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Original Article

Self-protective motivation and avoidance of heuristically threatening outgroups☆

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Abstract

Because hostile outgroup members have been a recurrent source of danger, self-protective motivation leads people to display psychological processes that reduce vulnerability to outgroup threats. The current research examines the consequences of self-protective motivation for intergroup behavior. The current research provides evidence that self-protective motivation causes individuals to automatically avoid heuristically threatening outgroup members. Across two studies, priming self-protective motivation led White participants to display faster avoidance behaviors when presented with images of Black individuals (members of an outgroup culturally stereotyped as violent) than White individuals (members of the ingroup) and Asian individuals (members of an outgroup not stereotyped as violent). This research sheds light on the way in which evolved mechanisms interact with cultural cognitions to shape intergroup behavior.

Keywords: Intergroup processes; Self-protection; Stereotypes; Avoidance

A common source of danger throughout human evolutionary history has been intergroup conflict. Members of hostile outgroups have recurrently posed significant threats to oneself and one's group (Baer & McEachron, 1982). Consequently, precautionary self-protective systems evolved to reduce the threat of outgroup harm. Indeed, a growing literature suggests that human cognition is shaped to protect the self from outgroup dangers (Kurzban, Tooby, & Cosmides, 2001; Maner et al., 2005; Miller, Maner, & Becker, 2010; Neuberg, Kenrick, & Schaller, 2011; Schaller, Park, & Faulkner, 2003; Schaller, Park, & Mueller, 2003). The current research adds to this literature by examining very basic aspects of self-protective behavior in intergroup contexts. In the following sections, we integrate evolutionary theories of motivation and intergroup relations (Cottrell & Neuberg, 2005) with cognitive theories of embodied social action (Cesario, Plaks, & Higgins, 2006) to generate hypotheses about the ways in which self-protective motivation biases people's automatic behavioral responses to members of heuristically threatening outgroups. In particular, we hypothesize that the activation of self-protective motivation leads White individuals to display low-level, automatic avoidance behaviors when encountering Black men.

1. Self-protective intergroup biases

In many contemporary societies, group membership is often indicated by a person's race. Race is linked with patterns of association, cooperation, and competition—the same cues that evolved to indicate coalitional status. From an evolutionary perspective, the categorization of race is a byproduct of evolved mechanisms aimed at identifying other people's coalitional status (Cosmides, Tooby, & Kurzban, 2003; Kurzban et al., 2001). As a result, mechanisms designed to protect the self from outgroup dangers are often applied to racial outgroups.

Consistent with this perspective, several studies have documented self-protective responses to racial outgroup members. For example, priming images of Black faces enhances White individuals' sensitivity to dangerous objects

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(Eberhardt, Goff, Purdie, & Davies, 2004; Payne, 2001). Images of threatening Black men are remembered especially well by White perceivers (Ackerman et al., 2006) and cause White individuals to perceive threat in other Black men even when they display no actual signs of threat (Shapiro et al., 2009).

Although several studies indicate that people cognitively process information so as to protect themselves from potential dangers posed by outgroup members, less research has examined actual self-protective behavior displayed in intergroup contexts. In humans and other animals, one of the most common types of self-protective behavior is avoidance (Blanchard, Flannelly, & Blanchard, 1986; Stankowich & Blumstein, 2005). By avoiding potentially threatening individuals, one reduces the chances of being physically harmed.

Self-protective avoidance behaviors are based in basic fight-or-flight responses and thus should be reflected in quick, automatic processes. An emerging literature reveals that automatic behaviors are built on an underlying physiological framework involving simple motor movements. For instance, several studies suggest that muscle extension (e.g., pushing a lever) underlies forms of avoidance, whereas muscle flexion (e.g., pulling a lever) underlies forms of approach (Chen & Bargh, 1999; Förster, Friedman, Özelsel, & Denzler, 2006). Although originally applied to nonsocial stimuli (Chen & Bargh, 1999), arm flexion and extension movements have been shown to reflect approach and avoidance, respectively, in a variety of social contexts (e.g., Neumann, Hulsenbeck, & Seibt, 2004; Slepian, Young, Rule, Weisbuch, & Ambady, 2012), including intergroup contexts (Kawakami, Phills, Steele, & Dovidio, 2007; Paladino & Castelli, 2008). Motivated-preparation accounts of embodied cognition suggest that these approach avoidance systems prepare individuals to respond efficiently to threats and opportunities in the social environment (Cesario, Plaks, Hagiwara, Navarrete, & Higgins, 2010; Cesario et al., 2006; Eder & Rothermund, 2008; Fishbach & Shah, 2006). For example, when motivated to protect against pathogen contagion, people are quick to push a lever away from themselves (an avoidance behavior) in response to pictures of individuals heuristically associated with pathogens (Miller & Maner, 2011). Thus, from a motivated-preparation account, encountering threatening stimuli—such as outgroup members—may elicit automatic avoidance movements (e.g., muscle extension and pushing a lever). Such low-level movements underlie more overt behaviors aimed at achieving physical safety.

