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Testing the Motivational Tradeoffs Between Pathogen Avoidance and Status Acquisition

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Supplementary Materials: Data, Materials [see [Index of Supplementary Materials](#)]



Abstract

To reduce disease transmission through interpersonal contact, humans have evolved a behavioral immune system that facilitates identification and avoidance of pathogens. One behavioral strategy in response to pathogenic threat is the adoption of interpersonal reticence. However, reticence may impede status acquisition. This program of research tested whether activating pathogen-avoidant motives through priming fosters reticence related to status, namely disinterest in pursuing a group leadership position (Study 1) or disinterest in accepting a group leadership position bestowed onto them (Study 2). Individuals high in germ aversion were particularly interested in pursuing leadership as a form of status, with disease salience unexpectedly heightening status motives among those low in germ aversion. Furthermore, those high in perceived infectability reported reluctance for high-status positions, although disease salience heightened interest in accepting such positions. We contextualize findings by identifying dispositional and situational factors that foster individuals to invoke motivational tradeoffs.

Keywords

disease, status acquisition, evolutionary psychology, motivational tradeoffs



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Highlights

- Two studies identified the interplay between pathogen-avoidant and status acquisition motives.
- Acute activation of pathogen-avoidant motives and dispositional germ aversion heightened interest in status acquisition.
- Perceived infectability predicted disinterest in status unless disease was salient.

Concerns of effective leadership have become increasingly salient to ensure citizens remain compliant with public health guidelines following the COVID-19 Pandemic. Several countries experienced better health outcomes than others, which may be attributable to the appropriate actions of their leaders (Wilson, 2020). This makes understanding leadership selection during a disease threat critical. It could be possible to understand how disease threats influence the dynamics of leadership through an evolutionary perspective by identifying how prospective leaders value the costs and benefits of assuming a high-status position while navigating their own risk of infection.

The complexity of human sociality has historically necessitated group living to reap its benefits of resources and protection. Within this complexity remains a motivation to appear optimally distinctive from others to ensure others are aware of their unique group value (Brewer & Pickett, 2014). Such distinctiveness is frequently acquired through ascending status hierarchies. Status affords opportunities for additional benefits, including increased access to, and more control over, allocation of group resources (Van Vugt, Hogan, & Kaiser, 2008). Although both immersion in social groups and optimal distinctiveness are crucial to reap the benefits of group living, satisfying one need is not without costs. The decision of how to invoke this tradeoff may be partially contingent upon whether pursuit of a given strategy is especially costly in an ecology (Hornsey & Jetten, 2004). A desire for distinctiveness is particularly muted following a social threat, as normative behavior may facilitate group acceptance critical in acquiring allies during intergroup conflicts (Badea, Jetten, Czukor, & Askevis-Leherpeux, 2010).

One historically powerful ecological cue that may influence processes related to valuating the costs and benefits of distinctiveness is the threat of communicable disease. When considering disease transmission threats, distinctiveness may only be a safe means to acquire status when the risk of infection in an environment is relatively low (Fincher, Thornhill, Murray, & Schaller, 2008). However, when disease is salient, the benefits of reducing one's conspicuousness to reduce disease transmission could supersede status goals. Pathogenic threat prompts individuals to engage in, and value, interpersonal reticence as means of embracing culturally sanctioned disease-minimizing customs and behaviors, suggesting individuals downregulate the importance of distinctiveness in such

environments in favor of group immersion (Murray & Schaller, 2012; Murray, Trudeau, & Schaller, 2011). Reticence may lead individuals to avoid pursuing social roles requiring interpersonal contact. Status acquisition would have historically increased physical proximity toward others during intragroup rule enforcement and intergroup representation (Lukaszewski, Simmons, Anderson, & Roney, 2016). The current research sought to determine how disease salience influences this immersion-distinctiveness tradeoff.

Behavioral Immune System and Reticence

The primary strategy of many species, including humans, to ameliorate pathogen threat is a biological immune system designed to thwart infections (e.g., white blood cell production, fevers). Nonetheless, such responses are metabolically costly and divert critical resources from other fitness-enhancing processes (e.g., reproduction). Selection would have favored those able to recognize pathogenic threats and avoid them prior to infection, reducing the necessity of initiating biological immunological responses (Neuberg, Kenrick, & Schaller, 2011). It has been argued that a concomitant behavioral immune system (BIS) evolved to ameliorate threats preemptively. These cognitive, affective, and behavioral responses identify pathogenic threats prior to one coming into direct contact with them (Murray & Schaller, 2016). Responses include heightened reticence (Mortensen, Becker, Ackerman, Neuberg, & Kenrick, 2010), reduced affiliative interest (Sacco, Young, & Hugenberg, 2014), and perceiving social congregations as threatening (Wang & Ackerman, 2019).

