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# Beauty at the Ballot Box: Disease Threats Predict Preferences for Physically Attractive Leaders

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## Abstract

Why does beauty win out at the ballot box? Some researchers have posited that it occurs because people ascribe generally positive characteristics to physically attractive candidates. We propose an alternative explanation—that leadership preferences are related to functional disease-avoidance mechanisms. Because physical attractiveness is a cue to health, people concerned with disease should especially prefer physically attractive leaders. Using real-world voting data and laboratory-based experiments, we found support for this relationship. In congressional districts with elevated disease threats, physically attractive candidates are more likely to be elected (Study 1). Experimentally activating disease concerns leads people to especially value physical attractiveness in leaders (Study 2) and prefer more physically attractive political candidates (Study 3). In a final study, we demonstrated that these findings are related to leadership preferences, specifically, rather than preferences for physically attractive group members more generally (Study 4). Together, these findings highlight the nuanced and functional nature of leadership preferences.

## Keywords

evolutionary psychology, decision making, physical appearance, preferences, social structure

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In the fall of 1960, John F. Kennedy and Richard Nixon faced off in the closest presidential election of the 20th century—with a mere 0.17% separating the two candidates in the national popular vote. Although many substantive issues separated the candidates, historians agree that a seemingly stylistic difference, the physical appearance of Kennedy during the first presidential debate, was a major turning point in the campaign. Whereas Kennedy appeared handsome and fit, Nixon seemed pale and sickly (Kraus, 1962). Anecdotal reporting on the debate highlighted the consequences of the candidates' contrasting appearances: Those who watched the debate on television seemed to think Kennedy was the winner; those who had listened to the debate only on the radio, and had not seen the candidates, perceived Nixon to be the victor (Germond & Witcover, 1979).

In recent years, a number of empirical studies have supported the notion that physical appearance can affect voting preferences. In both laboratory experiments and

examinations of real voting behavior, people are more likely to vote for physically attractive candidates (e.g., Banducci, Karp, Thrasher, & Rallings, 2008; Berggren, Jordahl, & Poutvaara, 2010; Budesheim & DePaola, 1994; Rosenberg, Bohan, McCafferty, & Harris, 1986). In general, this phenomenon has been attributed to people's tendency to ascribe positive characteristics to those who are physically attractive and, the thinking goes, that these generally positive attributions drive voting behavior. We suggest another explanation—that preferences for physically attractive leaders may be related to functional disease-avoidance mechanisms. Adopting this perspective in the current investigation, we derived and tested novel

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hypotheses about when and why people prefer physically attractive leaders.

## **An Evolutionary Approach to Leadership**

Humans are a social species, and to function effectively, people must often coordinate their behavior with one another. A seemingly universal means of achieving that coordination is through leader-follower relationships (Van Vugt, Hogan, & Kaiser, 2008). Indeed, such relationships emerge spontaneously and quickly in group settings (Bales, 1951; Van Vugt & De Cremer, 1999) and even arise in groups of 3-year-old children (Hawley, 2003).

Although leadership is considered a “universal” aspect of human social groups, this does not mean that leadership preferences are invariant. Rather, a functional-evolutionary perspective suggests that leadership preferences should shift as a function of the unique set of threats and opportunities facing a group: Groups that face different types of adaptive challenges should seek different types of leaders.

In line with this thinking, several studies have demonstrated that leadership preferences shift in response to physical-safety threats. For example, during periods of intergroup conflict, people especially prefer charismatic, masculine, and dominant leaders (Cohen, Solomon, Maxfield, Pyszczynski, & Greenberg, 2004; Kosloff, Greenberg, Weise, & Solomon, 2010; Little, Burriss, Jones, & Roberts, 2007; Re, DeBruine, Jones, & Perrett, 2013). Extending these findings, Van Vugt and Spisak (2008) showed that intergroup conflicts influence leadership preferences differently than intragroup conflicts. During periods of intergroup conflict, when concerns about intergroup aggression are raised, people prefer male leaders, but during intragroup conflicts, when concerns about group cohesion come to the fore, people prefer female leaders. Together, the results from these studies suggest that different leadership preferences emerge in response to different physical-safety threats. In the current investigation, we considered how another type of threat, that posed by infectious disease, can affect leadership preferences.

