

Empirical Papers

Was she wearing red? The function of victim-blaming in women's intrasexual competition

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Previous research indicates that women frequently use red clothing to signal their sexual receptivity, with men and women both recognizing this as a reliable cue to such receptivity. Nonetheless, receptivity cues can inform perceptions of women's culpability for experiencing sexual assault. Thus, women experiencing sexual assault could become more of a target for victim-blaming if assaulted while wearing red. Such victim-blaming could be especially apparent especially among those who believe the world is just. The current study presented a sexual assault vignette to American undergraduates (155 women, 66 men) describing a woman wearing either red or green whom participants evaluated for the degree of culpability she has for the assault. Results indicated that the red-wearing target was viewed as more culpable for the assault, particularly for women with heightened just-world beliefs. We frame results from an evolutionary framework considering victim-blaming as part of women's intrasexual competition.

Key words: Red, sexual assault, evolutionary psychology, victim-blaming, intrasexual competition.

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INTRODUCTION

The ability to identify mates with similar reproductive intents is critical to relationship formation across various contexts. Inferences of a mate's interests occur frequently with considerable uncertainty as a result of limited information during initial interactions with a prospective mate (Haselton & Buss, 2000). It would have thus been advantageous for perceivers to utilize various physical and behavioral features of a social target as heuristics to identify their preferred mating strategy with greater accuracy (Brown, Boykin & Sacco, 2022; Sng, Williams & Neuberg, 2020). As a consequence of this potential adaptation, complementary signaling strategies could have evolved to connote sexual receptivity to aid perceivers in their mate pursuit. One strategy includes women's display of the color red on their skin or clothing, which appear to function as means to bolster their attractiveness and signal sexual intent to prospective mates due to its connotation of sexual receptivity (Prokop & Hromada, 2013; Re, Whitehead, Xiao & Perrett, 2011; Stephen & McKeegan, 2010). Men indeed recognize this signal value as one of sexual receptivity and find women wearing red more attractive than those wearing other colors (Pazda, Elliot & Greitemeyer, 2012; Elliot, Tracy, Pazda & Beall, 2013).

As a putative cue to sexual receptivity, women's adornment in red could shape perceptions of their character. Red-wearing women are frequently derogated by other women who view them as intrasexual threats (Keys & Bhogal, 2018; Pazda, Elliot & Greitemeyer, 2014). The sexual receptivity connoted through red could similarly inform judgments of women's culpability for experiencing sexual assault. Provocatively dressed women receive more blame for their sexual assault by both men and women despite such blame being rooted in rape myths (e.g., "What was she wearing?", Workman & Freeburg, 1999). When considering a

perspective of victim precipitation (Petherick, Kannan & Brooks, 2021), this attribution could represent an erroneous belief that women's sexually receptive appearance would have encouraged the commission of the assault (i.e., "She was asking for it"). These ancestrally derived judgments could lead perceivers to stigmatize sexual assault victims who wore red during the assault, impeding fair treatment under the law (see Brown, Rodriguez, Gretak & Berry, 2017). This study sought to identify how the receptivity connoted through red fosters greater attribution of blame toward women experiencing sexual assault.

Red as a sexual receptivity signal

Women signal their sexual intentions through various behaviors and physical displays. These signals function to augment perceptions of women as desirable mates exhibiting both good genes and interest in prospective suitors. Among other reasons for their use, women use cosmetics (Batres, Russell, Simpson, Campbell, Hansen & Cronk, 2018), revealing clothing (Durante, Li & Haselton, 2008), and high heels to communicate this information to prospective mates (Prokop & Švancárová, 2020). These adornments function to accentuate the physical features that men prioritize in mate selection.

Within this suite of potential receptivity signals is using the color red. This signal appears to possess a strong biological basis, with both human and non-human primates heuristically associating the color with sexual receptivity and thus mate preferences. In several species of macaques, redness in various facial and bodily areas provides an honest cue to a female's fertility (i.e., sexual swelling). This redness leads to the males preferring such colorations to improve their likelihood of sexual success (Higham, Kimock, Mandalaywala *et al.*, 2021; Rigail,

Higham, Winters & Garcia, 2019). Similar to humans is a general connotation of red skin as being diagnostic of good health, which is often central to human evaluations of attractiveness (e.g., Brown & Sacco, 2018; Pazda, Thorstenson, Elliot & Perrett, 2016). In humans, redness in the skin connotes physiological arousal (e.g., blushing), which could signal women's sexual receptivity in specific contexts that would motivate men to approach these women as mates (Re, Whitehead, Xiao & Perrett, 2011).