Interpersonal contact heightens infection threat, prompting BIS responses in infectious environments (Brown & Sacco, *in press*; Jones et al., 2008). This threat would necessitate judicious sociality to reduce infection risk. Residents of countries with historically high levels of pathogens report lower levels of extraversion (Schaller & Murray, 2008) and conform more to reduce these risks (Murray et al., 2011). They further abide by more traditional social roles (Bastian et al., 2019; Fincher et al., 2008). Experimentally, both chronic and acute activation of pathogen-avoidant motives heightens valuation of normative behavior while downregulating interest in gregarious individuals (Brown & Sacco, 2016; Mortensen et al., 2010) and those whose deviant behavior connotes disease transmission (Keefer, Brown, & Rothschild, 2020; Murray & Schaller, 2012). Given the distinctiveness of status, it could be possible pathogenic threat downregulates motivation to acquire status in a tradeoff to satisfy one salient need for another.

Despite a universality of BIS responses, some individuals exhibit greater aversion to that potential costs of infection through interpersonal contact than others. This possible distinction could potentially be explained through the nuance apparent in individual differences in pathogen avoidance, as indexed by perceived vulnerability to disease (PVD), given that personality may reflect difference in chronic activation of motivational states (McConnell, 2011). This nuance could manifest as different strategies to reduce contamination. PVD contains two components in *germ aversion* and *perceived infectabil-*

ity (Duncan, Schaller, & Park, 2009), which respectively emerge as separate affective and cognitive BIS responses. Heightened germ aversion (GA) manifests as discomfort at situations resulting in disease transmission. To ameliorate this risk, it would be advantageous for germ-averse individuals to reduce the likelihood of disease transmission within their social environment. Germ-averse individuals espouse greater desire for reticence (Murray & Schaller, 2012), immigration restriction (Brown, Keefer, Sacco, & Bermond, 2019), and social rules that prevent contamination (Makhanova, Plant, Monroe, & Maner, 2019). Perceived infectability (PI) refers to vigilance toward pathogenic threat rooted in perceiving oneself as susceptible to disease. Those perceiving themselves as highly infectable may be similarly sensitive to the threat of infectious disease as those high in GA while directing their wariness to identifying others as pathogenic (Brown & Sacco, 2016; Young, Sacco, & Hugenberg, 2011).

Interplay Between Status Acquisition and Pathogen Avoidance Motivational Systems

Although immersion in social groups guarantees one's resource access, such access is often limited and related to the total number of group members accessing resources. Motivation to increase one's access to the benefits of group living could subsequently increase a desire for status. Successful group living has historically relied on developing status hierarchies that saw certain group members' ascension (Anderson, Hildreth, & Howland, 2015). High-status individuals would facilitate cooperation to ensure appropriate resource allocation among group members for increased access to resources and prioritization in mate selection (Van Vugt & Tybur, 2015). This status would ensure continued bargaining power in implementing collective decisions (Cheng, Tracy, Foulsham, Kingstone, & Henrich, 2013; Maner & Mead, 2010).

Despite these benefits, high status poses several costs. Status necessitates having to solve a considerable number of collective action problems, which itself is metabolically and physically costly (Van Vugt et al., 2008; von Rueden, Gurven, Kaplan, & Stieglitz, 2014). Further implicit in solving these problems is increased conspicuousness as high-status individuals enforce intragroup rules (Lukaszewski et al., 2016). Conspicuousness could present additional costs in pathogenic environments, given the extensive interpersonal contact historically required for high-status roles that may include direct physical contact (Hoang et al., 2019; Salathé et al., 2010). Perceived physical proximity with others further heightens perceptions of oneself as infectable (Brown & Sacco, *in press*). In pathogenic environments, costs of status in the form of increased proximity with group members could outweigh its potential benefits (e.g., resource access), thereby downregulating individuals' motivation to acquire status. Individual differences in pathogen-avoidant motives may lead to different sensitivities to the costs and benefits of status acquisition in a highly pathogenic environment, making it likely these sensitivities

elicit different motivations to acquire status, depending on whether one feels capable of engaging this tradeoff between status and infection likelihood.

Despite inherent costs of status in pathogenic environments, pathogen prevalence is nonetheless associated with the instillation of rigid social hierarchies (Jackson, Gelfand, De, & Fox, 2019; Murray, Schaller, & Suedfeld, 2013). Germ-averse individuals' ascension of status hierarchies could serve as an opportunity to reduce disease transmission systematically restricting intra- and intergroup contact (Duncan et al., 2009; Goh, 2020), which could upregulate their interest in status acquisition. This pursuit would pose a cost of increased interpersonal contact, but such short-term costs may be outweighed by potential long-term benefits of continually reduced infection risk. However, interest in status may be limited to environments wherein germ-averse individuals do not perceive the costs of pursuit to exceed the benefits. When contamination threat is high, these individuals may perceive the costs of status acquisition to exceed its benefits, which would downregulate their interest in pursuing leadership roles when disease is salient. However, perceiving oneself as susceptible to infection may undermine interest in invoking the tradeoff in status acquisition, given how taxing the interpersonal contact typifying status acquisition would be on their immune system (Hoang et al., 2019). Reticence could ostensibly afford health benefits, consequently downregulating interest in status acquisition. This downregulation should be especially apparent following acute activation of pathogen-avoidant motives.

