold lines: $p < .01$; thin lines: $p < .05$), and gray lines represent nonsignificant paths ($p > .05$).

was moderated by collectivism index score ($\beta = -0.08$; $b = -0.003$, 95% CI = $[-0.0048, -0.0002]$; $p = .027$). People from states with low collectivism scores (1 *SD* below the mean) showed a stronger relationship between perceived vulnerability and xenophobia ($\beta = 0.36$; $b = 0.44$, 95% CI = $[0.36, 0.52]$; $p < .001$) than did people from states with high collectivism scores (1 *SD* above the mean; $\beta = 0.20$; $b = 0.31$, 95% CI = $[0.24, 0.39]$; $p < .001$); the difference between the slopes was significant, $t(49) = 2.25$, $p = .03$. At the state level, low collectivism amplified the impact of perceived vulnerability on xenophobic tendencies, controlling for individual-level collectivism.

In summary, collectivism at the state level moderated xenophobic responses to Ebola risk. This analysis not only validates the index of state-level collectivism (Vandello & Cohen, 1999) by providing results analogous to those obtained for individual-level collectivism, but also provides support for the idea that a collectivistic context in which other people engage in group-protective behaviors can provide something akin to psychological herd protection. Finally, given that the influence of state-level

collectivism was above and beyond the influence of individual-level collectivism, this study demonstrates the independent influences of individual-level and collective state-level cultural orientation in shaping psychological responses to the threat of Ebola.

Discussion

People who perceive themselves to be more vulnerable to Ebola are more xenophobic, not only in their opinions regarding issues directly relevant to the Ebola threat, but also in more generalized ways. More important, although perceived vulnerability was associated with increased xenophobia uniformly, this association was weaker among people who were more collectivistic; greater collectivism predicted lower psychological reactivity to perceived vulnerability. Low collectivism also strengthened the relationship between perceived vulnerability and xenophobia when we analyzed state-level cultural orientation. Although the results are correlational and the usual caveats about causal inference apply, a collectivistic context

may afford psychological protection from the threat of Ebola regardless of individuals' level of collectivism, and may attenuate xenophobia among those who perceive high vulnerability to the disease.

It is intriguing that although high collectivism and low individualism appeared to function similarly, there was a subtle difference. The difference between high and low collectivism emerged when perceived vulnerability was high, whereas the difference between high and low individualism emerged when perceived vulnerability was low. This pattern is consistent with the idea that collectivism is a response mechanism for coping with disease vulnerability (Fincher, Thornhill, Murray, & Schaller, 2008). From this perspective, it is not surprising that collectivism's functionality would become clearer in the face of disease vulnerability. In contrast, individualism may be afforded by a lack of such vulnerability. Thus, the association between individualism and low xenophobia was found only when there was low perceived vulnerability, and when vulnerability increased, people who endorsed high levels of individualism became just as xenophobic as those who endorsed low levels of individualism.

In addition, we found that higher collectivism was associated with a greater perceived vulnerability to Ebola. The pathogen-prevalence hypothesis (Fincher et al., 2008) suggests one possible reason for this relationship: People may respond to perceived vulnerability by becoming more collectivistic. However, given that the state-level analyses used a measure of collectivism taken prior to the outbreak of Ebola, it is unlikely that this reverse-causality explanation fully accounts for the association. Future research in which perceptions of vulnerability are manipulated would strengthen such causal claims.

The present findings suggest there are at least two ways in which cultural value orientation influences the psychological functioning of individuals. One is through the values and beliefs people develop through their personal upbringing and experiences; this path is the primary focus of psychology. However, engagement in local sociocultural contexts that have their own cultural orientation can influence individuals' responses to social information and may thereby provide an independent source of influence on individuals' psychology and behavior. The collectivism index (Vandello & Cohen, 1999) is based on concrete behavioral indicators of collectivism, rather than on values. Thus, this index is likely to capture the social structures that give rise to high or low collectivism in a given state. Our study provides further support to the idea of collective construction of psychology (Kim & Markus, 1999).