## **Disease Threats and Physical Attractiveness**

For millions of years, humans have faced a strong, persistent threat from disease (Wolfe, Dunavan, & Diamond, 2007) and, in response, have evolved defenses to prevent and combat infection. Increasingly, researchers have examined the role of psychological and behavioral responses in preventing diseases from entering the body

(Schaller & Park, 2011). For instance, people are especially likely to pay attention to those with disfigurements (Ackerman et al., 2009) and to associate benign physical abnormalities with contagious disease (e.g., Park, Faulkner, & Schaller, 2003; Park, Schaller, & Crandall, 2007). Concerns about disease have also been linked to the stigmatization and avoidance of individuals who have heuristic cues of illness, such as deformities, lesions, obesity, physical disabilities, and facial asymmetry (e.g., Park et al., 2003, 2007; Schaller & Neuberg, 2012).

Physical attractiveness is also used as a heuristic cue to health status. Ratings of facial attractiveness are highly correlated with perceptions of health (e.g., Grammer & Thornhill, 1994; Rhodes, 2006; Thornhill & Gangestad, 1999), and some research has suggested that physical attractiveness might be a diagnostic (if imperfect) cue to actual health outcomes (Gangestad, Thornhill, & Yeo, 1994; Henderson & Anglin, 2003; Rhodes et al., 2001). For instance, in one study, attractive participants, relative to unattractive participants, displayed greater cardiovascular health and had fewer cold symptoms over a 1-month period (Shackelford & Larsen, 1999).

## **Disease Threats and Leadership Preferences**

There are several reasons to believe that disease threats will increase preferences for a healthy leader. First, group members are relatively more dependent on leaders than on other group members, and groups with effective leaders are more successful than those with ineffective leaders (Van Vugt et al., 2008). Thus, the costs of a leader becoming ill (and less effective) would be much larger than the costs of a typical other member becoming ill. Moreover, if an unhealthy leader were to die, periods of leadership transition could interfere with intragroup coordination and create group instability—adversely affecting the ability of the group to meet its members’ needs.

On this reasoning, we posit that people should prefer healthy leaders and that this preference should be exaggerated during periods of disease threat. Because physical attractiveness can serve as a cue of health, we propose that people concerned with disease should especially favor physically attractive leaders. Further, this relationship should be unique to disease threats, compared with other types of threats (e.g., physical-safety threats), because robust health is especially important during periods of illness and disease. We tested these hypotheses in a series of four studies using both correlational data on real-world voting behavior and laboratory-based experiments. In Study 1, we examined the relationship between disease threats and the outcomes of U.S. congressional

elections. In Studies 2 and 3, we manipulated the presence of disease threats and measured both stated preferences for physically attractive leaders and inclinations to vote for physically attractive politicians. Finally, in Study 4, we tested whether the relationship between disease threats and leadership preferences reflects a general bias for preferring physically attractive people—in all aspects of one's life—or whether this relationship is more important for those in leadership positions.

## Study 1: Disease Threats and Congressional Elections

### Method

In Study 1, we examined the relationship between disease threats and preferences for physically attractive leaders at the national level. To do so, we gathered photos of major-party candidates (winners and losers) from the 2010 U.S. congressional elections. An independent group of 20 research assistants (14 women, 6 men) rated each photo using a scale from 1 (*extremely unattractive*) to 7 (*extremely attractive*). We also collected information about election results, each candidate's political affiliation, and each candidate's incumbent status. Finally, we obtained data on disease threat in each congressional district using measures of infant mortality rate and life expectancy. These indicators are considered to be highly sensitive proxy measures of population health (Murray, Salomon, & Mathers, 2000) and correlate with health outcomes (Reidpath & Allotey, 2003). In our data set, infant mortality rate and life expectancy were correlated,  $r(325) = -.74$ . Therefore, we  $z$ -scored each variable and combined these scores to create a disease-threat composite.