In addition, the redness of their skin appears to be an understanding of how red clothing may shape women's attractiveness. This interest in wearing red could be seen as a form of "phenotypic extension" in signaling their overall mate value. Similar to women's use of eyeliner to increase perceptions of their overall health (Russell, Porcheron, Sweda, Jones, Mauger & Morizot, 2016), red clothing could augment existing cues in their bodies that men use to identify health (e.g., skin) or provide a heuristic signal of women's interest through non-physiological means. In anticipation of a sexual encounter, particularly in short-term contexts, women opt to wear red (Prokop & Hromada, 2013), which augments their attractiveness and perceptions of their sexual receptivity that would implicate them as an optimal reproductive opportunity for men (Elliot, Tracy, Pazda & Beall, 2013; Niesta-Kayser, Elliot & Feltman, 2010; Pazda, Elliot & Greitemeyer, 2012; Pazda, Prokop & Elliot, 2014; Pazda, Thorstenson & Elliot, 2021).

Although the apparent signal value of red attire is most obvious toward male perceivers, women use other women's use of red as a heuristic about their social intentions from which they make affiliative judgments. Women wearing red are regarded as intrasexual threats to female perceivers whom they would derogate as romantic rivals (Pazda, Elliot & Greitemeyer, 2014), a common derogation toward women who appear sexually receptive (Vaillancourt & Sharma, 2011). This signal of receptivity through red could further foster inferences of women's interest in any sexual encounters. One consequence of this general inference could be perceptions of women wearing red as culpable for unwanted attention when they experience nonconsensual sexual contact. For men, this inference could reflect a disconnect between perceived and actual receptivity. Women's inferences could reflect a belief that potential rivals are responsible for their own victimization in the mating market.

Sex-specific functions of victim-blaming

Stigmatization functions to mitigate the perceiver's contact with those who may pose greater risk to group living (Kurzban & Leary, 2001). One route through which this stigmatization could occur is victim-blaming. Individuals are motivated to maintain sense in their social world through believing it to be just (Hafer, Bègue, Choma & Dempsey, 2005). Such beliefs could function to ensure individuals believe their group membership is coherent and should continue without question. This may motivate continued participation in group activities if they believe their desirable actions will always guarantee fair treatment. Those who are exploited by others are consequently regarded as culpable for their own misfortunes by perceivers. This perceived culpability is

a belief that the perceiver's assumed control over the environment would have prevented harm from befalling the perceiver. Victims would have conversely been viewed as deserving of victimization due to their own ostensibly irresponsible behavior (Grubb & Harrower, 2008). Despite data suggesting that the perpetrator is overwhelmingly deemed the one responsible for a sexual assault (Perilloux, Duntley & Buss, 2014), victim-blaming remains pervasive in sexual assault cases (Furnham, 2003; Yamawaki, 2009).

Although more common in men, women are nonetheless prone to victim-blaming for different purposes (van der Bruggen & Grubb, 2014). This different basis for victim-blaming could suggest unique functions of it for men and women that may facilitate relevant survival and reproductive goals. For example, men's overestimation of women's sexual intent may position them to view women as sexually receptive, even when that is not a woman's intent (Haselton & Buss, 2000). That is, red clothing is not always worn to connote sexual receptivity but could be a source of error in identifying receptivity. These perceptions may foster aversion to women whom they could perceive as a threat to their control in the relationship that could undermine their sense of paternal certainty toward offspring (Atari, Barbaro, Sela, Shackelford & Chegeni, 2017; Moon, 2021). Victim-blaming could reflect men's awareness of the greater likelihood that women who prefer promiscuous mating strategies are more prone to victimization (Perilloux, Duntley & Buss, 2011). Thus, men could perceive the covariation between promiscuity and victimization as means to justify the belief that the victim is culpable for the assault.

Conversely, just-world beliefs are substantially more predictive of women's derogation of rape victims than men's (Bai, Liu & Khei, 2021; Sinclair & Bourne, 1998). Women's attribution of blame could reflect an understanding of the promiscuity-vulnerability covariation, albeit with awareness of the intrasexual threat promiscuity could provide. Women's motivation to acquire mates heighten their sensitivity to good gene cues in women that would represent an intrasexual threat (Brown, Keefer & Sacco, 2020; Brown & Sacco, 2018). Indeed, women are more derogative toward women who appear promiscuous (Krems, Rankin & Northover, 2020; Vaillancourt & Sharma, 2011). This derogation toward such women could extend to viewing them as especially culpable of victimization. Victim-blaming could be a potential manifestation of the competitiveness women experience around those whom they perceive as an intrasexual threat, with these attitudes potentially fostering reputational damage toward women deemed promiscuous that could impede their social support and access to reproductive opportunities (Vaillancourt & Krems, 2018).

