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Original Article

The Puzzling Attractiveness of Male Shame

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Abstract: Two studies examined the mechanisms underlying North American women's previously documented attraction to men displaying the nonverbal expression of shame (Tracy and Beall, 2011). In Study 1, American women at high-conception risk were found to be less attracted to men displaying shame compared to women at low-conception risk, suggesting that male shame displays indicate poor genetic fitness. In Study 2, Indian women were found to be less attracted to men displaying shame than American women, suggesting that American women's tendency to find shame-displaying men attractive is likely due to local socio-cultural factors rather than to universal genetically encoded predispositions. Together, findings suggest that the attractiveness of male shame displays, previously documented in several North American samples, is best explained by cultural rather than biological factors.

Keywords: emotion expression, sexual attraction, shame

Introduction

Nonverbal expressions of emotion are often perceived as conveying trait information about social group members (Knutson, 1996). For example, displays of anger increase perceptions of dominance, whereas displays of fear and surprise reduce such inferences (Knutson, 1996; Marsh, Ambady, and Kleck, 2005; Montepare and Dobish, 2003). By quickly communicating socially relevant information about interactants' personalities and behavioral tendencies, these expressions facilitate the smooth functioning of social interactions and relationships.

One interpersonal domain in which individuals typically seek to acquire as much information as possible about others, and often without directly asking, is that of mate choice. When choosing a romantic partner, individuals prioritize certain dispositional traits and seek mates who exhibit these desired qualities, which, as a result, are perceived as increasing a target's sexual attractiveness (Li and Kenrick, 2006). For example, individuals

tend to seek out—and find attractive—mates who exhibit gender dimorphic qualities (i.e., traits perceived as indicating masculinity or femininity; Buss, 2008; see also Rhodes, 2006). Evolutionary mating theory suggests that these desired characteristics are likely to have conferred genetic fitness advantages to their possessors (or their possessors' offspring) in ancestral environments, and thus increase possessors' mate value (see Buss, 2008). As a result, it is adaptive for women be attracted to opposite-sex partners who exhibit traits such as social dominance, and for men to be attracted to opposite-sex partners who exhibit traits such as youth, amiability, and receptivity to sexual relationships (e.g., Buss, 2008). In a similar manner, emotion expressions that communicate dispositional information relevant to an expresser's mate value (e.g., dominance, approachability) might be expected to influence expressers' perceived attractiveness.

Supporting this expectation, a recent series of studies found that distinct emotion expressions have large and gender-divergent effects on perceived attractiveness (Tracy and Beall, 2011). The emotions examined in this prior research were happiness, pride, and shame—all thought to communicate information relevant to mate value. Though participants in these studies were not asked to report specific reasons for their attraction to the emotion expressions examined, findings were largely consistent with evolutionary explanations of mate choice. Specifically, happiness—an emotion that conveys femininity and sexual receptivity (Brown et al., 1986; Hareli, Shomrat, and Hess, 2009)—was judged to be highly attractive when displayed by women, but considerably less so when displayed by men. Pride displays, in contrast, increased the relative attractiveness of men more than women, consistent with the pride display's cross-cultural associations with high-status (Shariff and Tracy, 2009; Shariff, Tracy, and Markusoff, 2012; Tiedens, Ellsworth, and Mesquita, 2000; Tracy, Shariff, Zhao, and Henrich, 2013) and its prototypical features of expanded chest and generally large appearance, known to increase masculinity and male attractiveness (Li and Kenrick, 2006). In addition, female shame displays were judged as less attractive than female happy displays but more attractive than female pride and neutral displays, consistent with the assumption that shame's submissiveness connotations increase displayers' apparent approachability, and thus the attractiveness of shame-displaying women.

In contrast to these findings, which fit with evolutionarily derived theoretical expectations, results that emerged regarding the attractiveness of male shame displays were more unexpected. Men displaying shame were judged as *more* attractive than men displaying other emotions. Specifically, across samples ranging broadly in age and ethnicity, shame-displaying men were rated as equally or more attractive than men displaying neutrality or happiness, and only slightly less attractive than men displaying pride. This pattern of results was observed first in a study that asked participants to view and rate the attractiveness of one opposite-sex person displaying, in a photo, one of the four expressions, and, second, in a study in which three different samples of participants viewed and rated the sexual attractiveness of either 40 or 80 different opposite-sex targets, each displaying one of the four expressions (such that, across participants, there were 30 different versions of each emotion expression viewed in total; Tracy and Beall, 2011).