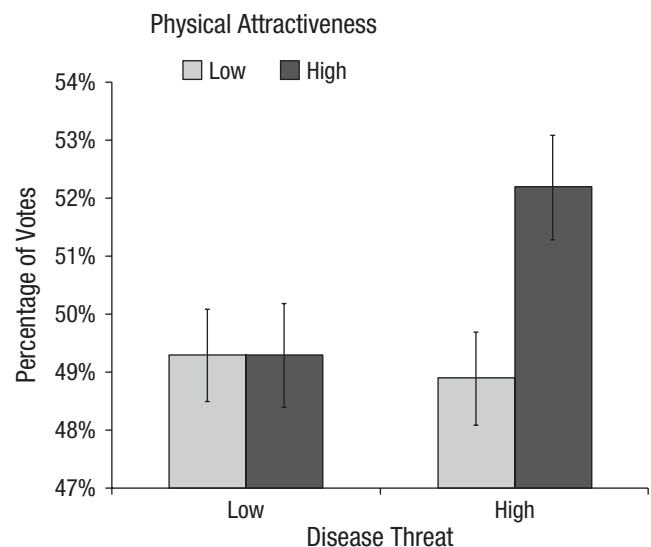
### Results and discussion

Candidates' political affiliation and incumbent status accounted for a large percentage of variance in voting patterns. In our analyses, we conducted a hierarchical regression in which we entered political affiliation and incumbent status in the first step and disease threat, physical attractiveness, and their interaction in the second step. For results from a full regression analyses, see Study 1: Additional Analyses in the Supplemental Material available online.

We regressed the percentage of votes each candidate received onto political affiliation, incumbent status, disease threat, physical attractiveness, and the Disease Threat  $\times$  Physical Attractiveness interaction. Replicating previous results, physical attractiveness was positively related to percentage of votes,  $t(649) = 1.98$ ,  $p = .048$ ,  $\beta = 0.053$ . As predicted, there was also a marginally significant interaction between disease threat and physical

attractiveness,  $t(649) = 1.94$ ,  $p = .053$ ,  $\beta = 0.051$  (see Fig. 1). Next, we assessed the relationship between physical attractiveness and percentage of votes at 1 standard deviation above and below the mean of disease threat. In districts with high disease threat (1 standard deviation above the mean), physical attractiveness significantly predicted vote percentage,  $t(649) = 2.57$ ,  $p = .011$ ,  $\beta = 0.11$ . However, in districts with low disease threat (1 standard deviation below the mean), it did not ( $p > .90$ ). Stated another way, in districts with high disease threat, a 1-SD increase in physical attractiveness increased a candidate's total percentage of votes by 1.7%. In districts with low disease threat, a 1-SD increase in physical attractiveness increased a candidate's total percentage of votes by 0.008%.

In a second set of analyses, we examined what might be considered the most important electoral outcome—whether a candidate won or lost. A logistic regression revealed a significant interaction between disease threat and physical attractiveness,  $b = 0.17$ , Wald  $\chi^2(1) = 6.85$ ,  $p = .009$ . In districts with high disease threat, physical attractiveness significantly predicted whether a candidate won or lost,  $b = 0.62$ , Wald  $\chi^2(1) = 10.42$ ,  $p < .001$ ; in districts with low disease threat, it did not,  $p > .90$ . Stated another way, in districts with high disease threat, a 1-SD increase in physical attractiveness increased a candidate's odds of winning by a factor of 1.77. In districts with low disease threat, a 1-SD increase in physical attractiveness decreased a candidate's odds of winning by a factor of 0.1.



**Fig. 1.** Results from Study 1: mean percentage of votes that U.S. congressional candidates received as a function of disease threat and attractiveness. Low and high levels of disease threat and physical attractiveness were 1 standard deviation above and below the mean, respectively. Error bars indicate standard errors of the mean.

We also tested whether our results (a) were consistent across both male and female candidates and (b) survived after controlling for factors potentially correlated with disease threat, such as income and education. Each of the findings reported above remained significant, even after controlling for gender, income, and education (see Study 1: Additional Analyses in the Supplemental Material).

