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Short Communication

Facing the implications: Dangerous world beliefs differentially predict men and Women's aversion to facially communicated psychopathy

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ABSTRACT

Individuals with heightened self-protection motives demonstrate considerable perceptual acuity toward facial features connoting others' cooperative intentions, an adaptive response to mitigate vulnerability to exploitation. This sensitivity may necessarily also produce an aversion to individuals exhibiting facial features implicating them as interpersonal threats. Previous research indicates humans possess considerable accuracy at identifying psychopathy through facial features, which may suggest that individuals with heightened self-protection concerns may be

particularly averse to facially communicated psychopathy. In the current study, participants reported interaction partner preferences among face pairs that were manipulated to communicate high and low levels of psychopathy. Participants then reported their dispositional belief in a dangerous world. Women with dispositionally higher dangerous world beliefs reported a stronger aversion to facially communicated high-psychopathy. Conversely, men higher in dangerous world beliefs reported reduced aversion to high psychopathy targets. Men's aversion down-regulation may be indicative of tolerance for antisocial conspecifics to facilitate action against coalitional threat. Results indicate that self-protection motives differentially predict men and women's relative aversion to psychopathy in adaptive ways.

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1. Introduction

Interpersonal threats to physical safety have posed a consistent challenge to human survival and reproductive success, leading to the emergence of threat management systems to avoid dangerous conspecifics (Neuberg, Kenrick, & Schaller, 2011). Psychopathic conspecifics, individuals more prone to violent behavior (Neumann & Hare, 2008), may have posed a specific threat in interpersonal contexts. Research implicates psychopathy as an antisocial trait that evolved to facilitate exploitation (Glenn, Kurzban, & Raine, 2011). High-psychopathy individuals are especially sensitive to interpersonal cues indicative of one's vulnerability to victimization (Book, Costello, & Camilleri, 2013). This necessitates the evolution of perceptual systems to identify exploitative conspecifics. Porter, ten Brinke, Baker, and Wallace (2011) found individuals higher in the erratic lifestyle facet of psychopathy less able to suppress deceptive emotions, suggesting a potential basis for identifying psychopathic individuals through facial features. Additionally, certain facial features could communicate a target's likelihood of inflicting harm, thus allowing perceivers to avoid threatening conspecifics (i.e., Holtzman, 2011; Lyons & Blanchard, 2016). The current research seeks to identify how dispositional self-protection motives influence aversion to facially-communicated psychopathy.

1.1. Veridical cues to personality and selection

Human faces communicate information about personality, and therefore behavioral intentions (Little & Perrett, 2007; Parkinson, 2005). Specific facial structural components can provide veridical cues of individuals' underlying personality traits. Holtzman (2011) developed prototypical faces for Dark Triad traits (i.e., psychopathy, narcissism, Machiavellianism) based on respondents scoring the highest in corresponding measures (both self- and other-reports). Subsequent ratings of the extent to which faces exemplified each trait indicated observers accurately inferred personality with psychopathy eliciting the greatest accuracy. Thus, there is evidence for typical facial structures for psychopathy.

Given such accuracy in identifying psychopathy, perceivers may also be able to infer exploitative intentions exhibited by high-psychopathy individuals, thus shaping preferences. Previous research highlights preferences for facial personalities according to potential costs and benefits associated with such personalities. For example, pathogen-avoidant individuals downregulate preferences for facial extraversion, in favor of introversion, to mitigate likelihood of contracting infectious disease (Brown & Sacco, 2016). Conversely, socio-sexually unrestricted women prefer extraverted and narcissistic male faces, as such men are attractive short-term mating partners (Brown & Sacco, 2017; Marcinkowska, Helle, & Lyons, 2015). Women are also averse to high-psychopathy male faces and rate high-psychopathy faces as particularly aggressive, an indication that

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women are sensitive to these targets' exploitive behavioral intentions (Lyons & Blanchard, 2016; Lyons & Simeonov, 2016; Marcinkowska et al., 2015). Perceiving these conspecifics as dangerous may dually elicit aversion in affiliative domains, particularly among those with greater self-protection concerns.

