Conformity pressure is a ubiquitous part of social life, and the psychology of conformity manifests in many different guises. Children are expected to conform to the directives of parents, teachers, and other authority figures and are often punished if they do not. As adults too, people are expected to adopt the beliefs and behavioral norms of their social groups and may be socially rejected if they do not (e.g., Festinger, Gerard, Hymovitch, Kelley, & Raven, 1952; Festinger & Thibault, 1951; Schacter, 1951). Indeed, failures to conform to the enduring group or cultural norms (e.g., incest taboos) are often viewed by others not merely as an embarrassing social faux pas but as a contemptible moral transgression as well.

The prevalence of conformity in social life can be understood as a consequence of the fact that, although conformity can be costly (it inhibits innovation), it can be beneficial too. Many social norms provide a basis for predictable interaction and efficient decision making; the collective benefits associated with sociality require some level of conformity to those norms. In addition, many norms provide buffers against specific risks and hazards. (Norms regarding reciprocity reduce the likelihood of being cheated in exchange relationships; norms regarding interactions with other animals reduce the likelihood of predation; norms regarding hygiene and food preparation inhibit the spread of infectious diseases, and so forth.) Normative transgressions not only put transgressors at risk, they may also increase risks to others in the local population. Given these benefits of conformity, there may have evolved fundamental psychological tendencies that dispose people toward conformity (Henrich & Boyd, 1998; Henrich & Gil-White, 2001). Consistent with this analysis, empirical research reveals that individuals are guided by heuristic processes that incline them to adopt the attitudes of popular majorities, to obey the advice of authorities, to maintain the status quo, and to respond adversely to those who do not (Asch, 1956; Cialdini & Goldstein, 2004; Eidelman & Crandall, 2009; Jost & Hunyady, 2005; Kruglanski, Pierro, Mannetti, & De Grada, 2006; Milgram, 1974; Sechrist & Stangor, 2001; Wheatley & Haidt, 2005).

This natural tendency toward conformity is variable across both persons and situations. Many different variables influence conformist attitudes and behaviors (Cialdini & Goldstein, 2004; Hogg, 2010). Of particular relevance here is the perception of threat. Given that many norms provide beneficial buffers against risks and hazards, it follows that individuals may show especially strong conformist tendencies under conditions in which they feel especially vulnerable to risks and hazards. Abundant evidence supports this analysis. Right-wing authoritarianism (which is defined substantially by socially conservative attitudes and adherence to the status quo) correlates positively with individual differences in the belief that the world is a dangerous place (Altemeyer, 1988) and is increased under threatening circumstances (Feldman & Stenner, 1997; Sales, 1973). Experimental manipulations that facilitate accessibility of danger-related or death-related thoughts lead to increased conformity to majority opinion (Griskevicius, Goldstein, Mortensen, Cialdini, & Kenrick, 2006; Renkema, Stapel, & Van Yperen, 2008).
Does the Threat of Infectious Disease Exert a Unique Impact on Conformity?

Threat is broad and non-specific construct. Qualitatively different kinds of threats influence human health and welfare, and these distinct kinds of threat elicit distinct neurochemical, affective, cognitive, and behavioral responses (e.g., Cottrell & Neuberg, 2005; Neuberg, Kenrick, & Schaller, 2011; Plutchik, 1980). Previous research linking threat to conformity has not attended closely to these distinctions. It remains unknown whether different forms of threat have psychologically distinct implications for conformity. We focus here on the threat of infectious disease. There are several reasons to suspect that threat of infectious disease may exert a unique—and perhaps especially potent— influence on conformity.

