

Elevated ethnocentrism in the first trimester of pregnancy[☆]

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Abstract

Recent research employing a disease-threat model of the psychology of intergroup attitudes has provided preliminary support for a link between subjectively disease-salient emotional states and ethnocentric attitudes. Because the first trimester of pregnancy is a period of particular vulnerability to infection, pregnant women offer an opportunity to further test this association. We explored the expression of intergroup attitudes in a sample of pregnant women from the United States. Consistent with the predictions of the disease-threat model, results from our cross-sectional study indicate that favoritism toward the ingroup peaks during the first trimester of pregnancy and decreases during the second and third trimesters. We discuss this finding in light of the possible contributions of cultural and biological factors affecting ethnocentrism.

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1. Introduction

Foreigners, ethnic minorities, and other outgroup members are often compared to animals associated with disease transmission (Suedfeld & Schaller, 2002). Likened to vectors (e.g., rats and cockroaches), outgroup members are frequently blamed for disease outbreaks. Worse still, murderous violence is sometimes incited against them using rationalizations that follow a disease model (e.g., “ethnic cleansing”). Although a sizeable literature addresses the dehumanization of outgroup members, only recently have investigators explored the connection between disease and intergroup attitudes (Faulkner, Schaller, Park, & Duncan, 2004; Kurzban & Leary, 2001; Navarrete & Fessler, 2006; Park, Faulkner, & Schaller, 2003; Schaller, 2003). Building on the budding literature linking disease threat and intergroup attitudes, we employ a model wherein negativity toward the outgroup and attraction toward the ingroup serve to both avoid likely sources of disease and garner the

coalitional support needed to stay healthy or to recover from illness when vulnerable.

Guided by rationales similar to the above, researchers have demonstrated a link between the threat of disease and intergroup attitudes. Faulkner et al. (2004) showed that participants who felt vulnerable to disease either chronically (as a stable individual-difference measure) or temporally (due to a disease-salient prime) reacted more negatively toward foreigners. Navarrete and Fessler (2006) found that Americans’ preference for Americans over foreigners increased as a function of perceived vulnerability to disease and disgust toward potential avenues for contamination, effects due neither to the negative valence of the stimuli nor to mortality concerns.

For several reasons, psychological mechanisms that address the risk of infectious disease might attend to indices of group membership. First, frequency of interaction influences the risk posed by an interactant as a source of disease, as the likelihood that one already possesses antibodies to pathogens carried by conspecifics is a function of past interaction; because interactions are more frequent with ingroup members than with outgroup members, the latter often pose a greater threat of disease transmission than the former. Second, cultural evolution can lead to locally adaptive practices, reducing the prevalence of disease via hygienic behaviors, diet, patterns

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of food storage and preparation, medicinal traditions, mortuary practices, and sexual behaviors, among others. Outgroup members may adhere to locally maladaptive practices, particularly when they are immigrants. Since cultural evolution and diffusion take time, immigrants often maintain practices that are ill suited to local conditions. Cultural dissimilarity may thus index the risk of disease and may, therefore, activate psychological mechanisms that generate prophylactic behavior, including avoidance of outgroups (Faulkner et al., 2004).

In addition to attending to group membership as an index of disease risk, psychological mechanisms that address this threat may focus on group membership due to the importance of alliances during times of hardship (Navarrete & Fessler, 2006; Navarrete, Kurzban, Fessler, & Kirkpatrick, 2004). In societies structured similarly to those in which humans lived during most of human history, allies provision the sick and their dependents, provide care, and protect them from predators and enemies (Sugiyama, 2004). Because alliances are more common within than across group boundaries, questions of group membership and cultural similarity can be expected to be salient when illness threatens, as individuals benefit from attitudes that enhance and extend existing coalitions when they are most vulnerable. Thus, people are expected not only to be motivated to avoid outgroups in response to disease threats but also to find the ingroup more attractive.