Current research

This study considered an evolutionary framework for the signal value of red in connoting women's sexual receptivity. We addressed how red shapes evaluations of women as culpable for their victimization in a sexual assault. We predicted that a sexual assault survivor would be perceived as more culpable for her assault when she is wearing red given the heuristic association between red and receptivity (e.g., Pazda, Elliot &

Greitemeyer, 2012). The specificity of just-world beliefs in predicting women's proclivity to victim-blame other women led us to argue that just-world beliefs would heighten women's derogation of red-wearing survivors (e.g., Pazda, Elliot & Greitemeyer, 2014; Vaillancourt & Sharma, 2011). Conversely, we predicted men's proclivity toward victim-blaming women in red would be higher compared to women across various levels of belief in a just world (BJW). We report all measures, manipulations, and exclusions in this manuscript. Data, materials, and the pre-registration for these hypotheses are provided at: https://osf.io/vm3hr/?view_only=28e14836d3a6497f8428df5d50ada3b1.

METHOD

Participants

We recruited 221 undergraduates from a small private university in Northeastern U.S. for course credit across two semesters in an online experiment (155 women, 66 men; $M_{\text{Age}} = 20.22$, $SD = 3.80$; 45.2% White). A power analysis a priori indicated 190 participants would adequately detect medium effects (Cohen's $f = 0.30$, $1 - \beta = 0.80$). We oversampled in case of exclusions and only analyzed our data following completion of data collection. No data were excluded.

Materials and procedures

Target attire. Participants read a vignette describing a hypothetical woman who experienced an attempted sexual assault from a man she met at a party after "flirting passionately" with him and leaving the party together (van Prooijen & van den Bos, 2009). The target woman presented to participants was always the same unique identity whose face was occluded through blurring and regarded under a pseudonym ("Zoe"), ostensibly as means to protect her identity.

Participants viewed "Zoe" as wearing one of two colors as the critical experimental manipulation on a between-subjects basis. "Zoe" was either wearing a red shirt ($n = 110$) or a green shirt ($n = 111$), a methodological decision based on these colors being chromatic contrasts to each other (Fig. 1). This allowed us to control for lightness and chroma while minimizing heuristic associations with other colors (e.g., white and purity;

Pazda, Elliot & Greitemeyer, 2014). "Zoe" appeared to be a young White woman with dark brown hair. She was presented in front of a white background in Qualtrics software to optimize the contrast to ensure participants could view the target color more readily. It is important to note that the online nature of this experiment did not allow for rigorous control of participants' displays and, therefore, color stimuli (see Pazda, Thorstenson & Elliot, 2021).

Target evaluation. "Zoe" was evaluated using two critical dependent measures. First was a single-item measure assessing her interest in sex (Pazda, Elliot & Greitemeyer, 2012), which operated along a seven-point scale (1 = *Not at All*; 7 = *Very Much*; $M_{\text{Grand}} = 2.59$, $SD = 2.08$), as our measure of sexual receptivity. Second were four items assessing the extent to which participants attributed blame to "Zoe" for the incident occurring (van Prooijen & van den Bos, 2009). These items operated along seven-point scales (1 = *Strongly Disagree*; 7 = *Strongly Agree*), with higher scores indicating perceptions of greater culpability toward "Zoe" (e.g., "I think Zoe deserved what happened to her"). Items for this latter measure had acceptable reliability ($\alpha = 0.78$; $M_{\text{Grand}} = 1.74$, $SD = 0.94$).

Just world beliefs. Participants indicated the extent they perceived the world to be a just place using the Belief in a Just World Scale (BJW; e.g., "I feel that people get what they deserve"; Lipkusa, Dalbert & Siegler, 1996). This 16-item measure operates along six-point scales (1 = *Strongly Disagree*; 6 = *Strongly Agree*), with higher scores reflecting greater beliefs in the world being just ($\alpha = 0.88$; $M_{\text{Grand}} = 3.42$, $SD = 0.72$).