One reason pertains to the antiquity and ubiquity of disease. Disease-causing parasites have been present within human populations throughout history and, as a consequence, have imposed powerful selective pressures on the evolution of human physiology and behavior (Wolfe, Dunavan, & Diamond, 2007; Zuk, 2007). The second reason pertains to the enormous impact that infectious diseases have had on human health and welfare. It has been conjectured that infectious diseases have likely claimed more lives than all wars, non-infectious diseases, and natural disasters combined (e.g., Inhorn & Brown, 1990). The third reason pertains to the mysteriousness of infectious disease. Unlike most other threats to human welfare (e.g., intergroup violence, predation by larger mammals), most disease-causing parasites are invisible. Prior to recent scientific advances (the microscope, germ theory, and pharmacology), the causes of infectious disease, and means of mitigating their transmission, were inaccessible to logical analysis. Disease control therefore depended substantially on the development of behavioral norms that reduced the risk of infection and on semi-superstitious adherence to those norms; this remains evident in contemporary foraging societies that have no access to modern healthcare, wherein most social norms operate as prescriptions to avoid illness in some way (Fabrega, 1997).

If indeed social norms historically served an essential rule in blunting the powerful threat posed by infectious diseases, it follows that the perceived threat of infectious disease may exert a similarly powerful influence on conformist attitudes and behaviors. If so, this influence may be psychologically distinct from effects associated with other threats to human welfare.

Several bodies of evidence are somewhat relevant to this hypothesis, including research on disgust—the emotional experience most closely connected to the perceived risk of disease transmission (Curtis, de Barra, & Auenger, 2011; Oaten, Stevenson, & Case, 2009). The arousal of disgust leads to greater contempt in response to counter-normative behavior (e.g., Wheatley & Haidt, 2005); individuals who are more chronically sensitive to disgust likewise hold more politically conservative attitudes (Inbar, Pizarro, & Bloom, 2009; Terrizzi, Shook, & Ventis, 2010), and also recommend more lengthy sentences for criminals (Jones & Fitness, 2008). However, disgust is not specific to disease threat (it serves as a signal of other kinds of threats as well; Rozin, Haidt, & Fincher, 2009); consequently, these results do not bear directly on the current hypothesis. Additional evidence has emerged from cross-national studies of societal outcomes: ecological variation in pathogen prevalence predicts societal variation in collectivist value systems, authoritarian political structures, and societal conformity pressure (Fincher, Thornhill, Murray, & Schaller, 2008; Murray & Schaller, 2010; Murray, Trudeu, & Schaller, 2011; Schaller & Murray, 2008; Thornhill, Fincher, & Aran, 2009). These effects remain significant even when controlling for additional variables. However, results found on population-level outcomes may be explained by causal mechanisms that are conceptually independent of individual-level psychological processes (e.g., genetic or cultural evolution; Schaller & Murray, 2011).

In sum, although various bodies of evidence are obliquely relevant, there is no extant evidence that directly tests the hypothesis that perceived threat of infectious disease influences individuals’ conformist attitudes and behavior (and that this effect is distinct from the influence of other threats to individuals’ welfare).

If such an effect exists, an additional question arises: Just how specific might this effect be to particular domains of normative behavior? The effect of disgust on moral judgments has been found across a variety of behavioral domains, some of which have no clear implications for disease transmission (e.g., shoplifting; Wheatley & Haidt, 2005). Similarly, collectivistic and authoritarian value systems (which are correlated with pathogen prevalence in cross-national analyses; Fincher et al., 2008; Thornhill et al., 2009) have pervasive implications across behavioral domains. It is plausible that disease threat may trigger conformist attitudes that are expressed broadly, even in domains of normative behavior that serve no obvious disease-buffering function. Nevertheless, if indeed the psychology of conformity serves as a functional defense against the threat of pathogen transmission, it is also plausible that the effect of disease threat on conformist attitudes may be especially pronounced within specific behavioral domains (such as food preparation and personal hygiene) that have especially clear implications for pathogen transmission. No prior research has tested this subsidiary hypothesis.

Overview of the Present Investigation

We employed two methodological strategies to examine the effects of disease threat on conformist attitudes and behavior. One strategy focused on individual differences. We assessed chronic individual differences in Perceived Vulnerability to Disease (PVD; Duncan, Schaller, & Park, 2009) and tested whether individuals who felt more chronically vulnerable to infectious disease also exhibited more strongly conformist attitudes and behavior. Importantly, we also tested whether these predicted correlations remained when statistically controlling for individual differences in concerns pertaining to other (disease-irrelevant) threats. This allowed us to test whether PVD exerted a statistically unique effect in predicting conformity.