## Study 2: Disease Threats and Desired Leadership Characteristics

Study 1 provided real-world evidence for the relationship between physical attractiveness and disease threat. Of course, the correlational nature of the study limits our ability to affirm that disease threats causally shifted leadership preferences. In Study 2, we experimentally manipulated disease threat and measured preferences for different leadership characteristics. Additionally, we compared disease and self-protection threats to test whether disease threats uniquely affect preferences for physical attractiveness.

### Method

**Participants.** One hundred twenty-three participants (75 women, 48 men; mean age = 33.67 years) were recruited through Amazon's Mechanical Turk and received a small amount of money in return for their participation.

**Procedure.** Participants were told that they would read a story and that later their memory for it would be assessed. Participants were randomly assigned to read one of three stories and were instructed to imagine themselves in the situation described. The *disease-threat* story described a person volunteering at a geriatric ward who encountered a number of disgusting events—being sneezed on by a sickly person, seeing a person with an open wound, and finding a hair in his or her lunch. The *self-protection* story described a person, home alone during a stormy night, who realizes there is an intruder in his or her house. The *control* story described a person organizing his or her office. To assess whether these manipulations created the desired psychological states, we queried participants about the emotions they felt while reading the story. As expected, participants in the disease-threat condition reported feeling more disgust than did those in the self-protection and control conditions ( $ps < .001$ ), whereas participants in the self-protection condition reported feeling more fear than did those in the disease-threat and control conditions ( $ps < .001$ ). After the emotion questions, participants were asked to rate how important 17 characteristics are in political leaders (e.g., power, trustworthiness; see Study 2: Materials in

the Supplemental Material), using scales ranging from 1 (*not at all important*) to 7 (*extremely important*). The list of characteristics included “physical attractiveness.”

## Results and discussion

A one-way analysis of variance (ANOVA) revealed a significant main effect of story on preferences for physical attractiveness,  $F(2, 120) = 4.63$ ,  $p = .012$ ,  $\eta_p^2 = .072$ . Participants in the disease-threat condition ( $M = 3.55$ ) rated physical attractiveness to be more important than did those in the self-protection ( $M = 2.43$ ,  $p = .004$ ) and control ( $M = 2.74$ ,  $p = .034$ ) conditions. There was no difference between the self-protection and control conditions ( $p > .25$ ). Disease threats had no influence on ratings of the importance of 14 of the remaining 16 characteristics but did increase preferences for leaders who were “powerful” and “persistent” ( $ps < .05$ ), compared with the control manipulation. The self-protection and control conditions were not significantly different from each other in ratings of any of the characteristics.

We tested whether participants' reported feelings of disgust after reading the disease-threat story mediated the relationship between story condition and preferences for physical attractiveness. Following Preacher and Hayes (2008), we estimated the standard deviation of the indirect effect of story on preferences for physical attractiveness for 5,000 bootstrapped samples. The indirect effect was estimated to lie between 0.071 and 1.12 with 95% confidence ( $\beta = 0.54$ ,  $SE = 0.27$ ). Because zero was not included in the 95% confidence interval, this analysis demonstrates significant mediation. As predicted, the disease-threat story engaged feelings of disgust, which, in turn, predicted preferences for physical attractiveness.

## Study 3: Disease Threats and Voting Preferences

In Study 2, we found that people concerned about disease, relative to other threats, explicitly reported physical attractiveness to be more important in a leader. In Study 3, we sought to replicate and extend this finding by using a more subtle dependent measure—asking participants their willingness to vote for politicians who varied in physical attractiveness.

### Method

**Participants.** Two hundred ten American participants (156 women, 54 men; mean age = 36.73 years) were recruited through Amazon's Mechanical Turk.