2. Motivation and target specificity

The engagement of self-protective avoidance behaviors should depend upon contextual cues that reflect the likelihood of potential danger. Self-protective responses, such as avoidance, require the use of limited energetic resources and time that could be spent on the pursuit of other important goals. Consequently, self-protective biases should be highly selective, becoming most pronounced in situations that require heightened need to protect oneself from harm. In particular, self-protective avoidance behaviors should be motivation specific (i.e., they should occur when people are motivated to protect themselves from physical harm) and target specific (i.e., they should be directed most strongly toward groups perceived as physically threatening).

2.1. Motivation specificity

While people may be generally motivated to protect themselves from harm (Kenrick, Griskevicius, Neurberg, & Schaller, 2010), the strength and salience of that motivation are dependent upon situational cues indicating vulnerability to danger. Situations that prime perceived vulnerability to danger heighten one's self-protective motivation and should increase behaviors designed to reduce vulnerability to threat. Indeed, although people may be generally wary of outgroups, mounting research demonstrates that people are most likely to display self-protective intergroup biases when primed with self-protective motives. For example, situational cues that activate self-protective motivation elicit a positive relationship between White people's concerns about interpersonal danger and the degree to which they espouse negative threat-related stereotypes of Black individuals (Schaller, Park, & Faulkner, 2003; Schaller, Park, & Mueller, 2003). Self-protective motivation also leads White individuals to perceive threat in the faces of Black men (Maner et al., 2005) and to assume that threatening men are Black, rather than White (Miller et al., 2010). Thus, in the current investigation, we predicted that automatic avoidance of outgroup members would be most pronounced when self-protective motivation is activated.

2.2. Target specificity

Just as outgroup biases are activated selectively in certain types of circumstances, so too are those biases likely to be directed most strongly toward groups that are stereotypically associated with physical threat. Evolved mechanisms interact with social learning processes to mark certain outgroups as posing physical threats (Cosmides et al., 2003; Maner et al., 2005). Stereotypes in North America, for example, cast particular racial groups, such as Black men, as hostile and physically dangerous (Devine, 1989; Madon et al., 2001). Consequently, many self-protective biases among North American White perceivers are directed toward Black men (Schaller, Park, & Faulkner, 2003). Other racial groups (e.g., Asians) are less stereotyped as physically aggressive and therefore may be less likely to be the targets of self-protective intergroup biases. Thus, although self-protective motives can enhance the processing of outgroups generally, effects are strongest for outgroups that are heuristically viewed as threatening (Miller et al., 2010). That is, evolved self-protective motives interface with social

learning processes to focus people's self-protective concerns on those outgroups that are culturally stereotyped as threatening (Kurzban et al., 2001; Maner et al., 2005). Applying this to the current research suggests that automatic avoidance of outgroup members should be most pronounced for groups stereotyped as physically dangerous (e.g., Black men).

3. Overview of the current research

The current research tests the hypothesis that the activation of a self-protective motive leads to automatic behavioral avoidance of stereotypically threatening outgroup members. Across two studies, we tested both the motivation specificity and target specificity of this hypothesis. To examine automatic aspects of behavioral avoidance, participants pushed and pulled a lever away from and toward their body. We predicted that, when primed with self-protective motivation (compared to control motivations), White participants would be quicker to push a lever (i.e., display avoidance responses) upon seeing images of Black men than White men or Asian men.

4. Study 1

In Study 1, we manipulated whether White individuals were concerned about physical danger or pathogen contagion. Pathogen avoidance represents a strong control condition as it is also a fundamental human motivation linked to prejudice and behavioral avoidance (Duncan & Schaller, 2009; Mortensen, Becker, Ackerman, Neuberg, & Kenrick, 2010). However, self-protection and pathogen avoidance systems are distinct systems that should be applied to different types of threats (Cottrell & Neuberg, 2005; Neuberg et al., 2011). Given that Black men are stereotypically associated with physical safety threat more than pathogen threat, we predicted that self-protective motivation (relative to pathogen avoidance motivation) would facilitate greater avoidance behaviors when encountering Black men as compared to White men.