Current Research

The current research sought to identify how activating pathogen-avoidant motives affects individuals' desire to acquire status. Two experiments assessed interest in leadership both through ambition in acquiring the position and whether one would assume such a position following an election while considering both acute and chronic activation of BIS responses. Given that highly germ-averse individuals may be more willing to incur short-term costs of disease transmission for long-term benefits of enacting rigid hierarchies (Duncan et al., 2009), we hypothesized heightened GA would increase leadership interest. Conversely, because individuals who perceive themselves as highly infectable may view themselves as incapable of incurring these costs, we predicted that PI would downregulate status acquisition.

We further predicted that those high in GA *and* PI would downregulate their interest in leadership following disease salience because of the presence of an additional acute disease threat. Finally, we considered a potential mechanistic basis for this downregulation in status acquisition by considering the concomitant disinterest in social interactions activated by disease salience (Sacco et al., 2014). We predicted that heightened disinterest in physical contact would mediate the association between disease salience and status motives. We report power analyses, all data exclusions, manipulations, and measures.

Data analyzed and materials for both studies are publicly available (see [Supplementary Materials](#)).

Study 1

The first study considered status acquisition based on a desire to obtain a leadership position. We considered active pursuit of status following induction of pathogen-avoidant motives to determine whether disease salience downregulates this interest in pursuing status in favor of assuming a role as a subordinate. Participants indicated their interest in pursuing a high-status position that would require them to approach this position.

Method

Participants

We recruited 234 participants from a public university in Southeastern U.S. for course credit in an online study (183 women, 48 men, 3 unspecified; $M_{\text{Age}} = 19.83$, $SD = 3.69$; 58.1% White). We collected as much data as possible in a week; a sensitivity analysis indicated the collected sample could sufficiently detect medium effects (Cohen's $f = 0.18$, $\beta = 0.80$). No data were excluded from the final analyses; we only analyzed data upon completion of collection.

Materials and Procedure

Pathogen-avoidant motives — Participants reported dispositional pathogen-avoidant motives using the Perceived Vulnerability to Disease Scale (PVD; [Duncan et al., 2009](#)). This 15-item measure operates along 7-point Likert-type scales (1 = *Strongly Disagree*; 7 = *Strongly Agree*) and is comprised of two subscales assessing GA ($\alpha = .69$) and PI ($\alpha = .86$).

Disease Prime

Participants were randomly assigned to one of two immersive narrative primes, specifically either a disease prime or a negative affect control ([White, Kenrick, & Neuberg, 2013](#)). Primes immersed participants in unpleasant experiences to induce negative affect, albeit with the former additionally activating pathogen concerns. The disease prime described a protagonist volunteering at a geriatric hospital that involves participants encountering presumably sick patients and various disgusting scenarios within the hospital ($n = 119$). The control prime described a protagonist as losing their wallet, a similarly distressing experience without rendering pathogenic concerns salient ($n = 115$).

Following immersion, participants responded to three items assessing state-level pathogenic concern (e.g., “In the context of this story, I feel concerned about disease,” $\alpha = .85$; $M_{\text{Grand}} = 1.81$, $SD = 1.81$) and four items assessing interest in interpersonal contact (e.g., “In the context of this story, I would like to be with a group of people,”

$\alpha = .68$; $M_{Grand} = 3.49$, $SD = 1.33$). Both measures operated on 7-point Likert-type scales (1 = *Not at All*; 7 = *Very Much*; Brown, Medlin, Sacco, & Young, 2019). Participants also responded to one face-valid general affect item to determine whether these conditions were similarly valenced (i.e., “How negative/positive do you feel?” –3 = *Very Negative*; 3 = *Very Positive*; $M_{Grand} = -0.60$, $SD = 1.32$).

Consenting participants completed PVD before being assigned to one of the two priming conditions and responding to manipulation check items with additional filler items. Participants then read the following scenario describing their participation in a general interdependence task:

“Imagine that you have been placed into a group. The group will be involved in problem-solving tasks and trying to meet a major end goal. As part of this group, you will need to participate in at least one role in this group, wherein you would volunteer to assume different roles. Please think about the extent to which you would want to be part of different roles in this group, namely whether you would be a leader or a follower.”

This was followed by participants indicating the extent they would prefer “to be the leader of this group and give orders” ($M_{Grand} = 4.64$, $SD = 1.70$) and “to be the follower and take orders in the group from the leader” ($M_{Grand} = 3.77$, $SD = 1.63$) using separate 7-point scales (1 = *Not at All*; 7 = *Very Much*). Participants then provided demographics and were debriefed.