1.2. Self-protection and face perception

Humans' vulnerability to exploitation in group living requires sensitivity to features connoting benevolence. This sensitivity seems particularly strong among those with heightened self-protection concerns (e.g., Sacco, Brown, Lustgraaf, & Young, in press; Young, Slepian, & Sacco, 2015). Young et al. (2015) found temporally activated self-protection concerns enhanced acuity in categorizing trustworthy faces from untrustworthy and Duchenne ("real") smiles, a cue indicating genuine affiliative intent, from non-Duchenne ("fake") smiles, which are deceptive expressions. Furthermore, women are particularly accurate in categorizing Duchenne smiles from non-Duchenne when they have dispositionally higher dangerous world beliefs (Sacco, Brown, Lustgraaf and Young, in press). After identifying safe interaction partners, individuals concerned with self-protection should have correspondingly heightened preferences for such conspecifics. Given women's greater vulnerability to physical violence imposed by sexual dimorphism (e.g., Sell, Hone, & Pound, 2012), women's preferences for safe interaction partners should be particularly strong. Indeed, women with heightened self-protection concerns prefer dominant men who would better ensure protection from harm (Sacco, Lustgraaf, Brown, & Young, 2015). Similar selection principles should apply based on veridical perceptions of personality traits through facial features. Heightened self-protection motives should elicit aversion to conspecifics whose faces communicate personality traits associated with exploitation and antagonism. Thus, dispositional self-protection motives should elicit aversion to facially communicated psychopathy, particularly among women.

1.3. Current research

This study sought to extend previous findings indicating aversion to facially communicated psychopathy. We created face pairs manipulated to communicate high and low levels of psychopathy from which both male and female participants indicated interpersonal preferences. We hypothesized participants would prefer low-psychopathy faces relative to high-psychopathy faces. Additionally, we predicted this aversion would be heightened among those with heightened self-protection motives (as indexed by dangerous world beliefs). Further, given women's perceptual acuity toward exploitive conspecifics as a function of dangerous world beliefs, we predicted this aversion to high-psychopathy faces will be particularly strong for women with higher dangerous world beliefs.

2. Method

2.1. Participants

We recruited 155 participants (92 men, 62 women, 1 indicating "other" was excluded from analyses; $M_{Age} = 35.09$ years, $SD = 11.25$; 77.3% White) through Amazon's Mechanical Turk for \$0.35 (US). A medium-effect size power analysis ($f = 0.25$, $\beta = 0.80$) indicated 128 were needed to detect effects; we intentionally oversampled in one data collection wave.

2.2. Material

2.2.1. Psychopathy faces

We created high- and low-psychopathy faces by morphing 20 male and 20 female unique, young adult Caucasian faces from face databases (Ma, Correll, & Wittenbrink, 2015; Minear & Park, 2004) with composite, same-sex face prototypes communicating high- or low-psychopathy (Holtzman, 2011). Holtzman's composite faces were composed of individuals who completed a self- and other-reported psychopathy inventory with the 10 individuals of both sexes scoring highest and lowest on psychopathy being morphed into a single face that communicated high- or low-psychopathy, respectively. Using these four composite faces (female-low, female-high, male-low, male-high), we blended each unique identity with the matched-sex face prototypes using morphing software (Morpheus Animation Suite v3.10). Morphs were 50/50 blends (50% original face/50% prototype; Brown & Sacco, 2016), producing 40 face pairs (20 female, 20 male targets with high- and low-psychopathy versions of each). See Fig. 1 for example faces and how face pairs were presented

Participants were randomly presented with individual face pairs with one unique identity per pair (high- and low-psychopathy face position was counterbalanced). They selected the version of either face in each pair they would prefer to "interact with." The task was self-paced; each face pair was displayed until participants made their selection before continuing to the next pair. We calculated participants' low-psychopathy face preference (relative to high), by summing the number of times participants selected the low-psychopathy face morph and divided it by the total number of trials, separately for male and female targets. Preference scores ranged from 0 to 1, with higher values reflecting larger preferences for low-psychopathy; a 0.5 proportion would reflect a preference for neither type of target.

2.2.2. Dangerous world beliefs

Participants reported dispositional self-protection motives using the Belief in a Dangerous World Scale (BDW; Altemeyer, 1988), a 12-item inventory tapping the degree to which individuals believe the world is dangerous (e.g., "Things are getting so bad, even a decent law-abiding person who takes sensible precautions can still become a victim of violence and crime"). Participants responded along 5-point Likert-type scales (1 = *Strongly Disagree*; 5 = *Strongly Agree*; 6 items reverse-scored); higher scores indicated greater dangerous world beliefs. This scale demonstrated sufficient reliability ($\alpha = 0.93$).