4.1. Method

4.1.1. Participants

Eighty-two White undergraduates (ages 18–22; 63 females) participated.

4.1.2. Materials and procedure

A film clip/ambient lighting manipulation was used to elicit either a self-protective motive or a control, pathogen avoidance motive. In the self-protection condition, participants sat in a dimly lit room and watched a clip from *Silence of the Lambs* (Bozman & Saxon, 1991), in which a White female is stalked by a White male murderer. This combination of video and ambient lighting has been shown to produce a self-protective state and elicit emotion (fear) consistent with that state (Maner et al., 2005; Miller et al., 2010). In the pathogen avoidance condition, participants sat in a well-lit room and watched a clip of a White woman squeezing pus from a mouth sore and a segment from *Pink Flamingos* (Waters & Waters, 1973) in which an actor eats feces. These videos produce a desire to avoid potential sources of pathogens and elicit emotion (disgust) consistent with that desire (Gross & Levenson, 1995; Vianna & Tranel, 2006).

After the motivation manipulation, participants completed the Brief Mood Introspection Scale (BMIS; Mayer & Gaschke, 1988), which provided measures of their mood and level of arousal; participants indicated the extent to which they currently felt a variety of emotions (1=*not at all*; 5=*very much*). In addition to the items included in the BMIS, participants also indicated the extent to which they currently felt scared and disgusted—emotions associated with self-protection and pathogen avoidance motives.

Participants then completed the approach avoidance task. Participants were told to categorize faces according to their race (Black or White) by moving a joystick. Target stimuli consisted of eight male faces (four Black; four White) used in previous studies (Plant, Peruche, & Butz, 2005). To confirm that stimuli did not differ in facial expression, 12 raters (blind to hypotheses) rated how happy, angry, and threatening each target appeared to be using a 5-point scale (1=*not at all*, 5=*extremely*). Ten additional raters indicated how disgusting each face was using the same scale. There were no differences between White and Black faces on any of those measures; all F's<1.

Consistent with previous research (Chen & Bargh, 1999; Miller & Maner, 2011), participants were randomly assigned to one of two movement conditions: a congruent racial bias condition in which they pushed the joystick away from themselves (avoidance behavior) in response to a Black face and pulled the joystick toward themselves (approach behavior) in response to a White face or an incongruent racial bias condition in which they did the reverse (pull for Black; push for White). Participants were instructed to move the joystick lever as far forward (away from themselves) or backward (toward themselves) as it could go and to move it as quickly as possible (Förster et al., 2006). On each trial of the approach avoidance task, a stimulus cross first appeared in the center of the screen for 2500 ms, immediately followed by a target face. The target face remained on the screen until a joystick response was made. Each face was presented four times in random order for a total of 32 trials. Prior to completing the experimental block of trials, participants completed a practice block of 16 trials in which they pushed and pulled the joystick in response to the words PUSH and PULL.

4.2. Results

4.2.1. Manipulation check

As predicted, participants in the self-protection condition reported feeling more scared (M=2.53, S.D.=1.26) than

participants in the pathogen avoidance condition (M=1.54, S.D.=.89), t(80)=−4.07, p<.001, partial η^2=.17. Participants in the pathogen avoidance condition reported feeling more disgusted (M=3.93, S.D.=1.13) than participants in the self-protection condition (M=2.37, S.D.=1.44), t(80)=5.43, p<.001, partial η^2=.27. There were no differences between conditions for overall affective valence or arousal, ps>.20. Thus, the manipulation was successful at creating the intended differences between conditions without creating differences in overall affect.

4.2.2. Approach avoidance behavior

Trials on which participants moved the joystick in the incorrect direction and trials on which the latency was greater than 3 S.Ds. away from the mean were excluded. On average, 3.0% of trials were excluded. See Table 1 for descriptive statistics.