**Procedure.** In Study 3, we used the same manipulation used in Study 2. After reading one of the three stories,



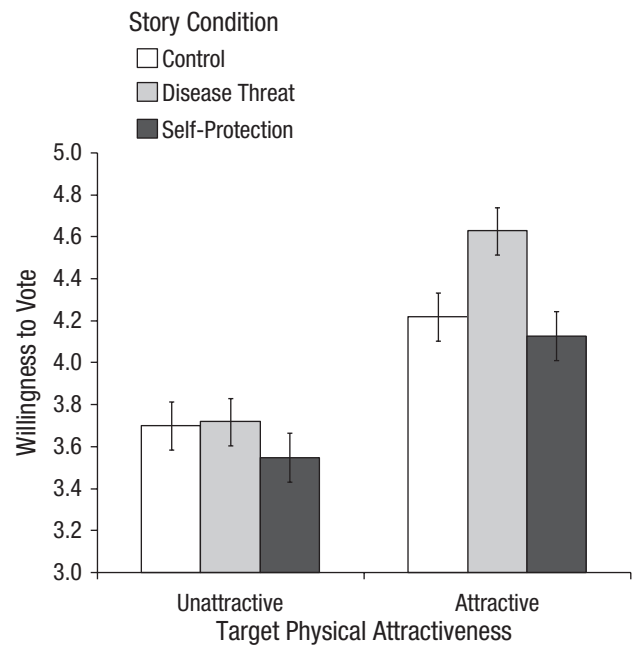
participants viewed a series of photos of 32 politicians and rated how likely they would be to vote for each one, using scales from 1 (*very unlikely*) to 7 (*very likely*). To ensure that our (American) participants would not recognize the politicians, we used photos of British politicians taken from <http://sexymp.co.uk>. This Web site displays randomly paired official photos of elected members of the British Parliament and allows the public to choose which member of each pair is more attractive; together, these choices create a ranking of the attractiveness of all members. We selected photos of the three most attractive and three least attractive politicians of each gender, as judged by visitors to the Web site, resulting in a sample of 12 photos. Using an independent sample of U.S. university students, we confirmed that the attractive politicians were seen as more attractive than the unattractive politicians ( $p < .001$ ). To mask the large attractiveness discrepancies among the photos, we combined them with 20 photos from the same Web site showing politicians who were ranked as average in attractiveness.

## Results and discussion

We conducted a 3 (story: disease threat, self-protection, control)  $\times$  2 (target gender: male, female)  $\times$  2 (target attractiveness: attractive, unattractive) mixed ANOVA. Replicating previous results, there was a significant main effect of attractiveness on likelihood to vote for a candidate,  $F(1, 207) = 94.35$ ,  $p < .001$ ,  $\eta_p^2 = .31$ . Participants reported being more likely to vote for attractive politicians ( $M = 4.32$ ) than unattractive politicians ( $M = 3.65$ ). There was also a significant Story  $\times$  Target Attractiveness interaction,  $F(2, 207) = 3.56$ ,  $p = .03$ ,  $\eta_p^2 = .033$  (see Fig. 2). Those in the disease-threat condition were more likely to vote for attractive politicians than were those in the self-protection ( $p = .002$ ) or control ( $p = .013$ ) conditions. There was no effect of condition on voting for unattractive politicians ( $ps > .30$ ). Story condition did not interact with target gender ( $p > .6$ ), and there was no significant three-way interaction ( $p > .45$ ).

## Study 4: Disease Threat and Job Preferences

In three studies, we found support for the hypothesis that disease threats increase preferences for physically attractive leaders. In interpreting these findings, we proposed a special relationship between disease threats and leadership preferences. Yet one might alternatively posit that the effects of disease threats are more general—that they lead people to prefer physically attractive others regardless of their role in the group. Indeed, the relationship between disease threats and leadership preferences is not entirely unique: In areas with elevated pathogen



**Fig. 2.** Results from Study 3: mean willingness to vote for candidates as a function of targets' physical attractiveness and story condition. Error bars indicate standard errors of the mean.

stress, people also prefer more physically attractive sexual partners (Gangestad & Buss, 1993).

Is there anything special, then, about the relationship between disease threats and preferences for physically attractive leaders? We agree that people concerned with disease may prefer group members, in general, to be healthier and more physically attractive. After all, human groups are highly interdependent, and people interact closely with others, which makes group members vulnerable to infection from others. We contend, however, that when a group faces disease threats, it is especially important for particular group members to be healthy. Specifically, those concerned about disease should value health and physical attractiveness in the people with whom they interact the most (e.g., sexual partners) and on whom they are most dependent (e.g., leaders). Building on previous research reporting that people are particularly dependent on group leaders (Van Vugt et al., 2008), we hypothesized that, all else being equal, during periods of disease threat, preferences for physically attractive group leaders will be stronger than preferences for physically attractive group members.