Results

Manipulation Checks

Disease-primed participants reported greater state-level pathogenic concern ($M = 4.75$, $SD = 1.49$) compared to control participants ($M = 2.42$, $SD = 1.25$), $t(229) = 12.84$, $p < .001$, $d = 1.69$. Disease-primed participants additionally reported less interest in interpersonal contact ($M = 3.15$, $SD = 1.33$) than control participants ($M = 3.85$, $SD = 1.24$), $t(230) = 4.14$, $p < .001$, $d = 0.54$. Disease-primed participants further reported greater negative affect ($M = -0.77$, $SD = 1.42$) than control participants ($M = -0.42$, $SD = 1.18$), $t(229) = -2.05$, $p = .041$, $d = 0.27$.

Primary Analysis

We conducted a 2 (Condition: Disease vs. Control) \times 2 (Role: Leader vs. Follower) mixed-model custom analysis of covariance (ANCOVA) with repeated factors over the latter factor with GA and PI as custom covariates to test for interactive effects while reducing familywise error through a singular omnibus test (Sacco & Brown, 2018). Effects were superordinately qualified by a Condition \times Role \times GA interaction, $F(1, 224) = 6.32$, $p = .013$, $\eta_p^2 = .027$. No main effects emerged, nor did any interactions for PI, $F_s < 2.63$, p_s

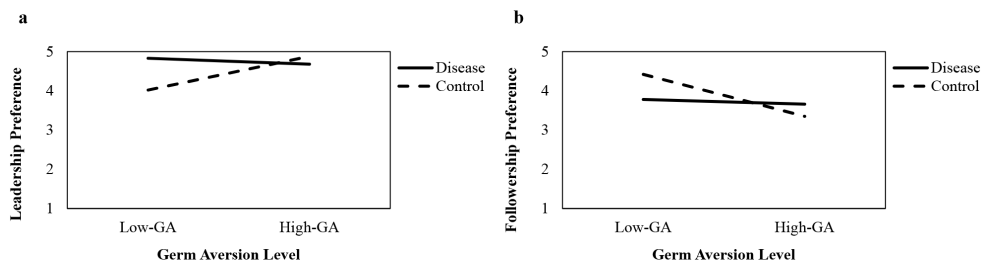
$> .108$, $\eta_p^2 < .013$. We conducted subordinate analyses to understand interactive effects of GA but considered PI no further.

Conditional differences in negative affect led us to conduct a supplementary omnibus ANCOVA including negative affect as an additional custom covariate. Inclusion of affect in the model did not meaningfully change the results, $F_s < 0.68$, $p_s > .413$, $\eta_p^2 < .004$. This suggests that effects appear specifically driven by the activation of pathogen-avoidant motives and not affect.

We decomposed the 3-way interaction by conducting two subordinate regression analyses for leadership and followership with Condition and GA as predictors (Brown & Sacco, 2016). We used Model 1 of PROCESS with (Hayes, 2013). For leadership, a Condition \times GA interaction emerged, $b = 0.49$, $SE = 0.21$, $t = 2.25$, $p = .025$. Simple slope analyses indicated a positive association between leadership preference and GA for control-primed participants, such that higher GA was associated with greater interest in leadership, $b = 0.42$, $SE = 0.15$, $t = 2.70$, $p = .007$. No effect emerged for disease-primed participants, $b = -0.07$, $SE = 0.15$, $t = -0.45$, $p = .648$. Viewed another way, among low-GA participants (-1 SD), disease-primed participants reported greater interest in leadership compared to control-primed participants, $b = -0.81$, $SE = 0.31$, $t = -2.55$, $p = .011$. No difference emerged for high-GA participants ($+1$ SD), $b = 0.20$, $SE = 0.31$, $t = 0.63$, $p = .527$. See Figure 1a.

Figure 1

Leadership (a) and Followership Preference (b) as a Function of Condition and GA in Study 1



Note. GA = germ aversion.

Followership effects were qualified by their own Condition \times GA interaction, $b = -0.45$, $SE = 0.20$, $t = -2.22$, $p = .027$. Simple effects indicated a negative association between followership preference and GA for control-primed participants, such that higher GA was associated with reduced interest in followership, $b = -0.51$, $SE = 0.14$, $t = -3.54$, $p < .001$. No effect emerged for disease-primed participants, $b = 0.06$, $SE = 0.14$, $t = 0.41$, $p = .682$. Viewed another way, control-primed participants were more interested in followership than disease-primed low-GA participants, $b = 0.64$, $SE = 0.30$, $t = 2.12$,

$p = .034$. No difference emerged for high-GA participants, $b = -0.30$, $SE = 0.30$, $t = -1.02$, $p = .306$. See Figure 1b.

Mediation Analyses

Given participants' heightened disinterest in interpersonal contact following disease salience, in addition to shifts in interests in leadership and followership as a function of GA, we found it prudent to determine whether this disinterest in interpersonal contact served as a mechanistic basis for these different pursuits. We conducted a pair of moderated mediation analyses, one for Leadership Preference and one for Followership Preference, using Model 8 of PROCESS that considered Condition as the predictor, disinterest in interpersonal contact as the mediator, and GA as the moderator using 5,000 bootstraps. The index for moderated mediation indicated that disinterest in interpersonal contact did not mediate the reported effects for Leadership, 95% CI [-0.05, 0.07], or Followership Preference, 95% CI [-0.02, 0.09]. These findings suggest interest in interpersonal contact did not serve as the mechanistic basis for the pursuit of a specific group role.