To test the prediction that self-protective motivation would lead to heightened avoidance of Black men, a 2 (motivation: self-protection versus pathogen avoidance)×2 (movement: congruent versus incongruent) between-subjects analysis of covariance (ANCOVA) was performed on average reaction times, consistent with previous studies on approach and avoidance (Chen & Bargh, 1999; Miller & Maner, 2011). Average reaction time during the practice block was included as covariate to account for substantial individual differences in overall speed, F(1,77)=58.48, p<.001, partial η^2=.43. Consistent with predictions, analyses revealed a significant interaction between motivation and movement, F(1,77)=4.43, p=.039, partial η^2=.05.[1] Follow-up contrasts revealed an effect of movement among participants primed with self-protection, F(1,77)=3.69, p=.058, partial η^2=.05. Participants in the self-protection condition who performed approach avoidance behaviors congruent with racial bias (pushing for Black faces; pulling for White faces) were quicker than participants in the self-protection condition who performed behaviors incongruent with racial bias (pulling for Black faces; pushing for White faces). No effect of movement was observed among participants primed with pathogen avoidance, (1,77)=1.03, p=.31, partial η^2=.01 (Fig. 1).

To provide a more detailed picture of participants' approach avoidance responses, separate ANCOVAs were performed on approach and avoidance latencies. Analysis of avoidance latencies revealed a significant interaction between motivation and target race, F(1,77)=4.50, p=.037, partial η^2=.06. Consistent with hypotheses, there was a significant effect of target race among participants primed with self-protection, F(1,77)=6.52, p=.013, partial η^2=.08; participants primed with self-protection were quicker to push the joystick in response to Black targets as compared to White targets. No effect of target race was observed among participants primed with pathogen avoidance, F<1.

Analysis of approach latencies revealed a marginally significant interaction between motivation and target race, F(1,77)=3.36, p=.071, partial η^2=.04. However, follow-up analyses revealed no significant simple effects, all ps>.13.

Table 1
Study 1 estimated mean (S.E.) reaction times (in milliseconds)

	Push (avoid)		Pull (approach)	
	Self-protection	Pathogen avoidance	Self-protection	Pathogen avoidance
Black targets	626 (24)	679 (25)	673 (25)	634 (23)
White targets	716 (25)	666 (23)	634 (25)	685 (26)

4.3. Discussion

Study 1 suggests that self-protective motivation causes automatic, low-level behavioral avoidance of heuristically threatening outgroup members. When primed with a self-protective motive (but not a pathogen avoidance motive), White participants were quicker to push a joystick away from themselves in response to Black targets than White targets.

Findings from this study may be compared to research examining the effect of pathogen primes on avoidance. For example, Mortensen et al. (2010) demonstrated that priming people with concerns about pathogen contagion (compared to a neutral, nonthreatening prime) led them to display greater avoidance (arm extension) of images of human faces. In the current study, we observed similar overall levels of avoidance (collapsing across all faces) in

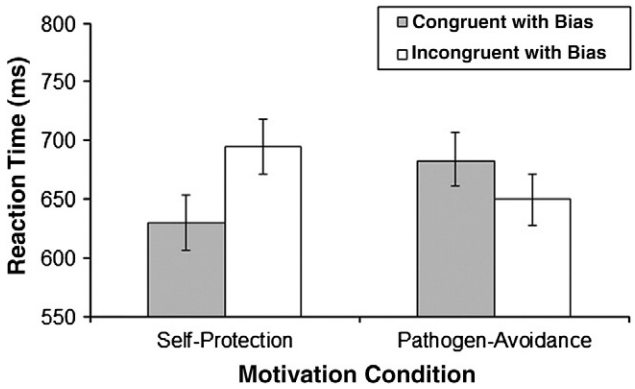

Fig. 1. Study 1. Participants in the self-protection condition were quicker at responding to faces when arm movements were congruent with an outgroup avoidance bias (pushing away in response to a Black face; pulling in response to a White face) than when movements were incongruent with an outgroup avoidance bias (pulling toward in response to a Black face; pushing away in response to a White face). No effect of movement condition was observed among participants in the pathogen avoidance condition. Error bars represent standard errors.