The second strategy employed the inferential rigor of experimental methods. We tested whether the experimentally manipulated salience of infectious disease led to stronger conformist attitudes and behavior. Importantly, we included a control condition in which other threats (non-relevant to infectious disease) were made salient. This
allowed us to test whether the salience of infectious disease exerted an especially potent influence on conformity.

All participants completed a set of dependent measures that assessed (1) self-reported conformist attitudes, (2) liking for people with conformist personality traits, (3) valuation of obedience, and (4) behavioral conformity to majority opinion. These measures did not distinguish between different domains of normative behavior and so cannot test the subsidiary hypothesis that disease threat may trigger conformist attitudes most strongly within specific behavioral domains. However, before data collection was completed, we added two measures specifically designed to test this additional hypothesis. Therefore, a subset of participants also completed measures that assessed evaluative responses to people who either (1) violated norms or (2) conformed to normative pressure in behavioral domains that either were highly relevant to disease transmission (e.g., food preparation) or were not (e.g., motor vehicle operation). Results on these additional measures provide preliminary evidence bearing on the subsidiary hypothesis.

METHODS

Participants

Participants were 217 undergraduate students (172 women, 45 men; mean age 20.2 years) at the University of British Columbia. They volunteered to earn extra credit in undergraduate psychology courses. Participants were randomly assigned to one of three experimental conditions (Disease Threat, Other Threats, and Neutral). Because the Disease Threat and Other Threats conditions (and the comparison between them) were of special inferential interest, the random assignment algorithm was designed to assign a higher percentage of participants to these two conditions, relative to the Neutral condition; N’s in each condition were 82, 74, and 61, respectively.

Experimental Manipulation of Disease Salience

The experimenter asked each participant a series of questions designed to elicit recollection and verbal description of circumstances from the participant’s past. The specific nature of these recollected circumstances varied across experimental conditions. In the Disease Threat condition, participants discussed a time when they felt vulnerable to germs or disease. In the Other Threats condition, participants discussed a time when they feared for their physical safety. In the Neutral condition, participants discussed the activities that they had engaged in during the previous day.

In all conditions, experimenters elicited detailed descriptions of participants’ thoughts and feelings by prompting participants with questions from a common list (e.g., “What emotions were you feeling during this situation?”). All participants spent approximately 3–5 minutes engaged in detailed verbal recollection and description of the intended set of circumstances. In order to ensure a continuing psychological effect of the manipulation throughout the duration of the experimental session, participants were asked to recall the same event again, approximately 10 minutes later, in the context of completing the dependent variables (described in the following section). Specifically, participants were asked to describe, in writing, “the event/events that you discussed with the experimenter a few moments ago” and “the emotions and physical reactions... that you had in response to these events.”

Primary Dependent Measures

Behavioral Conformity with Majority Opinion

Participants were presented with a potential scenario in which their university might change the numerical scale on which course grades are reported on student transcripts and were asked to indicate whether they agreed or disagreed with this potential change by putting a penny (provided by the experimenter) into one of two clear plastic cups, labeled “AGREE” or “DISAGREE”. One of the cups already contained three pennies, and the other already contained 25 pennies—indicating a substantial majority opinion offered collectively by prior participants. (In fact, the pennies were placed in the cups by the experimenter prior to participant’s arrival; the apparent majority preference for “AGREE” or “DISAGREE” was counterbalanced.) Conformity was indicated by whether participants placed their penny in the cup containing the majority of existing pennies.

Liking for People with Conformist Traits

Participants were presented with brief descriptions of nine same-sex individuals and were asked to rate how much they would like to have each person as a friend. One description explicitly connoted a conformist disposition (described as conventional and traditional), and two descriptions connoted nonconformist dispositions (one described as untraditional and original and the other as artistic and creative). Ratings were made on 7-point scales (higher values indicated greater liking). After reverse-scoring ratings for the two non-conformists, the mean of these three ratings was computed to create a single index indicating liking for people with conformist traits.