2. The present research

Disease avoidance costs individuals time, energy, and opportunities for social exchange. Mechanisms generating prophylactic behavior might therefore respond to changes in susceptibility to illness, increasing prophylaxis only when warranted. Pregnancy is such a time. To protect the half-foreign embryo from the maternal immune system, pregnancy necessitates down-regulation of a number of immune responses, potentially leaving the mother and the fetus more vulnerable to intracellular pathogens such as viruses and some bacteria. This problem is greatly compounded by the fact that early development is highly susceptible to perturbation. However, as pregnancy progresses, the dangers posed by infection diminish: changes in immune function become more localized at the maternal–fetal interface, the fetal immune system develops, and development becomes less susceptible to disruption. For many diseases, maternal vulnerability and fetal vulnerability are thus greatest during the initial phase of pregnancy, the first trimester (reviewed in Fessler, 2002).

Existing findings support the notion that prophylactic attitudes change in a manner that compensates for increased immunovulnerability in pregnancy. During the critical first trimester, ingestive selectivity and susceptibility to nausea and vomiting increase, potentially reducing the likelihood of foodborne illness (Fessler, 2002; Flaxman & Sherman, 2000). Disgust responses are also elevated during the first

trimester (Fessler, Eng, & Navarrete, 2005). Lastly, relative to nonpregnant women, pregnant women display an increased preference for healthy over unhealthy faces (Jones et al., 2005).

Given evidence of (a) a connection between disgust sensitivity and intergroup attitudes and (b) changes in prophylactic responses during pregnancy, we propose that intergroup attitudes vary across pregnancy in a manner that compensates for heightened vulnerability to infection during the critical 2nd through 10th weeks of pregnancy. Specifically, we predict that (a) ingroup attraction and (b) negativity toward outgroups should both peak during the early weeks of the first trimester and decrease thereafter.

3. Method

3.1. Participants

Participants for our Web-based survey were recruited through postings to pregnancy-related Web sites targeting female adult U.S. citizens. Participants received no compensation. Data were analyzed for 206 participants, ranging in age from 18 to 42 years ($M=28.9$, $S.D.=5.3$), who were between Weeks 2 and 42 of pregnancy.

3.2. Procedure

Participants evaluated the authors of two essays putatively written by students. One essay presented the negative experiences and opinions of a foreigner critical of the United States and its citizens; the other presented an American's positive appraisal of America and its values. Following each essay, participants were prompted with items from the Interpersonal Judgment Scale (IJS; Byrne, 1971). Using a -4 to 4 scale, participants evaluated the extent to which each author was likeable, intelligent, knowledgeable, moral, well adjusted, and truthful, as well as the extent to which they would want to work with each author. The scale was anchored at a neutral value of 0, with numerical values corresponding to specific negative (e.g., "I would definitely not like to work with the author") and positive appraisals (e.g., "I would definitely like to work with the author").

Participants also completed several filler items on their pregnancy (e.g., "Have you named your baby?") and a question designed to explore the extent to which nausea might mediate the predicted effects (i.e., "To what extent do you feel nauseous *right now*?"). Demographic questions followed.

3.3. Measurement of dependent variables

Ingroup attraction was defined as the participant's attraction toward the American author. *Outgroup negativity* was defined as the lack of attraction toward the foreigner.

Variables of intergroup bias were calculated as follows: for each participant, ingroup attraction was calculated using the raw mean of the items on the IJS toward the American target. Since the scale is anchored at a midpoint of zero, this

generated a numerical score that, when positive, indicated to what extent participants positively evaluated the ingroup over and above a neutral score. Outgroup negativity was similarly calculated, albeit with values transposed such that high values meant greater negativity toward the outgroup.

To affirm the validity of our measures of intergroup attitudes in our sample, we conducted correlational analyses between the participants' mean IJS scores against their mean levels of patriotism and self-described conservatism (patriotism as an index of social identity with the United States as an ingroup and conservatism as a predictor of bias against foreigners). The product–moment correlation between the IJS scores for the American target and patriotism was $r=.21$ ($p=.004$), while the correlation between conservatism and the IJS of the foreigner was $r=-.32$, ($p<.0001$). The IJS scales for the American and foreign targets had Cronbach's α internal reliability ratings of .91 and .92, respectively.