[1] The interaction between motivation and movement remained marginally significant when practice latency was not included in the model, F(1,78)=3.74, p=.057, partial η^2=.05.

the pathogen avoidance and self-protection priming conditions (i.e., there was no main effect of priming condition on avoidance). This is consistent with the idea that, at a general level, both pathogen avoidance and self-protective motives are likely to elicit avoidance of other people. However, the degree to which pathogen avoidance and self-protection motives elicit avoidance of other people should depend upon whether those people pose disease threats and physical threats, respectively. For example, Miller and Maner (2011) demonstrated that pathogen avoidance motivation promotes quicker arm extensions (avoidance) in response to individuals with facial disfigurement (a heuristic cue of infection) than individuals without facial disfigurement. The current findings suggest similar target specificity when one is motivated to protect the self from physical harm: Self-protective motivation promoted selective avoidance of individuals stereotypically associated with aggression (Black individuals). There is evidence that avoidance of outgroups is caused by concerns about pathogens as well (Faulkner, Schaller, Park, & Duncan, 2004; Fincher & Thornhill, 2012), but pathogen concerns are most likely to promote avoidance of outgroups who are unfamiliar and foreign, as those outgroups have the potential of transmitting new pathogens that one's immune system is not adequately prepared to fight off (Fincher & Thornhill, 2012; Letendre, Fincher, & Thornhill, 2010). Black Americans, however, are a relatively familiar outgroup for most White Americans. Moreover, because Black individuals are more strongly associated with physical safety threat than pathogen threat, there is more reason to avoid Black individuals when primed with physical safety concerns than pathogen concerns. Thus, the avoidance responses observed in Study 1 were both target specific (directed toward those individuals stereotypically associated with physical danger) and motivation specific (occurring among perceivers motivated to protect themselves from physical danger).

5. Study 2

One of the main assumptions underlying the current investigation is that evolved self-protective systems interact with stereotypes to focus people's self-protective concerns most strongly on those outgroups that are stereotypically perceived as physically dangerous. Therefore, Study 2 included another outgroup—Asians—that tends not to be stereotyped as physically threatening. To confirm differences in stereotypes about physical aggression, a group of 30 students from the same university in which the current study took place was asked to list common stereotypes of Black, Asian, and White men. A higher percentage of students listed concepts associated with danger (e.g., violent, aggressive, hostile) when thinking of stereotypes pertaining to Black men (93.3%) than White men (3.3%) or Asian men (0%) (McNemar tests: Black vs. White, $p<.001$; Black vs. Asian, $p<.001$; White vs. Asian, $p>.99$).[2] Thus, whereas Black targets represented a racial outgroup stereotyped as dangerous, Asians targets represented a racial outgroup not stereotyped as dangerous. Because Asians are not stereotyped as physically threatening, we predicted that a self-protective motive (more than a control motive) would promote greater automatic avoidance of Black targets in comparison to both White and Asian targets.

5.1. Method

5.1.1. Participants

One hundred forty-one White undergraduates (ages 18–54; 97 females) participated. Two participants had no correct joystick responses during an entire block; their data were excluded from analyses.

5.1.2. Materials and procedure

Participants in the self-protection condition underwent the same procedures used in Study 1. Rather than using disgust as a control condition in Study 2, we used a neutral control: Participants sat in a well-lit room and viewed time-lapsed videography of urban living from the film *Koyaanisqatsi* (Reggio & & Coppola, 1983). Previous studies examining self-protective biases have used this film clip as a comparison condition because it elicits a high degree of arousal, but with no particular emotional and motivational content (Maner et al., 2005; Miller et al., 2010).

After the motivation manipulation, participants completed two blocks of a modified version of the approach avoidance task used in Study 1. The approach avoidance task was modified to account for three types of targets (Black, White, Asian). Pushing in response to one target race and pulling in response to another (as in Study 1) would have produced an unbalanced design in which participants responded to only two out of the three races. Thus, to maintain balance in the design, participants moved the joystick in response to one target race (manipulated between subjects). For both blocks of trials, participants were told to move the joystick in response to one specific race (e.g., Black targets). Participants were told to NOT move the joystick when they saw individuals of another race (e.g., White or Asian targets). During one block, participants pushed the joystick away from themselves; during another block, participants pulled the joystick toward themselves. Participants were told to move the joystick as quickly as possible. The target race that participants responded to (Black, White, or Asian) and the order of push and pull blocks were randomized across participants.

[2] Participant responses were coded for concepts related to violence/aggression by two independent raters. Raters agreed 96.7% of the time. In cases of disagreement, a third rater coded the responses.