2.3. Procedure

Consenting participants were randomly assigned to a counterbalanced display of face pairs before indicating BDW and demographics information. Participants were then debriefed and received six-digit payment codes.

3. Results

We first determined whether there was an overall preference for low-psychopathy, relative to high, using a pair of one-sampled t -tests for both target sexes. For female faces, participants indicated above-chance preferences for facially communicated low-psychopathy relative to high-psychopathy, $t(153) = 3.95$, $p < 0.001$, $d = 0.64$. A similar above-chance preference emerged for male faces communicating low-psychopathy, $t(153) = 6.70$, $p < 0.001$, $d = 1.08$. A paired-samples t -test indicated a stronger preference for low-psychopathy in



Fig. 1. Example faces communicating high (left) and low levels of psychopathy.

male faces ($M = 0.57$, $SD = 0.13$) relative to female ($M = 0.54$, $SD = 0.13$), $t(153) = -2.21$, $p = 0.028$, $d = 0.38$. These results suggest that individuals show a preference for low-, relative to high-, psychopathy faces.

We conducted a 2 (Participant Sex: Male vs. Female) \times 2 (Target Sex: Male vs. Female) custom-model ANCOVA with repeated factors over Target Sex; BDW was a covariate to test for interactive effects between categorical and continuous predictors. A significant Participant Sex main effect emerged, such that men's low-psychopathy preference ($M = 0.56$, $SD = 0.13$) was larger than women's ($M = 0.54$, $SD = 0.12$), $F(1150) = 11.56$, $p = 0.001$, $\eta_p^2 = 0.072$. A significant Participant Sex \times BDW interaction also emerged, $F(1, 150) = 11.03$, $p = 0.001$, $\eta_p^2 = 0.068$. No other significant main effects or interactions emerged, $F_s < 1.81$, $p_s > 0.181$. Because Target Sex did not interact with any variables, we collapsed across target sex for one composite preference score.

To understand the Participant Sex \times BDW interaction, we correlated BDW scores with low-psychopathy preferences separately for male and female participants (see Fig. 2). Consistent with our hypotheses, a significant positive correlation emerged between BDW and face preferences for women; women with higher dangerous world beliefs exhibited greater preferences for low-psychopathy faces $r(60) = 0.327$, $p = 0.010$. Unexpectedly, for men, a negative correlation emerged between BDW and face preferences; men with higher dangerous world beliefs downregulated their preference for low-psychopathy, $r(90) = -0.222$, $p = 0.033$. That is, they appeared more tolerant of high-psychopathy targets, relative to women. Additionally, a directional Z-test revealed that the correlations between BDW and face preferences for men and women were significantly different from each other, $Z = 3.37$, $p < 0.001$.

4. Discussion

Dangerous world beliefs were differentially related to men and women's psychopathy preferences. Whereas women's self-protection motives predicted aversion to high-psychopathy faces, similarly motivated men demonstrated less aversion to high-psychopathy targets. Women's aversion is consonant with findings implicating self-protection motives heightening sensitivity to veridical exploitation cues (Sacco, Brown, Lustgraaf and Young, in press). Self-protection-motivated women tend to upregulate preferences for dominant male conspecifics, which could ensure protection from physical violence (e.g., Sacco et al., 2015). However, whereas previous studies may have considered aggression as ensuring protection, the aggression communicated through facial psychopathy appears to produce a unique signal. The inferred aggression in high-psychopathy faces may specifically indicate exploitative aggression.

Men's tolerance of high-psychopathy faces may be rooted in sex differences in coalitional threat responses. Coalitional threat, arguably the impetus behind dangerous world beliefs, motivates aggression in men to mitigate outgroup threat (McDonald, Navarrete, & Van Vugt, 2012). Such threats ideate men's coalitional responses to threat and motivate coalition formation (Bugental & Beaulieu, 2009). To form an optimum coalition, it may behoove the group to select several exploitive conspecifics. Although associations with high-psychopathy individuals may be costly, men could be willing to make the tradeoff insofar as high-psychopathy persons could prove useful in mitigating outgroup threat. This tradeoff would not be advantageous for women; coalitional threat elicits desires for protection from group members rather than intergroup violence in women (Bugental & Beaulieu, 2009). Associating with such conspecifics would also incur