RESULTS

Receptivity

An independent samples t -test indicated no difference in perceptions of receptivity when "Zoe" wore red ($M = 2.59$, $SD = 2.02$) or green ($M = 2.59$, $SD = 2.14$), $t(218) = 0.01$, $p = 0.996$, $d < 0.01$.

Blame

To identify the extent that participants blamed "Zoe" for her assault, we submitted our data to two different analyses. To



Fig. 1. Images used to represent "Zoe" in this study wearing red (left) or green presented to participants with blurred faces.

identify effects from simple slopes and floodlight effects from superordinate (interactions?), we employed Model 3 of PROCESS to test for interactive effects with three predictors (Hayes, 2013). Our three predictors were Color worn by “Zoe”, Participant Sex, and BJW. A Participant Sex main effect indicated that men attributed more blame to “Zoe” ($M = 2.16$, $SD = 1.18$) than did women ($M = 1.56$, $SD = 0.75$), $b = -4.04$, $SE = 1.97$, $p = 0.042$. No other main effects emerged in this analysis ($ps > 0.120$).

Effects were most superordinately qualified by a Participant Sex \times Condition \times BJW interaction, $F(1, 213) = 4.39$, $p = 0.037$, $\eta_p^2 = 0.020$. This interaction was decomposed by considering men and women separately within the same omnibus model. The subordinate interaction for men was not significant, $F(1, 213) = 0.80$, $p = 0.372$, $\eta_p^2 = 0.003$. We did not consider this interaction any further. Conversely, effects for women were qualified by a subordinate Condition \times BJW interaction, $F(1, 213) = 5.44$, $p = 0.020$, $\eta_p^2 = 0.024$ (Fig. 2).

Simple slopes analyses indicated that higher levels of BJW were associated with blaming “Zoe” more when wearing red, $b = 0.64$, $SE = 0.14$, $p < 0.001$. This association did not emerge for women who viewed “Zoe” wearing green, $b = 0.16$, $SE = 0.14$, $p = 0.253$. We then conducted floodlight analyses comparing women’s responses to “Zoe” wearing red and green at high (+1 SD) and low levels (–1 SD) of BJW separately. At low levels of BJW, no difference emerged in blame, $|b| < 0.01$, $SE = 0.18$, $p = 0.991$. At high levels of BJW, women attributed more blame to women wearing red than green, $b = -0.68$, $SE = 0.21$, $p = 0.002$.

DISCUSSION

Attribution of blame was higher when the target wore red, but only among female perceivers. This attribution is consistent with the previous demonstrating a red-sex link in women’s attire (Elliot, Tracy, Pazda & Beall, 2013; Pazda, Elliot & Greitemeyer, 2012). However, these findings afford an added nuance that victim-blaming toward features ostensibly connoting sexual intent appears most apparent toward other women. Women’s attitudes toward victims wearing red could be a competitive response toward women whose appearance is heuristically associated with intrasexual rivalry (Pazda, Elliot & Greitemeyer, 2014; Vaillancourt & Sharma, 2011). That is,

women could implicitly recognize such putative displays of sexual intent as a potential threat to their current relationship, which could motivate derision toward potential rivals. Indeed, women exhibit a proclivity to damage the reputation of intrasexual rivals dressed provocatively (Reynolds, Baumeister & Maner, 2018). Victim-blaming could represent a similar malignment as means to stigmatize someone whom female perceivers see as an intrasexual threat to impede their access to social support and mates. To understand the potential function of victim-blaming in future studies, researchers could task women with assessing the extent to which they view women as intrasexual threats based on their attire while indicating the culpability the target would have if they experienced sexual assault. From there, researchers could identify how ancestrally derived motivations could undermine fair treatment under the law.

These attributions were most apparent among women with heightened just-world beliefs. This finding aligns with previous work indicating these beliefs are more predictive of women’s victim-blaming (Bai, Liu & Khei, 2021; Sinclair & Bourne, 1998). Just-world bases of victim-blaming could serve to maintain women’s sense of control in group living based on the implicit assumption that sociosexually unrestricted women are more likely to be victimized (Perilloux, Duntley & Buss, 2014). Conversely, men’s just-world beliefs did not influence their proclivity to victim-blame. This finding could represent men’s generally greater proclivity toward making this attribution, as evidenced by both by the current study and previous findings (van der Bruggen & Grubb, 2014). Alternatively, just-world beliefs may not be the impetus behind victim-blaming in men if these beliefs are part of intrasexual competition. Future research would benefit from considering predictors related to intersexual selection, including endorsement of restrictive sexual norms that could increase the likelihood of paternal certainty for men (Moon, 2021).