Discussion

Results partially supported the hypotheses. Consonant with predictions, GA was associated with increased leadership interest. Despite the risk of disease transmission through interpersonal contact inherent in status acquisition, high-GA individuals could have viewed costs as necessary to instill status hierarchies of which they would be atop (Duncan et al., 2009). Among low-GA individuals, disease salience unexpectedly elicited greater leadership interest compared to control participants, who were also at levels comparable to high-GA individuals. When considering the fact that disease-primed participants reported greater disinterest in interpersonal contact, low-GA participants could have viewed this pursuit of status as a costly signal (Grafen, 1990). In anticipation of the considerable social benefits of high status, individuals may engage in behaviors that would necessarily increase their risk of incurring costs for large payoffs. Despite the increased likelihood of physical harm, men may engage in risky behaviors to ensure others view them as formidable, facilitating their future access to resources (Fessler et al., 2014). Disease threat poses its own costs, which could make status acquisition costly in pathogenic environments. Low-GA individuals' willingness to acquire status may connote an overall resistance to disease transmission in pathogenically threatening environments, which could implicate them as especially effective leaders.

Disease salience unexpectedly did not downregulate dispositionally heightened interest in leadership acquisition among high-GA individuals. Results could suggest that highly germ-averse individuals may view the downstream benefits of status as exceeding the costs of disease transmission to ascend a status hierarchy. A high-status position could afford individuals the opportunity to instill social rules that may reduce infection risk (Murray & Schaller, 2012). Germ-averse individuals could view their position as one

that facilitates intragroup disease transmission among subordinates (Lukaszewski et al., 2016), while also limiting contact with outgroups who may pose an increased pathogenic risk through measures such as immigration and travel bans to control the threat of exogenous pathogens (Goh, 2020).

Study 2

Results from Study 1 partially supported the hypotheses in terms of demonstrating how GA predicts interest in pursuing a status position. However, no support emerged for how individual differences in PI may shape status acquisition motives. PI was previously found to be unassociated with an interest in fostering social hierarchies (Duncan et al., 2009). This may reflect the more cognitive aspect of this facet compared to the motivational nature of GA that could make the active pursuit of status irrelevant to high-PI individuals. Rather than considering the active pursuit of status in potentially competitive domains like in Study 1, it is possible that PI may foster reluctance to accept a leadership position that was bestowed upon them as they weigh the costs and benefits of such a position in a non-competitive capacity. Further, it would seem likely that acute disease salience further downregulates this interest in such costly pursuits.

Method

Participants

We recruited 239 participants from a public university in Southeastern U.S. for course credit (187 women, 51 men, 1 other; $M_{\text{Age}} = 20.09$, $SD = 5.26$; 66.1% White). We collected as much data as possible within a week without an a priori power analysis, although a sensitivity analysis indicated we were sufficiently sampled for a medium effect size (Cohen's $f = 0.18$, $\beta = 0.80$). No data were excluded from the final analyses.

Materials and Procedure

Procedures started the same as in Study 1, with participants first completing PVD ($\alpha > .73$), followed by the disease ($n = 121$) or control prime ($n = 118$). This was followed by indicating disease concern ($\alpha = .88$; $M_{\text{Grand}} = 3.61$, $SD = 1.90$), interpersonal contact ($\alpha = .73$; $M_{\text{Grand}} = 3.43$, $SD = 1.36$), and affect ($M_{\text{Grand}} = -0.78$, $SD = 1.41$). Then, participants read a scenario about being elected group leader for an interdependent task:

“Imagine that you have been placed into a group. The group will be involved in problem-solving tasks and trying to meet a major end goal. As part of this group, you were elected to be the leader, which entails giving people orders. Please think about how that would make you feel.”

This was followed by indicating their likelihood of accepting and declining the leadership position using two face-valid 7-point items (1 = *Extremely Unlikely*; 7 = *Extremely Likely*). This was followed by demographics and debriefing.

Results

Manipulation Checks

Disease-primed participants reported more pathogenic concern ($M = 4.89$, $SD = 1.54$) than control participants ($M = 2.30$, $SD = 1.23$), $t(227.81) = 14.33$, $p < .001$, $d = 1.85$.

Disease-primed participants further reported less interest in interpersonal contact ($M = 3.04$, $SD = 1.35$) than control participants ($M = 3.84$, $SD = 1.25$), $t(237) = -4.75$, $p < .001$, $d = 0.61$. Disease-primed participants additionally reported more negative affect ($M = -1.02$, $SD = 1.40$) than control participants ($M = -0.54$, $SD = 1.38$), $t(237) = -2.63$, $p = .009$, $d = 0.34$.