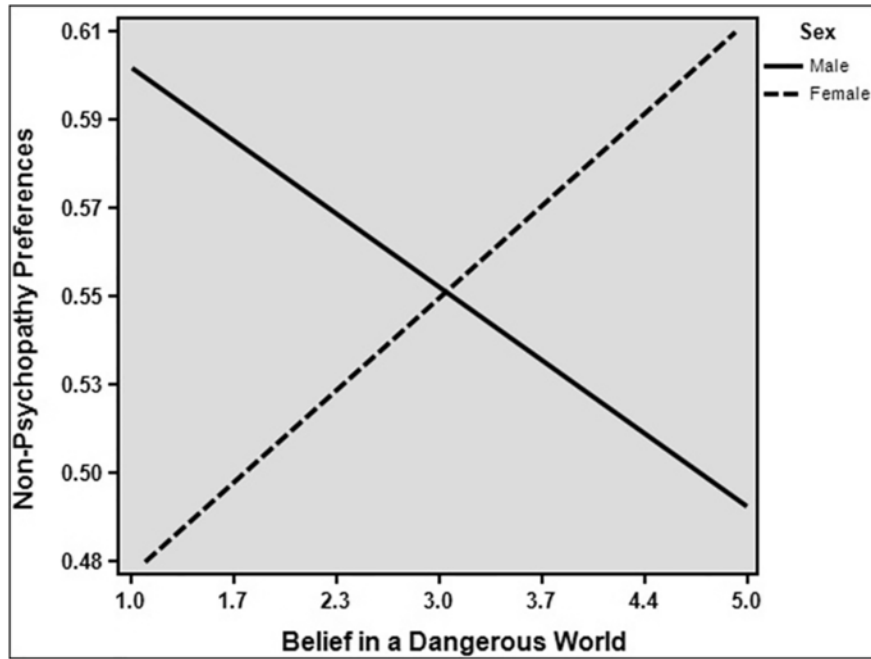


Fig. 2. Men and women's differential preferences for psychopathic faces as a function of dangerous world beliefs. Note: Higher scores indicate greater preference for low-psychopathy faces.

more costs to women (Snyder et al., 2011). Nonetheless, this tentative explanation necessitates further research.

Aversion to psychopathy also did not differ between male and female targets. The costs of physical violence would be readily apparent for an aversion to male psychopathy but the aversion to female psychopathy may be tied to less physical exploitative behavior. For example, high-psychopathy individuals have greater proclivity to make utilitarian moral decisions (e.g., pulling the lever in a trolley dilemma), decisions that may implicate other conspecifics as having harm befall them (Patil, 2015). Both men and women are capable of inflicting harm through such decisions, as evident by an aversion to utilitarianism regardless of decision-maker sex (Sacco, Brown, Lustgraaf, & Hugenberg, in press). Women's sensitivity to psychopathy may have communicated inferences of exploitation typically committed by both men and women.

Future research would benefit from determining how temporal activation of self-protection motives influences low-psychopathy face preferences. Priming participants with threats of physical violence (e.g., Sacco et al., 2015) may facilitate similar preferences, such that acute concerns for physical safety may upregulate preferences for low-psychopathy faces, particularly in women. To test the robustness of our tentative explanation for men's high-psychopathy tolerance, the threat to physical safety may best be contextualized as an outgroup coalition invading one's community (Bugental & Beaulieu, 2009). Since men seek coalitions for optimal competition against threats posed by rival groups, it would seem sensible to predict such specific threats would elicit greater tolerance for psychopathy. Future studies should also identify conditions under which high-psychopathy is actually preferred, particularly in leadership positions. Lilienfeld et al. (2012) found historically successful presidents demonstrated higher levels of psychopathy. This success may be related to greater willingness to engage in aggressive behaviors that low-psychopathy persons may be unwilling to perform, yet would ultimately facilitate attaining a greater good (e.g., Patil, 2015). The current study tasked participants to indicate whom they preferred out of each pair as inter-

action partners; future studies should task participants with indicating whom they would prefer as a leader.

5. Conclusion

The current study contributes to a growing body of research investigating the role of self-protection motives in shaping face perception. Specifically, we found that dangerous world beliefs differentially predict men and women's preferences for facially communicated psychopathy. We posit these divergent preferences may serve to facilitate affiliation with conspecifics who best satisfy salient needs. Importantly, preferences appeared contingent on the personality communicated in targets' faces based on their likelihood of being exploitative.

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