On each trial of the approach avoidance task, a stimulus cross appeared in the center of the screen for 2000 ms, immediately followed by a target face. Target faces remained on the screen for 700 ms or until a joystick response was made. If participants made an incorrect response (moving the joystick in the wrong direction, not moving the joystick when they should have moved it), an "INCORRECT" message was displayed for 1000 ms. For each block of trials, participants saw each of the 15 faces (5 Black, 5 White, 5 Asian) once in random order. All target faces were rated by 12 raters, unaware of hypotheses, in terms of how happy, angry, and threatening they appeared to be (1=*not at all*, 5=*extremely*). Analyses of those ratings revealed no differences between White, Black, and Asian faces, all *p*s>.25.

Prior to each experimental block, participants completed a practice block with six trials. For one practice block, participants pushed the joystick in response to the word "PUSH." For the other, participants pulled the joystick in response to the word "PULL." In both practice blocks, participants did not move the joystick in response to the stimulus "XXX."

5.2. Results

For each experimental block, we averaged participants' reaction times across the trials in which they moved the joystick. Trials on which participants either timed out (i.e., did not respond within the 700-ms window), responded in under 300 ms, or made an incorrect response were excluded from analyses. On average, 7.1% of trials were excluded. See Table 2 for descriptive statistics.

Using ANCOVA, average latencies were predicted from movement (approach vs. avoidance; within subjects), target race (Black vs. White vs. Asian; between subjects), motivation (self-protection vs. control; between subjects), and all interactions. Practice latency was entered as a covariate to account for individual differences in overall speed of responding. To account for practice effects, order of approach avoidance blocks was also entered as a covariate. There was a significant effect of practice latency, $F(1,131)=85.96$, $p<.001$, partial $\eta^2=.40$, as well as a significant main effect of target race, $F(2,131)=43.20$, $p<.001$, partial $\eta^2=.40$. More importantly, we observed the predicted interaction between motivation, movement direction, and target race, $F(2,131)=3.09$, $p=.049$, partial $\eta^2=.05$.[3] Subsequent analyses focused on approach and avoidance responses, separately.

For avoidance responses, there was a main effect of target race, $F(2,131)=38.36$, $p<.001$, partial $\eta^2=.37$. However, this was qualified by a (marginal) interaction between motivation and target race, $F(2,131)=3.04$, $p=.051$, partial $\eta^2=.04$. Consistent with hypotheses, for participants primed with self-protection, there was a significant effect of target race, $F(2,131)=27.56$, $p<.001$, partial $\eta^2=.30$. Participants in the self-protection condition who responded to Black targets displayed quicker avoidance movements than participants in the self-protection condition who responded to White targets, $F(1,131)=49.93$, $p<.001$, partial $\eta^2=.28$, or Asian targets, $F(1,131)=33.07$, $p<.001$, partial $\eta^2=.20$. There was no difference in avoidance speed between participants in the self-protection condition who responded to White targets and participants in the self-protection condition who responded to Asian targets, $F(1,131)=1.68$, $p=.20$, partial $\eta^2=.01$.

Participants in the control condition also displayed a significant effect of target race, $F(2,131)=13.57$, $p<.001$, partial $\eta^2=.17$. Participants in the control condition who responded to Black targets displayed quicker avoidance movements than participants in the control condition who responded to White targets, $F(1,131)=27.14$, $p<.001$, partial $\eta^2=.17$, or Asian targets, $F(1,131)=4.27$, $p=.04$, partial $\eta^2=.03$. Additionally, participants in the control condition who responded to Asian targets were quicker to perform avoidance movements than participants in the control condition who responded to White targets, $F(1,131)=7.35$, $p=.008$, partial $\eta^2=.05$. Crucially, although participants were quicker to avoid Black than White and Asian targets in both control and self-protection conditions, this difference was significantly larger in the self-protection condition than the control condition, $F(1,131)=4.61$, $p=.034$, partial $\eta^2=.03$. Indeed, the effect size of target race was approximately 75% greater in the self-protection condition than in the control condition.

For approach responses, there was a main effect of target race, $F(2,131)=24.17$, $p<.001$, partial $\eta^2=.27$; regardless of motivation, participants who responded to Black targets were quicker to display approach movements than participants who responded to White targets, $F(1,131)=42.86$, $p<.001$, partial $\eta^2=.25$, and participants who responded to Asian targets, $F(1,131)=26.17$, $p<.001$, partial $\eta^2=.17$. There was no difference in approach latencies between participants who responded to Asian targets and participants who responded to White targets, $F(1,131)=1.55$, $p=.22$, partial $\eta^2=.01$. Importantly, no main effects or interactions involving motivation were observed, *p*s>.47.