Valuation of Obedience

Participants were asked to assign monetary values to different personal qualities that children can be encouraged to learn. They were provided a hypothetical budget of $100 and

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instructed to allocate specific dollar amounts from this budget to each of seven specific qualities as a means of indicating how much “I would like to encourage my children” to possess each quality. (The seven qualities listed were Hardworking, Financially wealthy, Independent, Open-minded, Determined/Motivated, Religious, and Obedient). Our analyses focused on dollar values assigned to the trait “Obedient”.¹

Self-Reported Conformist Attitudes

Participants completed a questionnaire—developed by the authors for the purposes of this study—that included six statements endorsing conformist attitudes (e.g., “Breaking social norms can have harmful, unintended consequences”). Participants indicated the extent to which they agreed with each statement on a 6-point rating scale (1 = strongly disagree, 6 = strongly agree). A measure of self-reported conformist attitudes was computed as the mean rating across these items. (Principal components analysis of the six items yielded a clear one-factor solution, with only one eigenvalue > 1, accounting for 44% of variance; Cronbach’s alpha = .77.)

Ancillary Variables Assessing Domain-Specific Differences in Conformist Reactions

Part-way through the study, two additional measures were added, each of which was designed to assess the extent to which participants exhibited more conformist responses in disease-relevant (compared to non-relevant) domains of normative behavior. Therefore, a subset of 92 participants (75 women, 17 men) completed these two additional measures.

Difference in Perceived Severity of Normative Transgressions

Participants were presented with 12 scenarios in which individuals transgressed against a social norm. Five scenarios described transgressions that were overtly relevant to pathogen transmission (e.g., a butcher changes the date of expired meat to sell it as new meat; a hotel maid fails to disinfect a hotel room but reports that she has). The remaining scenarios described transgressions in disease-irrelevant domains of behavior (e.g., a bus driver drives with an expired license; a mechanic installs a car part that he knows to be unsafe). Participants rated the seriousness of each transgression on a 9-point scale (1 = not at all serious, 9 = extremely serious). We subtracted the mean rating of non-relevant transgressions from the mean rating of disease-relevant transgressions to compute a single index measuring the domain-specific difference in perceived severity of normative transgressions.

Difference in Perceived Correctness of Conformist Choices

Participants were presented with six scenarios in which individuals chose to conform to majority opinion rather than following their own intuitions. Three of these scenarios described conformist behavior in disease-relevant domains (e.g., a woman in a public restroom conforms to collective pressure to spend extra time washing her hands despite her desire to conserve water). Three other scenarios described conformist behavior in disease-irrelevant domains (e.g., a woman conforms to collective pressure to choose a particular topic for a group project even though she thinks it is a poor choice). On 9-point scales, participants rated the extent to which each individual took the right course of action (1 = completely the wrong course of action, 9 = completely the right course of action). We subtracted mean ratings for non-relevant scenarios from the mean ratings for disease-relevant scenarios to create a single index measuring the domain-specific difference in perceived correctness of conformist choices.

Individual Difference Measures Pertaining to Threat

All participants completed an additional set of questionnaires that assessed chronic personality traits and demographic information. Included were two individual difference measures of particular relevance.

Perceived Vulnerability to Disease

Participants completed a 15-item questionnaire assessing PVD (Duncan et al., 2009). The questionnaire has two subscales. An 8-item Germ Aversion subscale (PVD-GA) measures individuals’ discomfort in situations that imply high likelihood of pathogen transmission (e.g., “I don’t like to write with a pencil someone else has obviously chewed on”). A 7-item Perceived Infectability subscale (PVD-P) measures individuals’ explicit beliefs that they are susceptible to contracting infectious diseases (e.g., “I am more likely than the people around me to catch an infectious disease”). Psychometric analyses indicate good internal reliability of both subscales; the subscales are only moderately correlated and typically predict different psychological outcomes. Previous research suggests that the Germ Aversion subscale may be more predictive of variables obliquely related to conformity (e.g., it is positively associated with Need for Structure and is negatively associated with the personality trait Openness to Experience; Duncan et al., 2009).