3.4. Independent variable

The independent measure *week of pregnancy* was calculated as the difference in weeks between conception and date of participation. Week fractions were preserved as decimals.

To model the change in intergroup attitudes across pregnancy, a power transformation of the independent variable (x) was conducted by using its squared inverse (i.e., x^{-2}), allowing for a convex curvilinear relationship between independent and dependent variables.

4. Results and discussion

In assessing the predictions that ingroup attraction and outgroup negativity would be highest during the initial weeks of the first trimester and would then drop off, simple correlations were conducted between week of pregnancy and these respective variables. Consistent with predictions, analyses revealed that week of pregnancy was correlated with ingroup attraction ($r=.15$, $p=.03$) and outgroup negativity ($r=.12$, $p=.07$), although the effect for outgroup negativity was only marginally significant. A Hadi outlier test (Hadi, 1994) conducted on the variables in both comparisons did not reveal significant outliers.

Consistent with previous research (Fessler et al., 2005), self-reported nausea varied somewhat similarly across weeks of pregnancy ($r=.14$, $p=.05$). However, no significant relationship was found between self-reported nausea and ingroup attraction ($r=.07$, $p=.35$) or outgroup negativity ($r=0$). Importantly, when the effects of nausea were partialled out of each correlational model, the independent effect of week of pregnancy remained unchanged (Table 1).

A running-mean graph (with untransposed values) captures the general pattern underlying the relationship of nausea to week of pregnancy and the general pattern of intergroup attitudes across pregnancy (Fig. 1). Intergroup

Table 1
Partial correlation table

	Ingroup attraction		Outgroup negativity	
	r	p	r	p
WIP	.16	.02	.13	.07
Nausea	.09	.21	.02	.78

WIP, transformed weeks into pregnancy variable.

bias in the figure is shown as the relative preference for the ingroup over the outgroup (ingroup IJS–outgroup IJS).

Results from our cross-sectional study indicate that women exhibit heightened attraction toward the ingroup and negativity toward the outgroup during that phase of pregnancy when both the women and their fetuses are most vulnerable to infection. For two reasons, these effects are unlikely to be a by-product of negative mood experienced during this phase. First, our effects importantly encompass increases in both negative appraisals of the outgroup and positive appraisals of the ingroup. While depressed mood during the first trimester could conceivably result in a corresponding decrease in assessments of attitude objects (sensu Lewin, 1935), this would in no way account for the increase in positive attitudes toward the ingroup exhibited by our participants. Second, although we did not measure either stress or negative mood directly, we did measure gestational nausea. Because nausea is a potentially large contributor to negative mood during pregnancy (Swallow, Lindow, Masson, & Hay, 2004), the fact that our results hold when self-reported nausea is statistically controlled suggests that changes in intergroup attitudes across pregnancy are unlikely to be by-products of somatic or affective discomfort.

Readers of an earlier version of this article suggested that, rather than revealing a peak in intergroup bias during the first trimester, the results reported above are equally consistent with the possibility that our first-trimester participants are actually at baseline, while our second- and third-trimester participants evince a progressive suppression of ingroup favoritism and outgroup negativity over the course of pregnancy. Clearly, such a pattern would require quite a different explanation than that which we posit here. Ideally, this matter would be resolved through a longitudinal study of intergroup bias from preconception to parturition. Although such an enterprise is beyond the scope of this article, we are nevertheless able to indirectly address this question by employing data that we collected from nonpregnant women in a pilot study on a related topic using the same measures as those used here. Because (a) the nonpregnant women were not selected as matched controls for the pregnant women, (b) the protocols employed in the two studies differed slightly, and (c) the two sets of data were not collected simultaneously, comparisons between our pregnant and nonpregnant participants must be considered suggestive rather than conclusive. Nonetheless, in our sample of 507 nonpregnant women (age, 18–42 years), the mean level of intergroup bias (relative preference for the