It should be noted within these findings that some of these effects are particularly small. However, such small effects may be unsurprising with the sensitive nature of this study that could suggest any effect found could be particularly impressive (Prentice & Miller, 1992). Baseline levels of victim-blaming are already particularly low in a general population, especially among third-party observers (Perilloux, Duntley & Buss, 2014), which is further reflected in our data with the levels of culpability being around the low scalar anchor. These subtle effects could present an opportunity to focus on identifying how to address prevailing victim-blaming that could manifest through evolutionary means.

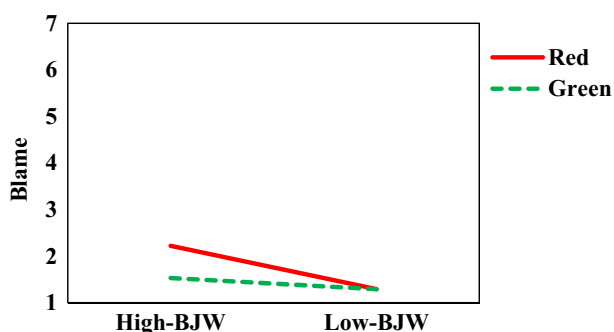


Fig. 2. Women’s attribution of blame to “Zoe” wearing red or green at high (+1 SD) and low levels (–1 SD) of BJW.

Heterogeneity in the effects of red on sexual receptivity

Despite the fact that our results indicate signals of sexual receptivity foster victim-blaming (Pazda, Elliot & Greitemeyer, 2012), our results indicated that the red-wearing target was not perceived as more sexually receptive. This possibility could be based on our experimental paradigm that is otherwise absent in previous research indicating this effect. Our study considered a hypothetical target already flirting with a man and deciding to go home with him. The target could have been perceived as interested in sex across categories based on that information to where explicit inferences of receptivity would be

less apparent. Participants could have been practicing a social desirability bias in this scenario to prevent themselves from endorsing rape myths, which could be reflected by the larger standard deviations for the receptivity item (i.e., $SDs > 2.00$) that could have muted actual effects. Nonetheless, the signal value of red emerged in the predicted fashion, which could necessitate more subtle measures of derogation. One route to consider in future studies could be a scenario without any sexual interest from the target, wherein the perpetrator is a stranger who drugs the target.

Alternatively, the inconsistency in findings in this study with related programs of research could reflect various methodological heterogeneities (see Peperkoorn, Roberts & Pollet, 2016; Pollet, Costello, Groeneboom, Peperkoorn & Wu, 2019). Much of the research investigating color perception involves laboratory settings with rigorous controls on the hues and saturation in computer-presented stimuli (for a discussion, see Pazda, Thorstenson & Elliot, 2021). Future research would benefit from considering various testing methods to identify best practices in stimulus presentation.

Limitations and future directions

The mixed support for our hypotheses necessitates future research to address our empirical shortcomings. First, despite sensible findings for the role of just-world beliefs in shaping women's derogation of receptivity signals, it is unclear what the attitudinal bases are for men's higher victim-blaming tendencies. Recent findings indicate that men's adherence to norms of restrictive sexual practices for women heighten their proclivity toward victim-blaming, potentially in the service of reducing concerns of paternal uncertainty for their own reproductive goals (Baboli & Karimi-Malekabadi, 2020; Moon, 2021). The receptivity signal of red would make it sensible to predict victim-blaming would be amplified toward such signals. Future studies would benefit from considering these male-specific processes. The smaller sample of men in this study could have further impeded our ability to detect these effects for men. Future research would benefit from specifically recruiting larger samples of men. Additionally, although red-green color blindness does not appear to impede men's ability to identify the social value of colors (Jonaskaite, Camenzind, Parraga *et al.*, 2021), the relatively greater likelihood of colorblindness in men could have nonetheless impeded men's perceptions of red to some degree (Wong, 2011). Future research would benefit from considering perceptual differences between those with typical color vision and those with deficiencies.

The specificity of just-world beliefs in shaping women's evaluations led us to consider this derogation as part of an intrasexually competitive process. However, these findings may only represent a proxy for competition because of the absence of direct measures for mating motives. Future research would benefit from considering mating-specific motives. For example, sociosexually unrestricted men and women exhibit heightened vigilance toward perceived intrasexual threats in the service of identifying likely rivals to their mating goals (e.g., Brown & Sacco, 2017; Sacco, Jones, DeBruine & Hugenberg, 2012). The notion of victim-blaming being heightened among those motivated by purity concerns could make it advantageous to consider orthogonal motives of disease avoidance that often foster

a derision of promiscuous sexual behaviors (Baboli & Karimi-Malekabadi, 2020; Moran, Kerry, Goh & Murray, 2021).