Belief in a Dangerous World

Participants completed the 12-item Belief in a Dangerous World questionnaire (BDW; Altemeyer, 1988), which assesses concerns about other (disease-irrelevant) threats to human welfare. (Example items are as follows: “There are many dangerous people in our society who will attack someone out of pure meanness, for no reason at all”; “Every day, as our society becomes more lawless and bestial, a person’s chances of being robbed, assaulted, and even murdered go up and up.”) Previous research indicates good internal reliability and good predictive validity as well (e.g., Altemeyer, 1988; Schaller, Park, & Mueller, 2003).

¹In six cases, participants’ total did not add to $100. For these six participants, we computed the dollars allocated to obedience as the proportion (out of 100) relative to the total dollar amount allocated across all seven qualities.
RESULTS

Predictive Effects of Perceived Vulnerability to Disease

Table 1 presents zero-order correlations involving PVD, BDW, and the four primary dependent measures individually.3 These results indicate no meaningful effects of PVD-PI, but there were statistically significant predictive implications of PVD-GA on three of the four individual independent variables. People who were more chronically germ averse reported stronger conformist attitudes, greater liking for people with conformist traits, and a higher monetary value on obedience (r’s = .40, .16, and .24, respectively; p’s < .05). The four primary dependent measures were all positively intercorrelated; consequently, we computed an aggregate conformity score for each participant by standardizing values on each measure (conversion to z-scores) and then computing the mean z-score across the four measures. PVD-GA correlated positively with this aggregate conformity index (r = .35, p < .001).

Do these relations persist even when statistically controlling for BDW (which also correlated significantly with three of the four primary dependent measures and with the aggregate conformity index)? We conducted separate regression analyses on the aggregate conformity index and on each of the four individual dependent measures, with PVD-GA and BDW entered simultaneously as predictor variables. Results of these analyses are summarized in Table 2. Notably, the unique effect of BDW was not (BDW scores were statistically equivalent across conditions, p > .05). PVD-GA scores were significant predictors of the aggregate conformity index (β = .26, p < .001), as was BDW (β = .25, p < .001).

Is the predictive effect of PVD-GA especially pronounced in behavioral domains that are more pertinent to pathogen transmission? PVD-GA correlated positively with the two ancillary difference-score measures assessing the extent to which perceived severity of normative transgression and the perceived correctness of conformist choices are stronger in disease-relevant domains compared with non-relevant domains of normative behavior: r’s = .18 and .21, p’s = .092 and .044, respectively. (Correlations between BDW and these two measures were −.13 and .11; both p’s > .20). We conducted regression analyses on each difference-score measure, with PVD-GA and BDW entered simultaneously as predictor variables. Results of these two regression analyses are summarized in Table 3. Results reveal that, when controlling for BDW, PVD-GA is a significant predictor of a tendency to judge normative transgressions more severely in disease-relevant domains and a marginally significant predictor of a tendency to more strongly endorse conformist choices in disease-relevant domains.

Impact of the Disease Salience Manipulation

Did the experimental manipulation exert a causal influence on conformist attitudes and behavior? In order to first test whether experimental condition accounted for a significant portion of variance across measures, the four primary conformity measures (behavioral conformity, liking for people with conformist traits, valuation of obedience, self-reported conformist attitudes) were included as dependent variables in a multivariate analysis of variance, with experimental condition (Disease Threat, Other Threats, and Neutral) as the independent variable. The multivariate test was significant, exact F(2, 212) = 2.01, p = .043, revealing an overall influence of the manipulation across the four measures. Univariate ANOVAs on each of the four dependent variables revealed a significant effect of condition on behavioral conformity, F(2, 214) = 4.84, p = .009 and a near-significant effect on liking for people with conformist traits, F(2, 214) = 2.77, p = .06. (The univariate ANOVAs on conformist attitudes and valuation of obedience were non-significant, p’s = .12 and .13 respectively).

Table 1. Correlations between individual difference variables and primary dependent variables

<table>
<thead>
<tr>
<th>PVD-GA</th>
<th>BDW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported conformist attitudes</td>
<td>.280</td>
</tr>
<tr>
<td>Liking for people with conformist traits</td>
<td>.120</td>
</tr>
<tr>
<td>Valuation of obedience</td>
<td>.200</td>
</tr>
<tr>
<td>Behavioral conformity with majority opinion</td>
<td>.090</td>
</tr>
</tbody>
</table>

Note: N = 217.