Table 2
Study 2 estimated mean (S.E.) reaction times (in milliseconds)

	Push (avoid)		Pull (approach)	
	Self-protection	Control	Self-protection	Control
Black targets	467 (9)	488 (9)	481 (10)	475 (9)
White targets	559 (9)	557 (10)	544 (9)	535 (11)
Asian targets	542 (9)	517 (11)	528 (9)	527 (11)

[3] The interaction between motivation, movement direction, and target race remained marginally significant when practice latency was not included in the model, $F(2,132)=2.97$, $p=.055$, partial $\eta^2=.04$.

5.3. Discussion

The current findings further elucidate the effect of self-protective motivation on automatic behavioral responses to heuristically threatening outgroup members. Although White participants were faster to avoid Black men than White and Asian men across conditions, this avoidance of Black men was significantly more pronounced after White participants were primed with self-protective motivation. Thus, Study 2's findings conceptually replicate those of Study 1, indicating that self-protective motivation heightens avoidance of Black men relative to men of other races. Moreover, Study 2's findings reveal that self-protective motivation causes greater avoidance of racial outgroups heuristically associated with threat (Black men) than racial outgroups not stereotyped as threatening (Asian men). Thus, cultural stereotypes may interact with evolved self-protection systems to shape behavioral responses to outgroup members.

It is worth noting that we observed an unexpected main effect of target race on approach responses: Regardless of motivation, White participants were quicker to approach Black targets relative to White and Asian targets. We suspect this finding has little to do with approach, specifically, and more to do with one's ability to identify and categorize a person's race. That is, across motivation condition and type of behavior, participants were quicker to respond to Black targets than non-Black targets, suggesting that perhaps White individuals were quicker to notice the race of Black than non-Black individuals. Importantly, the main effect of target race on approach responses was not moderated by motivation. Only for avoidance behaviors did the effect of target race depend upon the activation of self-protective motivation. Thus, consistent with Study 1, self-protective motivation's influence on responses to Black versus non-Black targets was specific to facilitating automatic avoidance behaviors.

6. General discussion

The current research indicates that concerns about danger promote self-protective behaviors toward members of a stereotypically threatening outgroup. White participants primed with self-protective motivation, compared to two different control states, displayed a greater propensity for automatic behavioral avoidance upon seeing Black individuals than White or Asian individuals. These findings highlight the motivation and target specificity of adaptive self-protection systems. Participants were most likely to display automatic behavioral avoidance when motivated to protect themselves from harm and in response to outgroup members heuristically associated with danger.

The current findings fit with evidence that self-protective motives heighten implicit negative evaluations and perceptions of outgroups associated with physical threat (Maner et al., 2005; Schaller, Park, & Faulkner, 2003). However, the current findings move beyond previous evidence of self-protective cognition by demonstrating motivated biases in automatic behavior. The joystick task used in the current research goes beyond measuring positive and negative evaluations and perceptions by tapping into people's basic orientation toward approach and avoidance. Theories of embodied cognition suggest that such lower-order, automatic responses provide the basic behavioral platform on which higher-order forms of social behavior are based. Indeed, in concert with negative evaluations, automatic approach versus avoidance responses may be linked with different overt forms of antisocial behavior (e.g., aggression versus ostracism) (e.g., Wilkowski & Meier, 2010). Future research would benefit from examining implications of the current findings for such types of overt behavior.

6.1. Integrating evolutionary and social learning perspectives

This research was conducted within the meta-theoretical framework of evolutionary psychology, building on an emerging literature suggesting that the human mind is designed to face important adaptive challenges posed by living in social groups. Throughout human history, outgroup members have posed potentially dire threats to physical safety. Humans, in turn, display psychological mechanisms designed to help deal with the possibility of outgroup threat (Haselton & Ketelaar, 2006; Neuberg et al., 2011). Thus, at a fundamental level, self-protective motivation promotes psychological processes associated with protecting the self from outgroup dangers.

While evolutionary perspectives suggest that people have a fundamental tendency for displaying vigilance to outgroups, those same perspectives also suggest that intergroup biases are influenced by social learning processes. Social learning provides critical information about what threats might be posed by what groups (Cottrell & Neuberg, 2005). Because self-protective processes typically involve a substantial expenditure of energy, it would be adaptive for people to focus their self-protective concerns primarily on groups that have come to be associated with a particular type of threat. Conversely, to prevent unnecessary expenditure of limited resources and energy, one might inhibit self-protective responses when the outgroup is perceived as posing a low likelihood of threat.