This well-replicated finding is surprising because shame is known to convey low-status (Shariff and Tracy, 2009; Shariff, Tracy, and Markusoff, 2012), and women tend to view status as an important characteristic when evaluating the attractiveness of a potential partner (Li and Kenrick, 2006). Communicating status information through emotional

expressions would have been adaptive in humans' status-driven ancestral societies, as such messages can help establish and solidify one's position within the social hierarchy (Martens, Tracy, and Shariff, 2012). By conveying one's high status, the pride expression, for example, may benefit displayers by informing others that he or she should receive deference (Shariff and Tracy, 2009). Correspondingly, observers of pride displays might benefit by acquiring information about which group members are likely to make good leaders, or which members are particularly knowledgeable or skilled and thus should be copied or followed (Martens and Tracy, 2013). In contrast, by signaling low status, shame displays should function to communicate poorer genetic fitness. As a result, evolutionary theory would predict that men who show shame should be perceived by women as *less* attractive.

However, in addition to its low-status message, shame communicates other trait information, which might indicate higher mate value: trustworthiness and a respect for social norms. Shame displays may have originated as a human form of the more ancient submission displays seen across a wide range of primate species, which function to appease conspecifics by signaling the displayer's awareness of others' relatively greater power or dominance (Fessler, 2007; Keltner, Young, and Buswell, 1997; Martens et al., 2012). Throughout humans' evolutionary history, the failure to accede to a stronger or otherwise more powerful adversary would have major costs, including survival (MacLean, 1990), so it makes sense that humans would have evolved to show an appeasing expression like shame in such situations.

Over time, the shame-submission display likely shifted toward a response to failure or social transgression (common shame-eliciting situations; Lewis, Alessandri, and Sullivan, 1992); in these situations, the display would serve the same appeasing function by communicating the transgressor's recognition of his or her violation and regret for it. This message would likely help avert punishment for the transgression. Eventually, the shame display may have come to convey not only regret for the violation of a social norm, but also one's respect for the norm that was violated (Keltner et al., 1997), and perhaps even a general tendency to respect social norms, broadly speaking. Though it seems somewhat counterintuitive that shame displays might communicate both acceptance of norms and also that an individual has broken a norm, there is good reason to think that this is exactly the complicated message shame evolved to send. In many cultures, displaying shame is considered to be an important way of demonstrating one's commitment to the group, and of protecting a transgressor from overly negative social appraisals and retribution following a transgression (Haidt and Keltner, 1999; Keltner et al., 1997). The theoretical rationale for this account is that all humans make occasional social transgressions or suffer failures, but expressing shame allows them to demonstrate their awareness that these behaviors are trespasses. The real threat to group harmony, in this view, is the individual who does *not* show shame.

Based on this account, displays of shame may signal not only that the individual is low in status and has corresponding poor mate value, but also that he or she respects the local social norms and thus can be trusted—a message that should indicate high mate value. This latter message may be what accounts for the prior evidence suggesting that women are attracted to men who display shame (Tracy and Beall, 2011).

Thus far, we have suggested that attractiveness judgments are guided by evolved mating strategies (Buss, 1987). However, the impact of these strategies on mating behavior

is expected to vary depending on social and cultural factors (Tovee, Swami, Furnham, and Mangalparsad, 2006). That is, the functioning of even evolved psychological mechanisms is sensitive to variations in local ecologies (Tooby and Cosmides, 1992), and we would expect mate preferences based on dispositional qualities to be subject to differences in cultural norms and practices. For example, Li, Valentine, and Patel (2010) found that although women across cultures value similar personality traits in potential male partners, Singaporean women place higher value on certain traits, such as a man's social status, compared to American women.