Primary Analysis

We conducted a 2 (Condition: Disease vs. Control) \times 2 (Decision: Accept vs. Decline) mixed-model custom ANCOVA with repeated factors over the latter factor using GA and PI as custom covariates. A Decision main effect indicated participants were more likely to accept the leadership role ($M = 5.05$, $SD = 1.69$) than decline it ($M = 3.03$, $SD = 1.67$), $F(1, 233) = 10.40$, $p = .002$, $\eta_p^2 = .041$. Effects were qualified by a Condition \times Decision \times PI interaction, $F(1, 233) = 5.51$, $p = .020$, $\eta_p^2 = .023$. No other main effects emerged, nor did any interaction with GA, prompting no further consideration, $F_s < 1.46$, $p_s > .228$, $\eta_p^2 < .010$.

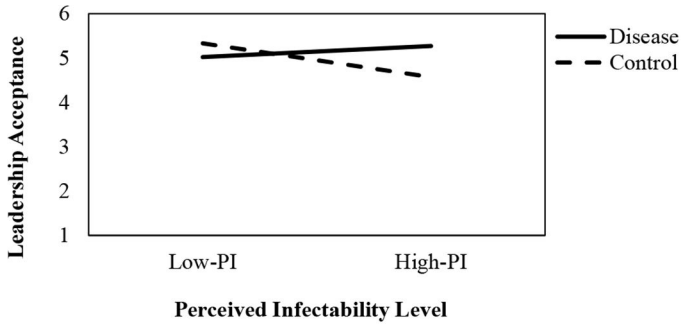
Because disease-primed participants reported more negative affect than control participants, we conducted a supplementary ANCOVA including negative affect as a custom covariate. Including negative affect did not meaningfully influence the results, $F_s < 0.61$, $p_s > .437$, $\eta_p^2 < .004$. Once again, effects elicited from priming appeared rooted in differential activation of pathogen-avoidant motives and not general negative affect.

We decomposed the 3-way interaction with two subordinate regression analyses for acceptance and declination as outcomes using Condition and PI as predictors for Model 1 in PROCESS. Acceptance effects were qualified by a Condition \times PI interaction, $b = -0.42$, $SE = 0.18$, $t = -2.32$, $p = .021$ (see Figure 2). Simple slopes analyses indicated a negative association between PI and acceptance likelihood among control-primed participants, such that high-PI individuals reported less likelihood of accepting the leadership position, $b = -0.31$, $SE = 0.13$, $t = 2.46$, $p = .014$. No association emerged for disease-primed participants, $b = 0.10$, $SE = 0.12$, $t = 0.82$, $p = .411$. Viewed another way, disease-primed participants reported greater likelihood of accepting the leadership position than control-primed participants among those high in PI (+1 SD), $b = 0.70$, $SE = 0.30$, $t = -2.28$, $p = .023$. No difference emerged among low-PI individuals (-1 SD), $b = 0.31$, $SE = 0.30$, $t =$

1.00, $p = .315$. No significant interaction emerged for Declination, $b = 0.33$, $SE = 0.19$, $t = 1.84$, $p = .067$.

Figure 2

Interest in Leadership Acceptance as a Function of Condition and PI in Study 2



Note. PI = Perceived infectability.

Mediation Analysis

We conducted a moderated mediation analysis for Leadership Acceptance, given the interactive effects between Condition and PI. Much like Study 1, we again used Model 8 in PROCESS using Condition as the predictor, PI as the moderator, and interest in interpersonal contact as the mediator using 5,000 bootstraps. The index of moderated mediation indicated no effect for Acceptance, 95% CI $[-0.06, 0.02]$. Once again, heightened aversion to interpersonal contact did not serve as the mechanistic basis for status acquisition.

Discussion

Results from Study 2 differed from Study 1 in several capacities. Most critically, effects were moderated by PI rather than GA. This moderation could reflect the difference in status acquisition in both studies. Whereas Study 1 focused on actively seeking status, Study 2 focused on interest in status following nomination by others. Effects for the former could be rooted in motivational responses, aligning with GA being a more affective component of PVD. Conversely, the latter's effects could be explained by participants' distinctiveness within the group being already heightened (Brown & Sacco, *in press*), thus utilizing their desire not to accept leadership as a cognitive response to a threat. Reluctance in accepting leadership positions could be rooted in recognizing the likelihood of increased interpersonal contact through leadership, which could be aversive to those perceiving themselves as highly infectable. Being placed atop a hierarchy by others

renders such individuals unable to avoid the increased costly interpersonal contact, thus prompting reluctance in accepting the position.