Thus, although people appear to possess an evolved tendency to perceive the social world in terms of coalitional ingroup and outgroup, local learning environments determine what specific cultural markers and stereotypes typically define ingroup and outgroup members (Cosmides et al., 2003; Kurzban et al., 2001). Rather than being "hardwired" to innately perceive all outgroups in an inflexible manner, the human mind evolved to incorporate cultural information pertaining to different groups. Indeed,

although Miller et al. (2010) observed self-protective responses within a minimal group paradigm (i.e., arbitrarily created groups), they observed much stronger outgroup vigilance when the outgroup was stereotyped as dangerous (i.e., when the outgroup was Black men). An arbitrarily created outgroup—one that connoted no particular type of threat—evoked self-protective responses only among people scoring very high on a measure of chronic fear of interpersonal harm. The current findings are consistent with this perspective: White participants displayed self-protective avoidance of Black individuals (individuals belonging to an outgroup stereotyped as threatening), but not Asian individuals (individuals belonging to an outgroup not stereotyped as threatening). Thus, contrary to an all-too-common misperception, an evolutionary perspective does not discount the role of social learning. Many specific psychological processes that are rooted in evolved mechanisms are also highly responsive to cultural context and social learning histories (Kenrick, Becker, Butner, Li, & Maner, 2003).

6.2. Limitations and future directions

One limitation of the current studies is that we investigated only one type of self-protective behavior—avoidance. A variety of different behaviors could be used to protect the self from harm. For example, danger concerns can promote defensive attack responses designed to ward off threats (Blanchard, Hynd, Minke, Minemoto, & Blanchard, 2001; Blanchard et al., 1986) or affiliation with ingroup members as a way of increasing one's ability to defend against outgroup threats (Van Vugt, De Cremer, & Janssen, 2007). Future research would benefit from examining a range of self-protective behaviors in intergroup contexts.

Another limitation is that we only examined a small set of factors likely to influence self-protective behavior in intergroup contexts, yet there are a range of factors that may heighten self-protective behavior. For example, throughout human history, men have been the primary perpetrators of physical aggression and have been much more likely than women to engage in warfare and intergroup violence (Daly & Wilson, 1994; Van Vugt et al., 2007). Consequently, self-protective responses should be observed primarily in response to outgroup men (Becker et al., 2010; Maner et al., 2005). Consistent with this perspective, we observed heightened self-protective avoidance of heuristically threatening outgroup men; however, we did not examine whether there was a lack of self-protective avoidance in response to outgroup women. Future research would benefit from exploring the extent to which target sex, as well as other ecological factors, moderate self-protective avoidance behavior in intergroup contexts.

Another limitation is that we focused only on self-protective responses displayed by White individuals toward Black targets. But what about the reverse? When concerned about physical harm, Black individuals might not display avoidance of White individuals because, although White people are outgroup members, they are not stereotypically associated with threat (similar to the responses displayed by White individuals toward Asian targets in the current research). However, Black individuals may also lack self-protective avoidance of other Black targets because, although they are stereotyped as threatening, those targets are members of the ingroup. Investigating self-protective intergroup biases among people from different groups is a worthwhile goal for future research.

Future research would also benefit from examining the influence of individual difference factors. For example, the degree to which people endorse stereotypes of different outgroups should influence self-protective avoidance of those outgroups. Consistent with this hypothesis, Maner et al. (2005) observed self-protective biases in response to Arab faces, but only among White individuals who displayed an implicit endorsement of associations between Arabs and danger. Individual differences in people's general concern about interpersonal threat may also moderate self-protective outgroup avoidance. As mentioned previously, Miller et al. (2010) observed self-protective outgroup categorization biases in a minimal group paradigm but only among participants chronically high in their fear of interpersonal harm. For such individuals, self-protective concerns may lead to avoidance of outgroups even if they lack stereotypes associated with threat. The current investigation provides a useful springboard from which to directly test these speculations.

6.3. Conclusion

Avoidance of physical harm reflects a fundamental evolved motive that influences the way people perceive and respond to their social world. The current research demonstrated that self-protective motivation caused participants to quickly and automatically avoid targets of a heuristically threatening outgroup. Thus, the current research adds to a growing literature suggesting ways in which evolved psychological systems interact with social learning to shape intergroup behavior.

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