Because the PVD and BDW questionnaires were administered to participants at the end of the experimental session, we were attentive to the possibility that responses on the questionnaires might be affected by the manipulation. BDW was not (BDW scores were statistically equivalent across conditions, p’s > .20). PVD-GA scores were significantly higher in the Disease Threat condition than in the Other Threats condition, p = .04 (but were not higher than in the Neutral condition, p > .40). Therefore, in order to ensure that the correlation and regression results involving PVD-GA are statistically independent of the effects of the experimental manipulation, we performed additional correlation and regression analyses that statistically controlled for experimental condition. The results of these additional analyses were virtually identical (in terms of effect sizes and p-values) to those reported here.
Table 3. Results of multiple regression analyses assessing the extent to which Perceived Vulnerability to Disease—Germ Aversion (PVD-GA) and Belief in a Dangerous World (BDW) uniquely predicted difference scores assessing the tendency to exhibit more conformist responses in disease-relevant (compared with non-relevant) domains of normative behavior

<table>
<thead>
<tr>
<th>Domain-specific differences in</th>
<th>PVD-GA</th>
<th>BDW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived severity of normative transgressions</td>
<td>.310 (.039)</td>
<td>.280 (.019)</td>
</tr>
<tr>
<td>Perceived correctness of conformist choices</td>
<td>.210 (.083)</td>
<td>.010 (.953)</td>
</tr>
</tbody>
</table>

Note: N=92.

These omnibus F tests do not directly speak to the question of primary conceptual interest: Were conformist attitudes and behaviors greater in Disease Threat condition compared with the other conditions? This question is addressed by additional results from a set of three planned contrasts comparing means in each of the three experimental conditions. Table 4 presents means, standard deviations, and results of the pairwise contrasts on all four primary dependent measures. Of particular inferential interest are the pairwise contrasts on the two measures for which the omnibus univariate F test was either significant (behavioral conformity) or near-significant (liking for people with conformist traits). Behavioral conformity was highest in the Disease Threat condition; this mean was significantly higher than in the Neutral condition (t = 3.20, p = .002) and also higher than in the Other Threats condition (t = 2.73, p = .007). The mean aggregate conformity score was higher in the Other Threats condition than in the Neutral condition, but this difference did not approach statistical significance, t = .60, p = .55.)

To test the subsidiary hypothesis, we examined responses on the two difference-score measures assessing the extent to which conformist attitudes are exhibited more strongly in disease-relevant domains of normative behavior. Across all participants who completed these measures, mean values on both measures were significantly greater than 0 (both t’s > 10, p’s < .001), indicating that normative transgressions were generally perceived to be more severe in disease-relevant domains and that conformist choices were generally perceived to be more correct in disease-relevant domains. Were these domain-specific differences greater under conditions of disease threat? Table 5 summarizes the impact of the experimental manipulation on both difference-score measures and also summarizes the results of three planned pairwise contrasts.

Table 4. Means (and standard deviations) on the four primary dependent variables in each of the three experimental conditions, along with p-values for the corresponding planned pairwise contrasts between these means

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Experimental conditions</th>
<th>Planned contrasts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported conformist attitudes</td>
<td>Disease Threat</td>
<td>Other Threats</td>
</tr>
<tr>
<td></td>
<td>3.34 (0.83)</td>
<td>3.10 (0.89)</td>
</tr>
<tr>
<td>Liking for people with conformist traits</td>
<td>3.62 (0.99)</td>
<td>3.31 (0.93)</td>
</tr>
<tr>
<td>Valuation of obedience</td>
<td>9.71 (7.90)</td>
<td>8.25 (5.62)</td>
</tr>
<tr>
<td>Behavioral conformity to majority opinion</td>
<td>0.67 (0.47)</td>
<td>0.53 (0.50)</td>
</tr>
<tr>
<td>N</td>
<td>82</td>
<td>74</td>
</tr>
</tbody>
</table>

Note: The p-values reported in this table correspond to two-tailed tests of null hypotheses.