Unexpectedly, disease salience heightened interest in accepting the leadership position among those high in PI. In the context of the current study, accepting the nomination could itself reflect adhering to a group mandate, thereby ensuring a greater level of group acceptance and self-group assimilation relative to refusing the position (Suhay, 2015). This effect could further reflect that PI could lead individuals to perceive their vigilance toward disease as an asset to their group, thus prompting them to reduce their reluctance toward leadership without necessarily accepting their role in that position explicitly. From this leadership position, high-PI individuals could restrict ingroup behavior and outgroup contact to reduce disease transmission within their group. Additionally, desire to decline the position being unaffected by priming suggests declining a role, rather than passively not accepting it, could make participants appear too distinctive, thus leaving them vulnerable to group sanctions.

General Discussion

The current program of study found evidence for how pathogen-avoidant motives modulate interest in status acquisition across different stages of status acquisition while considering both chronic and acute motives. Specifically, when pathogenic threat was not salient, we found differences in how individual differences in GA and PI shape status interest. High-GA individuals were particularly interested in pursuing status through a competitive environment, whereas high-PI individuals expressed disinterest in accepting a high-status position, a result based on individuals' potential willingness to incur the costs of potential infection to accrue status benefits.

In addition to these predicted results were unexpected findings among disease-primed participants. Low-GA participants were similarly interested in acquiring status to high-GA individuals when disease was salient in Study 1, whereas high-PI individuals heightened their interest in accepting a leadership position in Study 2. Contrary to initial predictions, these results seem to suggest that the activation of pathogen-avoidant motives do not operate in hydraulic opposition to status acquisition motives, wherein prioritization of one motivational state would reduce the prioritization of the other. Rather, acute activation of pathogen-avoidant motives appears to promote status acquisition, particularly among high-GA and -PI individuals in a manner consonant with their interpersonal styles (i.e., approaching and accepting leadership, respectively). This heightened motivation to acquire status suggests such individuals may value the benefits considerably more than the costs inherent in ascending a hierarchy. Such benefits may specifically include having the ability to develop restrictive social rules that ameliorate disease transmission within one's group. Further, the costs of disease transmission through interpersonal contact may be short-term when individuals successfully reach the highest

position in the hierarchy. From this position, leaders could further sequester themselves from population density required for disease transmission while enacting these rules (Jones et al., 2008).

In both studies, we additionally tested whether interest for interpersonal mediated these effects. Although disease salience indeed heightened this disinterest, this disinterest did not subsequently downregulate participants' motivation to acquire status. Coupled with the findings indicating how chronic and acute disease were both capable of heightening interest in status acquisition, participants' desire for status increased *despite* a motivational response that would ostensibly serve to ameliorate infection likelihood. The motivation to acquire status within a diseased environment thus represents a tradeoff, wherein individuals are willing to incur the costs of infection to reap the benefits atop a social hierarchy. This lack of effect nonetheless warrants future research to determine a mechanistic basis for this interest. For example, given high-GA individuals' interest in hierarchy (Duncan et al., 2009), it could be possible the impetus for their leadership preference is a desire to instill structure that would ultimately reduce their group's contact with disease. Alternatively, the basis of this status acquisition could be rooted in identifying environmental threats (Bastian et al., 2019), with future research specifically assessing perceived threats as a mediator. Furthermore, it could be possible that the nature of the group task was the basis of this lack of mediation because participants were ostensibly interacting only with ingroup members. Perhaps disinterest in interpersonal contact would only serve as a mediator for instances when the prospective leader would need to interact with individuals identified as being part of an outgroup, given that individuals perceive outgroup members similarly to those possessing physical disease cues (Petersen, 2017).

Pathogen Avoidance for Dominance and Prestige Strategies

The dispositional differences in status interest may reflect how BIS responses influence individuals' pursuit of status through different strategies. Individuals typically ascend the status hierarchy using *dominance* or *prestige* strategies based on the type of leader one aspires to be (Cheng & Tracy, 2014; Maner & Case, 2016). Each strategy appears to align with one facet of dispositional pathogen-avoidant motives, which reflects the divergent findings across both studies. Dominance strategies involve agonistic behaviors in ascension. The pursuance specifically coerces and intimidates weaker group members to ensure their ascension of the hierarchy without requiring the conferral of status from others (de Waal-Andrews, Gregg, & Lammers, 2015). Given the proclivity for high-GA individuals to desire rigid social hierarchies (Duncan et al., 2009), pursuing status through dominance could be especially appetitive. Pursuing a leadership position in Study 1 could be advantageous in fostering a restrictive environment conducive to preventing disease transmission with them atop the hierarchy. In this position, they could additionally isolate group members from each other in the service of both reducing transmission

through interpersonal contact and preventing the formation of threatening alliances between subordinates (Case & Maner, 2014). Interest in pursuing leadership appeared particularly heightened among high-GA participants, which may reflect their chronic interest in invoking hierarchies.