Given the complexity of messages communicated by shame—both low-status and high respect for social norms and trustworthiness—this expression may be particularly likely to be judged differently in different cultural contexts, depending on the relative value assigned to these two messages. The prior findings demonstrating the attractiveness of male shame emerged from studies conducted on several samples of women, ranging broadly in age. However, all these women were from North American populations, raising the question of whether this effect would generalize to cultural contexts where women place a relatively higher value on a man's social status, or a lower value on his respect for social norms or trustworthiness.

In the present research, we sought to understand the puzzling attractiveness of male shame by asking two questions: (1) Do male shame displays communicate genetic fitness, or high mate value (i.e., are male shame displays most attractive to women who are most likely to benefit reproductively from mating with shame displayers?); and (2) To what extent does the attractiveness of male shame vary across populations that hold different values regarding shame and the messages it sends?

To address these questions, we used two methodological approaches. In our first study, we adopted the conception-risk assessment approach. A growing body of evidence indicates that women's sexual preferences vary across the menstrual cycle, such that women are most attentive to markers of "good genes" in potential mates when conception is most likely—that is, the days immediately preceding and during ovulation (Baker and Bellis, 1995; Gangestad and Thornhill, 1998; Penton-Voak and Perrett, 2000; Regan 1996). Based on this account, if the male shame expression is a reliable signal of good genetic quality (by virtue of communicating the displayer's respect for social norms and potential trustworthiness), then women at the highest-risk for conception stage of the cycle should find shame-displaying men more attractive than women at a low-conception-risk stage. However, past work has shown that women at peak fertility are highly attracted to dominant men (Little, Jones, and Burriss, 2007), suggesting that at least one of the messages communicated by shame (submissiveness) is likely to be indicative of *poor* genetic fitness. Based on this finding, women at high conception risk might be expected to be *less* attracted to shame displayers. However, because this prior study did not examine the impact of conception risk on perceived attractiveness of shame or other submissive displays, but only on dominant-appearing men, it remains unclear whether the complexity of positive and negative messages communicated by shame result in a net gain or loss in terms of mate value.

In Study 1 we addressed this question by testing whether women who are at high risk for conception, based on their current stage of the menstrual cycle, are more attracted to men displaying shame compared to women at a lower risk for conception. We also tested whether women's risk of conception (based on cycle) influences their attraction to men

displaying other emotion expressions (i.e., pride, happiness, and neutrality), to determine whether any shift in preference for shame-displaying men could be attributed to a more general tendency for women at high-conception risk to judge male targets as more attractive compared to women at low risk.

In our second study, we adopted an approach from the cross-cultural psychological literature, in which individuals from maximally divergent cultures are compared, to examine the extent to which certain psychological phenomena might be considered human universals (see Norenzayan and Heine, 2005). Inherent in this approach is the assumption that if a particular psychological preference is found across groups expected to show *cultural* differences in the relevant trait, then this preference is likely to be a human universal, and thus may reflect evolutionary processes. Applying this perspective to the current research question, if male shame displays are judged as attractive by women living in a cultural setting with markedly different customs and values from North America, and, in particular, different cultural attitudes about shame and its associated message of low status, this would suggest that these displays may be universally attractive, and thus provide support for the invariant genetic fitness explanation. Conversely, if we find cultural variation in the attractiveness of male shame, such that women from cultures holding different attitudes about the importance of men attaining and demonstrating high status do not find male shame displays attractive, it would support the hypothesis that the expression's attractiveness in North American samples is dependent on culturally specific values about mate-relevant characteristics within that local ecology.

Thus, in Study 2, we compared the attractiveness judgments of male shame displays made by North American women with those made by women from India. We targeted Indian women as a comparison population for several reasons. First, India is one of the very few non-Western countries where researchers have examined recognition of the shame display, and produced findings suggesting that shame is recognized equally well by Indians and North Americans (Haidt and Keltner, 1999). This finding ensures that any cultural differences observed in the attractiveness of male shame displays, between the U.S. and India, cannot be attributed to cultural differences in how the display is recognized.