By considering cultural orientation as a moderator, the present study highlights the underlying psychological mechanism of defensive threat responses. People who are most psychologically vulnerable to a focal stressor

typically show the most pronounced threat response, exhibiting, for example, the greatest sympathetic nervous system activation when confronting relevant stressors (Sherman, Bunyan, Creswell, & Jaremka, 2009). In the present study, the people who were most psychologically isolated from others—those with relatively low collectivistic and high individualistic orientations—showed the strongest xenophobic reactivity to the threat of Ebola. The sense of belongingness and social connection that collectivism provides—along with the rituals and practices that have evolved to protect against infectious diseases (Murray et al., 2011)—may serve as a buffer against risks people often face and provide a foundation for resilience. Our findings suggest that one way to reduce counterproductive defensiveness and overreactions in situations involving contagious disease may be to afford people the opportunity to affirm their social relationships (Sherman & Cohen, 2006). In other words, the threat of isolation may be best countered by affirmations that remind people of their belonging (Shnabel, Purdie-Vaughns, Cook, Garcia, & Cohen, 2013) and help them maintain connections with others (Burson, Crocker, & Mischkowski, 2012).

Although there are many distinctive features that make the case of Ebola unique, the knowledge gained from the current research may be generalized to other cases involving high-profile diseases. For example, within the past decade, many parts of the world showed similar panic responses to swine flu, the West Nile virus, severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), and the Zika virus. Although the actual risk presented by such outbreaks varies greatly by region, the potential for fear to exacerbate the disaster exists in all areas of the world (Nossiter, 2014).

In a column in the *New York Times* during the height of the Ebola panic, David Brooks (2014) noted the relationship between the individualistic culture of the United States and its response to Ebola: "Fear isn't only a function of risk; it's a function of isolation. We live in a society almost perfectly suited for contagions of hysteria and overreaction." The present research shows that the fear and resulting xenophobia such diseases may elicit are perhaps "a function of isolation" heightened by individualistic thinking in the absence of collectivistic connections. Brooks's commentary turns out to be more accurate than possibly even he had imagined. Psychological isolation, one condition of an individualistic way of life, indeed worsens the fear of risks that humans have faced and will continue to face. Perhaps one antidote to such "contagions of hysteria and overreaction" is a dose of belonging and a sense of connection.

Action Editor

Joanne V. Wood served as action editor for this article.

Author Contributions

H. S. Kim and D. K. Sherman developed the study concept and contributed to the study design. Testing and data collection were performed by YouGov.com under the supervision of H. S. Kim and D. K. Sherman. J. A. Updegraff performed the data analysis. All authors interpreted the data and wrote the manuscript. All authors approved the final version of the manuscript for submission.

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Supplemental Material

Additional supporting information can be found at <http://pss.sagepub.com/content/by/supplemental-data>

Open Practices



All data and materials have been made publicly available via Open Science Framework and can be accessed at <https://osf.io/84zg3/>. The complete Open Practices Disclosure for this article can be found at <http://pss.sagepub.com/content/by/supplemental-data>. This article has received badges for Open Data and Open Materials. More information about the Open Practices badges can be found at <https://osf.io/tyyxz/wiki/1.%20View%20the%20Badges/> and <http://pss.sagepub.com/content/25/1/3.full>.

Notes

1. We included these different levels to explore the possibility that personal and group-level concerns function differently. However, their associations with other variables were very similar, as they were highly intercorrelated. The fact that they cohered so strongly suggests the inherently collective nature of Ebola risk.
2. The ethnocentrism scale also included two statements of positive evaluations of the United States (e.g., "Life in the United States is much better than most other places"), but the model fit was poor when the xenophobia factor included all four ethnocentrism items; thus, the latent factor included only the two items from the ethnocentrism scale that focused on evaluation of people from other countries.
3. There was a negligible amount of missing data (1.3% or less) for each variable included in analyses. Results reported in this article used all available data on an analysis-by-analysis basis.

Analyses restricted to cases with complete data for all variables yielded the same pattern of significant results, with the same directionality, as reported here.

4. Results remained significant when this covariate was excluded. The main analyses also remained significant when we controlled for other demographic correlates of individualism and collectivism, such as gender, age, ethnicity (White vs. non-White), family income level, and education. Seven people indicated that they had traveled to West Africa, and 32 indicated that they had friends or family who had traveled to West Africa; excluding their data did not change the pattern of results.

5. For a description of analyses confirming the linear relationship, see the Supplemental Material.

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