Prestige motives are rooted in motivations to have prospective subordinates freely confer status upon an individual based on their competence (Henrich & Gil-White, 2001). This possibility could inform results in Study 2 wherein individuals would display competence to group members through their vigilance in identifying disease threats (e.g., Brown & Sacco, 2016; Young et al., 2011). High-PI individuals indicated disinterest in accepting their appointed leadership position without the presence of an overt threat, as extensive interpersonal contact is associated with perceiving oneself as vulnerable to disease (Brown & Sacco, *in press*). However, heightened interest in accepting the position following disease threat could have facilitated high-PI individuals to recognize their heightened sensitivity toward disease as an asset in pathogenic environments, hence the favorability from group members. This self- and other-perceived competence could ensure success in an interdependent task, further reducing the likelihood of within-group disease transmission. Nonetheless, interpreting these results through specific status motives remains postdictive and requires future research to confirm these interplays.

Limitations and Future Directions

Despite the theoretical sensibility of both studies in understanding the interplay between pathogen-avoidant and status acquisition motives, the current research is not without its limitations. First, because the patterns of our findings were not predicted a priori, it remains important to replicate these results to ensure their overall robustness. Results consistently demonstrated that disease salience heightened status motives, yet it remains unclear if the activation of status motives could potentially up- or downregulate pathogen-avoidant motives. Salient status pursuit could reduce concerns of disease, which could be tested by priming status motives before tasking participants with a vigilance task to identify pathogenic cues (e.g., facial disfigurement; Ackerman et al., 2009; Griskevicius, Tybur, & Van den Bergh, 2010). Prioritizing distinctiveness elicits perceptions of social groups as unimposing, which could serve as a corollary to perceiving a group as less pathogenically threatening (Pickett, Silver, & Brewer, 2002).

Future research would also benefit from investigating the specific interplays between both aspects of PVD with dominance and prestige strategies to clarify our present explanation. Studies could consider GA- and PI-specific primes before tasking participants with indicating the extent to which they would utilize dominance and prestige strategies (Cheng et al., 2014). Given the results of the current research program, temporal activation of GA in the face of an acute disease threat could reduce individuals' interest in using dominance to acquire status. Conversely, the reduced aversion to being elected

leader lends itself to the prediction that implicating one's environment as highly infectious could heighten interest in utilizing prestige strategies.

An additional limitation to the current research is the overall asymmetry in male and female participants in both studies. Despite not having a priori predictions for sex differences, men and women nonetheless pursue status at different rates, suggesting men and women may pursue status differently as a function of disease salience. Given both men's greater size and aggression than women (Sell, Hone, & Pound, 2012), men would benefit more from status, motivating their pursuit. Although these status effects emerged with primarily female samples, it could be possible that a larger sample of men would allow us to identify magnitudinal differences in how men and women pursue status as a function of disease salience. Future research would benefit from recruiting more men, which would justify omnibus analyses that consider sex as a moderator.

Another limitation of this research is reliance on self-reported interest in leadership. Future research would benefit from considering the behavioral underpinnings of status acquisition. An extension of Study 1 could position participants to play a competitive game with confederates with the winner becoming group leader (Anderson & Bushman, 1997). It would seem sensible to predict that disease-primed participants would behave more competitively in these games. Additionally, studies could consider approach/avoidance behaviors toward terms associated with status (Mortensen et al., 2010). If participants are motivated to acquire status following disease salience, they should be more likely to approach concepts related to high status.

Future research would further benefit by considering additional fundamental social motives to identify how they shape interest in status acquisition (Kenrick, Griskevicius, Neuberg, & Schaller, 2010). Consideration may include activation of self-protection motives designed to identify and avoid threats to interpersonal safety similarly to how pathogen-avoidant motives identify disease threats (Neuberg et al., 2011). Because of this overlap between both motives, it would seem likely that activating self-protection motives could heighten interest in status in the service of ensuring access to greater safety atop the status hierarchy (White et al., 2013).

The theoretical implications for this work in identifying the interplay between pathogen avoidance and status acquisition further provides applied implications while understanding potential effects of the COVID-19 pandemic on who would be an optimal leader. Future work would benefit by identifying how the pandemic shapes both interest in leadership as a function of BIS responses and the types of leaders people ultimately select both to implement policies they deem necessary to ameliorate infections (Karwowski et al., 2020) or even to ensure their leader is capable of surviving infection (White et al., 2013). If disease salience heightens endorsement of social hierarchies, it would seem sensible to predict that increased leadership preferences would be accompanied by policies that perpetuate hierarchies.

Conclusion

Individuals' ascension in a status hierarchy presents a series of costs and benefits that must be carefully weighed to ensure one's own ability to reap the considerable benefits afforded to leaders. When considering the role of disease salience in these decisions, the current program of research provided initial evidence for how pathogenic threat shifts interests in pursuing status before and after one's ascension. From these status positions, individuals could maintain a level of distinctiveness that not only ensures their beneficence but also their survival.

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Supplementary Materials

Data analyzed and materials for both studies are publicly available at the OSF repository (for access see Index of [Supplementary Materials](#) below).

Index of Supplementary Materials

Brown, M., & Sacco, D. (2020). *Supplementary materials to "Testing the motivational tradeoffs between pathogen avoidance and status acquisition"* [Data and materials]. OSF.
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