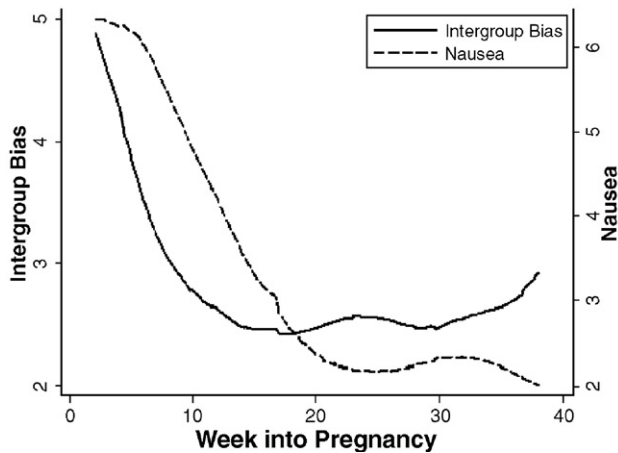


Fig. 1. Intergroup bias and nausea over the course of pregnancy. The solid line depicts the relative attraction for the American over the foreign target across week of pregnancy. The dashed line depicts self-reported nausea.

ingroup over the outgroup) is 0.60 (S.D.=1.1), while the comparable figure for the 206 pregnant women in the present study is 2.6 (S.D.=2.2), which is a whopping four times larger. Moreover, the mean level of intergroup bias in the first 10 weeks of pregnancy is 3.4—vastly larger than the “baseline” for nonpregnant women (although we have principled objections to reporting *t*-test comparisons of these data because the data were not collected with such comparisons in mind, readers will note that, with our large sample sizes, the *t* statistic assessing these differences would be sufficiently large to generate highly reliable alpha levels). In short, it appears very likely that pregnancy is accompanied by an elevation, rather than a depression, of intergroup bias, with the most dramatic increases occurring during the first trimester.

While far from conclusive, we believe that our findings are nevertheless consistent with the proposition that, during periods of vulnerability, psychological disease-avoidance mechanisms guard against ingestion of pathogens (Fessler, 2002; Flaxman & Sherman, 2000), reduce social interaction with possible disease vectors (Faulkner et al., 2004; Schaller, 2003), and enhance affiliation with sources of coalitional support (Navarrete & Fessler, 2006).

Although it is likely that evolved mechanisms shape prophylactic behavior as a function of vulnerability to disease, it is unclear at present whether biological or cultural evolution is responsible for the connection between disease threat and intergroup attitudes. On the one hand, this association may be an integral part of the disease-avoidance psychology crafted by natural selection. On the other hand, reflecting cumulative experience, cultures could come to contain the explicit or implicit knowledge that the most virulent pathogen threats often come from outgroup members, and that avoiding outgroups and embracing the ingroup are effective ways of coping with the risk of disease. Because of the adaptive utility of this information, cultural group selection would then make it likely that most

contemporary societies and, hence, most individuals will hold beliefs linking disease and intergroup attitudes.

It is likely that it is only within the last 10,000 years that humans have lived in populations dense enough to favor the evolution of pathogens sufficiently virulent that they, in turn, could constitute a source of selective pressure favoring the evolution of specialized cognitive mechanisms linking outgroups to disease threat (Inhorn & Brown, 1990). Hence, given the relative recency of the adaptive problem, it is likely that the pairing of intergroup attitudes with disease threat does not develop from canalized disease-avoidance machinery evolved by natural selection during the Pleistocene but, rather, has developed through an interaction between relatively ancient evolved disease-avoidance reactions and social learning mechanisms, unique to humans (Boyd & Richerson, 1985), which have operated in conjunction with historical experience and cultural memory passed on through the generations. Note that, in this view, the association between disease threat and intergroup attitudes is intimately linked to questions of cultural and social identity, suggesting that this association should be most evident when, as in our study, group boundaries are culturally defined; in contrast, the association between disease threat and intergroup attitudes should be less visible, and perhaps even absent, when the groups at issue are not cultural in nature.