In addition to these specific signals of sexual receptivity, future research would benefit from considering other cues of inferred sexual interest. Large breasts are perceived as diagnostic of a short-term mating orientation akin to the sexual receptivity of red (Brown, Boykin & Sacco, 2022). Future studies might therefore consider whether such physical features elicit similar derogation. Conversely, other features diagnostic of monogamous intent or physical vulnerability (e.g., short statures) may reduce a proclivity toward victims due to perceptions of them being more undeserving of exploitation (Bai, Liu & Khei, 2021; Brown, Keefer, Sacco & Brown, 2022). This consideration of conflicting signal values may further warrant consideration of victim-blaming toward male assault survivors. If physical features connoting vulnerability reduce perceptions of culpability, then it should logically follow that features connoting aggression in male faces would augment their perceived culpability for being assaulted (Sell, Tooby & Cosmides, 2009). Future research could consider facial width-to-height ratio, a feature associated with perceptions of men's aggression and mental toughness, and how it might foster perceptions of such men as responsible for their assault given their putative advantage in physical conflict (Brown, Bauer, Sacco & Capron, 2021).

CONCLUSION

Humans rely on various heuristics in social targets to infer different social opportunities that have historically been advantageous to survival and reproduction. These ancestral processes could potentially undermine modern-day attempts at fair treatment for individuals due to the particular salience of a competing signal. This research indicated such cues of receptivity could leave women vulnerable to victim-blaming, which necessitates public awareness to ensure continued fair treatment under the law for those experiencing sexual assault.

We report all measures, manipulations, and exclusions in this manuscript. Data and the pre-registration are provided: https://osf.io/vm3hr/?view_only=28e14836d3a6497f8428df5d50ada3b1.

REFERENCES

- Atari, M., Barbaro, N., Sela, Y., Shackelford, T.K. & Chegeni, R. (2017). The Big Five personality dimensions and mate retention behaviors in Iran. *Personality and Individual Differences*, 104, 286–290.
- Baboli, M.F. & Karimi-Malekabadi, F. (2020). Qeirat values and victim blaming in Iran: The mediating effect of culture-specific gender roles. *Preprint available at PsyArxiv*.
- Bai, B.Y., Liu, X.X. & Khei, M. (2021). Physical shortness lessens victim-blaming: The mediating role of belief in a just world. *Current Psychology*, 40, 1168–1173.
- Batres, C., Russell, R., Simpson, J.A., Campbell, L., Hansen, A.M. & Cronk, L. (2018). Evidence that makeup is a false signal of sociosexuality. *Personality and Individual Differences*, 122, 148–154.
- Brown, M., Bauer, B.W., Sacco, D.F. & Capron, D.W. (2021). Functional inferences of formidability bias perceptions of mental distress. *Evolutionary Psychological Science*, 7, 401–410.
- Brown, M., Boykin, K. & Sacco, D.F. (2022). Functional inferences of mating orientations through body fat and sex-typical features. *Journal of Social and Personal Relationships*, 39, 2228–2238.