To test this prediction, in Study 4, we manipulated concerns about disease and examined whether people wanted physically attractive individuals to take on leadership roles or nonleadership roles. If the effects found in Studies 1 through 3 were driven by a general preference for physically attractive group members, participants concerned about disease should prefer physically attractive people

equally for leadership and nonleadership roles. However, if it is relatively more important for leaders to be physically attractive during periods of disease threat, participants should want physically attractive people to take on leadership roles. In Study 4, we also extended the previous findings by using a different experimental manipulation of disease and assessing workplace, rather than political, leadership preferences.

## Method

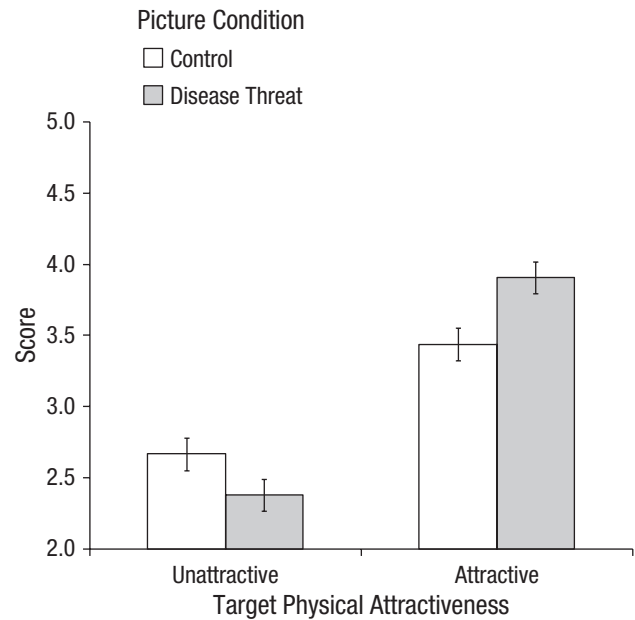
**Participants.** Sixty-six participants (40 women, 26 men; mean age = 30.73 years) were recruited through Amazon's Mechanical Turk.

**Procedure.** Participants were told they would take part in two separate studies. In the first study (actually our experimental manipulation), participants viewed a series of “advertising” images. Half of the participants saw pictures selected to raise concerns about disease (e.g., bodily sores, a person sneezing); the other half saw pictures of office supplies (e.g., colorful markers, a stapler). This priming manipulation has been used in recent research examining the psychological consequences of disease threats (Mortensen, Becker, Ackerman, Neuberg, & Kenrick, 2010).

After viewing the photos, participants took part in what was ostensibly a second study on workplace dynamics (our dependent measure). They were asked to make a series of hiring decisions on the basis of minimal information—a photograph of a job candidate. Participants were instructed to imagine that they worked for a large national corporation and that two positions were currently open in the company. The person filling one position would serve as the participant's boss; the person filling the other position would serve as the participant's coworker. Because participants might have different expectations for how much they would interact with people in these two positions, and because physical contact is likely related to disease concerns, we controlled for this potential confound. To do so, we told participants, “The new boss and coworker will work at a different office from you, but you will have meetings with the boss and coworker about once a week and correspond with them more frequently over e-mail.” Participants were shown the same series of 12 photos (three attractive and three unattractive people of each gender) used in Study 3; for each picture, they were asked, “Would you rather this person be your coworker or your boss?” Participants responded using 6-point scales from 1 (*definitely coworker*) to 6 (*definitely boss*).