Table 5. Means (and standard deviations) on difference scores assessing the tendency to exhibit more conformist responses in disease-relevant (compared to non-relevant) domains of normative behavior

<table>
<thead>
<tr>
<th>Domain-specific differences in</th>
<th>Experimental conditions</th>
<th>Planned contrasts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived severity of normative transgressions</td>
<td>Disease Threat</td>
<td>Other Threats</td>
</tr>
<tr>
<td></td>
<td>1.67 (1.01)</td>
<td>1.33 (1.07)</td>
</tr>
<tr>
<td>Perceived correctness of conformist choices</td>
<td>Disease Threat</td>
<td>Other Threats</td>
</tr>
<tr>
<td></td>
<td>1.58 (1.31)</td>
<td>1.43 (1.24)</td>
</tr>
<tr>
<td>N</td>
<td>30</td>
<td>39</td>
</tr>
</tbody>
</table>

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Mean values on both indices were highest in the Disease Threat condition, but a statistically significant difference between experimental conditions emerged only on the measure of domain-specific differences in perceived severity of normative transgressions: Compared with participants in the Neutral condition, participants in the Disease Threat condition showed an especially strong tendency to judge normative transgressions to be more severe in behavioral domains with clear implications for pathogen transmission ($p = .008$).

**DISCUSSION**

Individual differences in PVD predicted conformist attitudes; this effect was largely independent of concerns pertaining to threats non-relevant to disease. These correlational results are corroborated by experimental results: When the threat of infectious disease was temporarily salient, people expressed greater liking for people with conformist traits and exhibited higher levels of behavioral conformity; no comparable increase in conformist attitudes and behavior followed from temporarily salience of threats that were non-relevant to disease. These results support the hypothesis that the perceived threat of infectious disease exerts an especially potent (and perhaps psychologically unique) influence on individuals’ conformist attitudes and behavior.

Additional results provided some evidence that the positive relation between disease threat and conformist attitudes may emerge especially strongly in contexts that have potentially pathogenic consequences. These results offer preliminary support for the subsidiary hypothesis that the effects of disease threat on conformity may be particularly pronounced in domains of normative behavior that are especially pertinent to disease transmission.

It is important to note that, given the nature of the experimental manipulation, the experimenter was not blind to participant’s experimental condition. However, for two reasons, this methodological limitation seems unlikely to undermine the validity of the results. First, only one of the primary dependent measures involved any meaningful interaction between experimenter and participant; all other measures were questionnaire-based, with instructions provided in written form on paper rather than through interaction with the experimenter. This substantially eliminated opportunities for the experimenter to influence participant responses. Second, the between-condition results (showing greater conformity in the Disease Threat condition) are conceptually replicated by results involving individual-difference measures (showing that PVD-GA uniquely predicted conformity). The latter finding cannot have been influenced by experimenter’s knowledge of participant’s condition. No explanation based on the experimenter knowledge can offer a complete alternative account of the results of this study.

Although the overall pattern of results is fairly consistent, there was some variability in effects across different methods and measures. For instance, analyses of individual differences revealed statistically significant effects of BDW on conformist measures, but there was no significant increase in conformity in the Other Threats condition compared with the Neutral condition. The former finding conceptually replicates previous research linking threat to conformity (and extends it by showing that this effect of non-disease-relevant threat is statistically distinct from the effects of disease-relevant threat), but the latter non-effect fails to replicate previous experimental findings (e.g., Griskevicius et al., 2006). There are several possible methodological reasons for this non-replication. First, our experiment employed a different experimental manipulation to arouse disease-irrelevant threat. Although the manipulation check indicated that the manipulation was successful in arousing threat-relevant emotions, it may have been less motivationally potent than procedures used in previous experiments. Another methodological difference between our experiment and previous experiments lies in the measures used to assess conformity. Both Griskevicius et al. (2006) and Renkema et al. (2008) reported results showing that non-disease-relevant threats produce increased conformity, but both employed a very specific kind of outcome measure: the extent to which participants agreed with other people’s opinions in their self-reported subjective liking of artistic images. Our measures were different and more diverse. (In our experiment, only one of four primary dependent measures assessed behavioral conformity to others’ opinions. It is perhaps worth noting that it was only on this measure that the mean difference between Other Threats and Neutral conditions even approached statistical significance.)