- Brown, M., Keefer, L.A. & Sacco, D.F. (2020). Relational insecurity heightens sensitivity to limbal rings in partnered women. *Personal Relationships*, *27*, 61–75.
- Brown, M., Keefer, L.A., Sacco, D.F. & Brown, F.L. (2022). Demonstrate values: Moral outrage as a cue to long-term mating potential. *Emotion*, *6*, 1239–1254.
- Brown, M., Rodriguez, D.N., Gretak, A.P. & Berry, M.A. (2017). Preliminary evidence for how the behavioral immune system predicts juror decision-making. *Evolutionary Psychological Science*, *3*, 325–334.
- Brown, M. & Sacco, D.F. (2017). Unrestricted sociosexuality predicts preferences for extraverted male faces. *Personality and Individual Differences*, *108*, 123–127.
- Brown, M. & Sacco, D.F. (2018). Put a (limbal) ring on it: Women perceive men's limbal rings as a health cue in short-term mating domains. *Personality and Social Psychology Bulletin*, *44*, 80–91.
- Durante, K.M., Li, N.P. & Haselton, M.G. (2008). Changes in women's choice of dress across the ovulatory cycle: Naturalistic and laboratory task-based evidence. *Personality and Social Psychology Bulletin*, *34*, 1451–1460.
- Elliot, A.J., Tracy, J.L., Pazda, A.D. & Beall, A.T. (2013). Red enhances women's attractiveness to men: First evidence suggesting universality. *Journal of Experimental Social Psychology*, *49*, 165–168.
- Furnham, A. (2003). Belief in a just world: Research progress over the past decade. *Personality and Individual Differences*, *34*, 795–817.
- Grubb, A. & Harrower, J. (2008). Attribution of blame in cases of rape: An analysis of participant gender, type of rape and perceived similarity to the victim. *Aggression and Violent Behavior*, *13*, 396–405.
- Hafer, C.L., Bègue, L., Choma, B.L. & Dempsey, J.L. (2005). Belief in a just world and commitment to long-term deserved outcomes. *Social Justice Research*, *18*, 429–444.
- Haselton, M.G. & Buss, D.M. (2000). Error management theory: A new perspective on biases in cross-sex mind reading. *Journal of Personality and Social Psychology*, *78*, 81–91.
- Hayes, A.F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Publications.
- Higham, J.P., Kimock, C.M., Mandalaywala, T.M., Heistermann, M., Cascio, J., Petersdorf, M. et al. (2021). Female ornaments: Is red skin color attractive to males and related to condition in rhesus macaques? *Behavioral Ecology*, *32*, 236–247.
- Jonauskaitė, D., Camenzind, L., Parraga, C.A., Diouf, C.N., Ducommun, M.M., Müller, L. et al. (2021). Colour-emotion associations in individuals with red-green colour blindness. *PeerJ*, *9*, e11180.
- Keys, E. & Bhogal, M.S. (2018). Mean girls: Provocative clothing leads to intra-sexual competition between females. *Current Psychology*, *37*, 543–551.
- Krems, J.A., Rankin, A.M. & Northover, S.B. (2020). Women's strategic defenses against same-sex aggression: Evidence from sartorial behavior. *Social Psychological and Personality Science*, *11*, 770–781.
- Kurzban, R. & Leary, M.R. (2001). Evolutionary origins of stigmatization: The functions of social exclusion. *Psychological Bulletin*, *127*, 187–208.
- Lipkusa, I.M., Dalbert, C. & Siegler, I.C. (1996). The importance of distinguishing the belief in a just world for self versus for others: Implications for psychological well-being. *Personality and Social Psychology Bulletin*, *22*, 666–677.
- Moon, J.W. (2021). Why are world religions so concerned with sexual behavior? *Current Opinion in Psychology*, *40*, 15–19.
- Moran, J.B., Kerry, N., Goh, J.X. & Murray, D.R. (2021). Parasites and promiscuity: Acute disease salience leads to more restricted sexual attitudes. *Journal of Social and Personal Relationships*, *38*, 3333–3349.
- Niesta-Kayser, D., Elliot, A.J. & Feltman, R. (2010). Red and romantic behavior in men viewing women. *European Journal of Social Psychology*, *40*, 901–908.
- Pazda, A.D., Elliot, A.J. & Greitemeyer, T. (2012). Sexy red: Perceived sexual receptivity mediates the red-attraction relation in men viewing woman. *Journal of Experimental Social Psychology*, *48*, 787–790.
- Pazda, A.D., Elliot, A.J. & Greitemeyer, T. (2014). Perceived sexual receptivity and fashionableness: Separate paths linking red and black to perceived attractiveness. *Color Research & Application*, *39*, 208–212.
- Pazda, A.D., Prokop, P. & Elliot, A.J. (2014). Red and romantic rivalry: Viewing another woman in red increases perceptions of sexual receptivity, derogation, and intentions to mate-guard. *Personality and Social Psychology Bulletin*, *40*, 1260–1269.
- Pazda, A.D., Thorstenson, C.A. & Elliot, A.J. (2021). The effect of red on attractiveness for highly attractive women. *Current Psychology*, 1–8.