In this study, we asked women to report to us how they felt about an ingroup member and an outgroup member. It is possible that both the ability and the inclination to articulate such opinions are simply consequences of self-awareness. However, it is also possible that these are design features of the postulated biocultural adaptation. Because pathogens spread rapidly in a naive population, avoiding outgroup members while affiliating with ingroup members would have provided only limited protection to pregnant ancestral women—indeed, nothing short of complete asociality would have maximized prophylaxis, yet the latter entails obvious costs to women facing the dual challenges of pregnancy and possible illness. A compromise solution is to both actively avoid outgroup members and try to motivate other ingroup members to do likewise. While promulgating ethnocentrism does not solve the problem of intragroup disease transmission, it could potentially produce a buffer between the pregnant woman and infectious individuals, particularly if the same psychology motivates second-order ethnocentrism, that is, prejudice against, and avoidance of, ingroup members who fraternize with the outgroup (leading them to be seen as “contaminated,” etc.). This corollary generates the testable predictions that the first trimester should be accompanied by increases not only in ethnocentrism but also in both stridency in the expression of ethnocentric views and second-order ethnocentrism.

5. Limitations

We hypothesize that the first-trimester increase in ethnocentric impulses that we have documented reflects

the output of a psychological system that orients the individual toward prophylactic behavior as an adaptive response to disease threat. However, the study described here does not address the cognitive architecture of the system, as our results are not sufficient to deduce how the mind gets from function (disease avoidance) to attitudes and behavior (ethnocentrism). Perhaps disease threat gives rise to disgust, which, because of its utility as a motivator of pathogen avoidance, then gives rise to outgroup prejudice and, because of its utility as an index of one's current state of health, orients one to seek coalitional support from the ingroup. Alternatively, the phenomenon of ethnocentrism itself may be, in part, an expression of a psychological system designed to elicit normative behavior and beliefs that provide templates for adaptively patterned practices that attenuate the threat. We remain agnostic to the roles played by social norms and emotions, such as disgust or feelings of vulnerability, in the expression of intergroup attitudes in response to disease threat, and we consider such questions to be empirical ones.

There are other limitations to the interpretation of our results, some of which suggest that there are mechanisms of coalitional computation other than those enacted by pathogen avoidance. For example, these effects could conceivably be interpreted as outputs from a broader psychological system that elicits *pro-normative* ideation that allows individuals to embed themselves in coalitions, alliances, and social relationships that are adaptive when one is uncertain, feels vulnerable to bias because one is pregnant, or feels vulnerable in general and, therefore, needs social support from coworkers, friends, and family. Likewise, since our dependent measures include evaluations of an ingroup target and an outgroup target whose written pronouncements differ in valence of the content (one is positive and the other is negative), individuals could be reacting to the feelings of vulnerability by seeking help from people they view as more positive and friendly and, likewise, could be trying to minimize the probability of negative interactions.

With the further caveat that (a) constraints on the validity of questionnaire measures and (b) limits on the insights gained through a cross-sectional design are such that these findings should be considered preliminary, our results suggest that ethnocentrism is in part influenced by features of the mind designed to enact approach and avoidance behaviors in a manner that attenuates the threat of disease during periods of enhanced vulnerability to illness. These mechanisms incline people to negatively evaluate individuals who, by virtue of their categorization as outgroup members, are perceived to be potential carriers of pathogens, and to positively evaluate others who might be drawn upon for social support in times of illness. Whether the associations between disease and intergroup attitudes are an intrinsic feature of biologically evolved disease-avoidance mechanisms or reflect culturally evolved beliefs that interact with such mechanisms, we believe that

attention to the problem of disease avoidance can productively generate hypotheses concerning the cognitive and emotional underpinnings of intergroup relations. While the naturally occurring immune changes of pregnancy offer a ready avenue for investigating such hypotheses, additional and, perhaps, even more illuminating avenues also exist; in the future, we hope to explore intergroup attitudes among people who are episodically or chronically pharmacologically immunosuppressed, such as recipients of organ transplants or individuals undergoing treatment for autoimmune disorders.

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