Another apparent inconsistency lies in the finding that the disease salience manipulation had a substantial (and significant) effect on the measure of behavioral conformity, but individual differences in Germ Aversion did not. This is perhaps unsurprising. Personality traits most strongly predict outcomes aggregated across multiple responses in multiple situations and are less effective in predicting single behavioral responses in specific contexts (Epstein, 1983).

There was also some inconsistency in effects on the two measures assessing domain specificity in conformist attitudes: the disease salience manipulation had a stronger effect on the measure assessing responses to normative transgression than on the measure assessing responses to conformist choices. This may reflect the fact that, compared with norm-consistent behavior, normative transgressions are evaluated more negatively; consequently, they are more psychologically potent and more likely to produce differentiated responses (Rozin & Royzman, 2001).

**Implications and Future Directions**

The results underscore the importance of treating threat not as a single scientific construct but instead as a category of psychologically distinct constructs, each with potentially unique implications. This perspective fits with that of Amoebic Self Theory (Burris & Rempel, 2010) and has also proven productive in research on the psychology of prejudice: different threats predict psychologically distinct forms of prejudice (Cottrell & Neuberg, 2005; Neuberg et al., 2011). More generally, different forms of threat may produce psychologically distinct effects on many phenomena pertaining to social cognition and social behavior. Only recently has there emerged a body of work documenting the unique impact of disease threat on psychological responses (Schaller & Park, 2011). Most of this research has focused...
on social cognition (e.g., person perception and prejudice; Ackerman, Becker, Mortensen, Sasaki, Neuberg, & Kenrick, 2009; Duncan & Schaller, 2009; Faulkner, Schaller, Park, & Duncan, 2004; Park, Schaller, & Crandall, 2007). Our results offer some of the first empirical evidence that disease threat has implications for attitudes and social influence as well.

Just as disease threat may exert unique effects on conformist attitudes, disease threat may also exert unique effects on the cognitive biases that are psychologically consistent with these attitudes (Eidelman & Crandall, 2009; Jost, Glaser, Kruglanski, & Sulloway, 2003). For example, recent research reveals that people treat the mere existence of something (e.g., a policy) as evidence of its goodness (Eidelman & Crandall, 2009). Extrapolating from our results, one might speculate that this “existence bias” will be exaggerated under conditions of disease threat and that this exaggeration may occur especially when the existing policy is perceived as having immediate implications for pathogen transmission.

An individual’s perception of vulnerability to infection need not be calibrated to that individual’s actual vulnerability to infection. Our experimental manipulation focused on perception, not reality. Another avenue for future research is to examine the consequences of differences in actual immunocompetence. Previous research reveals that decreased immunocompetence is associated with increased disgust sensitivity and also increased ethnocentrism (Navarrete, Fessler, & Eng, 2007). It is possible that individuals who are temporarily immunosuppressed (because of pregnancy, medication, etc.) may also be temporarily more disposed toward conformist attitudes and behaviors. As immunocompetence changes across the lifespan, these changes may have attitudinal consequences as well.

There may also be consequences that reverberate throughout entire populations. A disease epidemic, or even the perceived threat of an epidemic (such as the H1N1 outbreak of 2009), may lead to temporarily higher levels of conformity within populations and may dispose individuals within those populations to respond more harshly to normative transgressions (perhaps especially in domains with immediate implications for infection). By the same reasoning, societal investments in public health (e.g., vaccination programs, disease eradication programs, and other public policies that reduce vulnerability—or perceptions of vulnerability—to the threat posed by infectious diseases) may result in a populace that is not only healthier but also less beholden to the existing status quo.

ACKNOWLEDGEMENT

This research was supported by a Canada Graduate Scholarship (awarded to D.R.M.) and by a Standard Research Grant (awarded to M.S.) from the Social Sciences and Humanities Research Council of Canada.

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