- Pazda, A.D., Thorstenson, C.A., Elliot, A.J. & Perrett, D.I. (2016). Women's facial redness increases their perceived attractiveness: Mediation through perceived healthiness. *Perception*, *45*, 739–754.
- Peperkoorn, L.S., Roberts, S.C. & Pollet, T.V. (2016). Revisiting the red effect on attractiveness and sexual receptivity: No effect of the color red on human mate preferences. *Evolutionary Psychology*, *14*, 1474704916673841.
- Perilloux, C., Duntley, J.D. & Buss, D.M. (2011). Susceptibility to sexual victimization and women's mating strategies. *Personality and Individual Differences*, *51*, 783–786.
- Perilloux, C., Duntley, J.D. & Buss, D.M. (2014). Blame attribution in sexual victimization. *Personality and Individual Differences*, *63*, 81–86.
- Petherick, W., Kannan, A. & Brooks, N. (2021). Victim precipitation: An outdated construct or an important forensic consideration? *Journal of Forensic Psychology Research and Practice*, *21*, 214–229.
- Pollet, T.V., Costello, J., Groeneboom, L., Peperkoorn, L.S. & Wu, J. (2019). Do red objects enhance sexual attractiveness? No evidence from two large replications. *Displays*, *56*, 23–29.
- Prentice, D.A. & Miller, D.T. (1992). When small effects are impressive. *Psychological Bulletin*, *112*, 160–164.
- Prokop, P. & Hromada, M. (2013). Women use red in order to attract mates. *Ethology*, *119*, 605–613.
- Prokop, P. & Švancárová, J. (2020). Wearing high heels as female mating strategy. *Personality and Individual Differences*, *152*, 109558.
- Re, D.E., Whitehead, R.D., Xiao, D. & Perrett, D.I. (2011). Oxygenated-blood colour change thresholds for perceived facial redness, health, and attractiveness. *PLoS One*, *6*, e17859.
- Reynolds, T., Baumeister, R.F. & Maner, J.K. (2018). Competitive reputation manipulation: Women strategically transmit social information about romantic rivals. *Journal of Experimental Social Psychology*, *78*, 195–209.
- Rigaill, L., Higham, J.P., Winters, S. & Garcia, C. (2019). The redder the better? Information content of red skin coloration in female Japanese macaques. *Behavioral Ecology and Sociobiology*, *73*, 1–12.
- Russell, R., Porcheron, A., Sweda, J.R., Jones, A.L., Mauger, E. & Morizot, F. (2016). Facial contrast is a cue for perceiving health from the face. *Journal of Experimental Psychology: Human Perception and Performance*, *42*, 1354–1362.
- Sacco, D.F., Jones, B.C., DeBruine, L.M. & Hugenberg, K. (2012). The roles of sociosexual orientation and relationship status in women's face preferences. *Personality and Individual Differences*, *53*, 1044–1047.
- Sell, A., Tooby, J. & Cosmides, L. (2009). Formidability and the logic of human anger. *Proceedings of the National Academy of Sciences*, *106*, 15073–15078.
- Sinclair, H.C. & Bourne, L.E. (1998). Cycle of blame or just world: Effects of legal verdicts on gender patterns in rape-myth acceptance and victim empathy. *Psychology of Women Quarterly*, *22*, 575–588.
- Sng, O., Williams, K.E. & Neuberg, S.L. (2020). Sex-age stereotyping: Social perceivers as lay adaptationists. *Evolution and Human Behavior*, *41*, 136–149.
- Stephen, I.D. & McKeegan, A.M. (2010). Lip colour affects perceived sex typicality and attractiveness of human faces. *Perception*, *39*, 1104–1110.
- Vaillancourt, T. & Krems, J.A. (2018). An evolutionary psychological perspective of indirect aggression in girls and women. In S.M. Coyne & J.M. Ostrov (Eds.), *The development of relational aggression* (pp. 111–126). Oxford University Press.

- Vaillancourt, T. & Sharma, A. (2011). Intolerance of sexy peers: Intrasexual competition among women. *Aggressive Behavior, 37*, 569–577.
- van der Bruggen, M. & Grubb, A. (2014). A review of the literature relating to rape victim blaming: An analysis of the impact of observer and victim characteristics on attribution of blame in rape cases. *Aggression and Violent Behavior, 19*, 523–531.
- van Prooijen, J.W. & van den Bos, K. (2009). We blame innocent victims more than I do: Self-construal level moderates responses to just-world threats. *Personality and Social Psychology Bulletin, 35*, 1528–1539.
- Wong, B. (2011). Color blindness. *Nature Methods, 8*, 441.
- Workman, J.E. & Freeburg, E.W. (1999). An examination of date rape, victim dress, and perceiver variables within the context of attribution theory. *Sex Roles, 41*, 261–277.
- Yamawaki, N. (2009). The role of rape myth acceptance and belief in a just world on victim blame attribution: A study in Japan. *Psychologia, 52*, 163–174.

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