## Results and discussion

We conducted a 2 (picture manipulation: disease threat, control)  $\times$  2 (target gender: male, female)  $\times$  2 (target



**Fig. 3.** Results from Study 4: mean employment-preference scores as a function of target physical attractiveness and picture condition. Lower scores indicate preferences for the target to be a coworker; higher scores indicate preferences for the target to be a boss. Error bars indicate standard errors of the mean.

attractiveness: attractive, unattractive) mixed ANOVA. There was a significant main effect of target attractiveness,  $F(1, 65) = 123.63$ ,  $p < .001$ ,  $\eta_p^2 = .66$ . Participants preferred the attractive job candidates ( $M = 3.67$ ), relative to the unattractive job candidates ( $M = 2.52$ ), for the boss position. There was also a Picture Manipulation  $\times$  Target Attractiveness interaction,  $F(2, 65) = 13.84$ ,  $p < .001$ ,  $\eta_p^2 = .18$  (see Fig. 3). Participants in the disease-threat condition preferred attractive job candidates for the boss position more strongly ( $M = 3.91$ ) than did participants in the control condition ( $M = 3.44$ ),  $F(1, 65) = 6.32$ ,  $p = .014$ ,  $\eta_p^2 = .089$ . In contrast, participants in the disease-threat condition preferred unattractive job candidates for the boss position less strongly ( $M = 2.38$ ) than did participants in the control condition ( $M = 2.67$ ),  $F(1, 65) = 3.51$ ,  $p = .066$ ,  $\eta_p^2 = .051$ . The picture manipulation did not interact with target gender ( $p > .45$ ), and there was no significant three-way interaction ( $p > .30$ ). These findings support the prediction that, during periods of disease threat, preferences for physically attractive leaders are stronger than general preferences for physically attractive group members.

## General Discussion

In four studies, we documented the predicted relationship between disease threats and preferences for physically attractive leaders. Using real-world voting data in Study 1, we revealed that in congressional districts with a

high level of disease threat, physically attractive candidates received a greater percentage of the vote and were more likely to be elected to the U.S. Congress. There was no such relationship in congressional districts with a low level of disease threat. Two experiments showed that a disease-threat manipulation, relative to self-protection and control manipulations, increased explicit preferences for physically attractive leaders (Study 2) and willingness to vote for physically attractive politicians (Study 3). Finally, in Study 4, we demonstrated that people concerned about disease want physically attractive people to take on leadership roles rather than nonleadership roles.

In this research, we adopted a functional-evolutionary perspective to make predictions about the relationship between disease threats and preferences for physically attractive leaders. To our knowledge, no other theoretical perspective has generated similar hypotheses. Moreover, we note that predictions couched in terms of more proximal mechanisms do not necessarily constitute “alternatives.” Instead, it may be through these mechanisms that more distal processes have their effects. Nevertheless, it is possible that functional, nonevolutionary approaches may also account for these findings. Because this research is relatively novel, more work is needed to better understand the origins of these effects.

As a whole, this research expands understanding of the behavioral immune system in several ways. Although disease avoidance is an individual concern, these findings highlight the role that disease-avoidance mechanisms can play in broader intragroup processes—leadership preferences and voting behavior. Further, these results contribute to a growing body of literature distinguishing between psychological reactions to disease threats and self-protection threats (Neuberg, Kenrick, & Schaller, 2011). Past research has shown that self-protection threats can increase preferences for masculine, dominant, or charismatic leaders; these findings show that disease threats increase preferences for physically attractive leaders. Finally, this work demonstrates the functional specificity of preferences for physical attractiveness. Even though it is possible that people concerned about disease may prefer everyone to be healthier and more physically attractive, these results show that it may be particularly important for certain group members to be physically attractive. People facing disease threats seem to value health and physical attractiveness in those with whom they interact most intimately (e.g., sexual partners) and in those on whom they are most dependent (e.g., leaders).

As a whole, these findings show that leadership preferences, like a wide range of other phenomena (e.g., stigma, personality inclinations, mate preferences, and conformity), can be contingent on disease-avoidance mechanisms. In doing so, they also highlight the advantage of

considering leadership preferences from a functional evolutionary perspective. Previous work has led to the broad conclusion that preferences for attractive leaders rest on simple inferences that attractive people possess desirable traits. Using functional reasoning in the current investigation, we were able to generate several novel hypotheses and findings regarding leadership preferences, thereby enhancing the understanding of when and why beauty wins out at the ballot box.

### Author Contributions

All authors developed the study concept and contributed to the study design. Testing, data collection, and data analysis were performed by A. E. White. A. E. White drafted the article, and D. T. Kenrick and S. L. Neuberg provided critical revisions. All authors approved the final version of the article for submission.

### Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

### Supplemental Material

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

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