Second, there are major cultural differences between India and North America in attitudes toward shame. In North American cultures, shame is considered a “hidden” emotion, typically not discussed or even acknowledged by those experiencing it (Lewis, 1971; Scheff, Retzinger, and Ryan, 1989). In fact, shame has been rated by North Americans as the most painful emotion to experience (Lazarus, 1991, p. 557). Not surprisingly then, the shame expression tends to be suppressed by individuals from these cultures, even in situations of major public failure (Tracy and Matsumoto, 2008). In contrast, in India, as in many Asian cultures, shame is a highly valued emotion, considered essential to social harmony and “making the world move along” (see Rozin, 2003, p. 278). Individuals from these cultures tend to reliably display the shame expression in response to public failure (Tracy and Matsumoto, 2008). For these reasons, we might expect Indian women to find shame-displaying men even more attractive than American women. However, the third reason for our choice of India as a comparison culture would suggest the opposite hypothesis.

Shame and pride are two emotions that, more than any others, communicate information about status (Shariff and Tracy, 2009; Steckler and Tracy, 2014). These expressions send strong messages of low and high status, respectively, and they do so when

perceived at both an implicit and explicit level, and across highly divergent cultural contexts (Shariff and Tracy, 2009; Shariff et al., 2012; Tracy et al., 2013). As a result, the attractiveness of men displaying these status-connoting expressions may be particularly affected by cultural variations in attitudes about status, and the importance placed upon the status of a potential mate. Prior research suggests that women's preference for high- versus low-status partners depends on features of their local ecology; American women tend to prioritize a potential male partner's status less than do women from other cultures (Li et al., 2011). More broadly, re-analyses of results from a survey examining over 9,000 individuals in 37 cultures worldwide (Buss et al., 1990) showed that women's tendency to seek high-status male partners varies greatly by culture (Kasser and Sharma, 1999). Women from cultures with reduced reproductive freedom (i.e., little access to birth control or abortion) and fewer educational or economic opportunities for women were found to place a greater emphasis on status as an indicator of a male partner's attractiveness, compared to women from cultures with greater access to these liberties. When women can independently acquire the resources needed to support themselves and their offspring, it becomes less important that they find a high-status mate who will do so for them.

From this perspective, we might attribute the findings of male shame's attractiveness among North American women to the fact that these women are not necessarily seeking high-status partners, allowing them to downplay the low-status message conveyed by shame, and focus on the expression's more positive associations. Conversely, women in India tend to have considerably fewer educational opportunities, and a lesser representation in the labor force, compared to women in the U.S. (United Nations Development Programme [UNDP], 2011), making Indian women particularly likely to value and emphasize high status in potential mates. Based on this account, we would predict that Indian women would find male shame displays particularly unattractive. Study 2 tested these competing hypotheses.

In both studies, we also assessed individual differences in mating strategies using the Socio-Sexual Orientation Scale-Revised (SOI-R; Penke and Asendorpf, 2008) in order to control for individual differences in participants' orientation toward a short-term versus long-term mating strategy. Previous research suggests that these strategies influence preferences in the mating domain (including preferences for status-relevant traits; e.g., Waynforth, Delwadia, and Camm, 2005) and can vary across culture and ovulatory stage (Schaller and Murray, 2008; see Haselton and Gangestad, 2006). Thus, to ensure that any effects found cannot be attributed to differences in mating strategy, SOI-R scores were treated as a covariate in all between-subjects analyses.¹

Study 1

Materials and Methods

Participants and procedure

One hundred seventy-two American women (aged 18–42; 78% Caucasian, 10% Asian, 12% Other) were recruited from Amazon Mechanical Turk™ (see Buhrmester,

¹ In all cases, reported effects held when SOI-R scores were not statistically controlled.

Kwang, and Gosling, 2011) to participate online in exchange for monetary compensation. Thirty-three women who were not heterosexual were excluded, given our research goals of examining heterosexual attraction,² and one participant was excluded for giving an attractiveness rating of “1” to 38 of the 40 target photographs.

Of the remaining 138 women, we excluded 30 women who indicated that they either experienced irregular menstrual cycles,³ were pregnant, or were using any form of hormonal contraception (see Haselton and Gildersleeve, 2011).

Women were shown a calendar of the current and previous 2 months and asked to use it in facilitating their response to the question: “How many days has it been since the onset of your last period of menses?” To address concerns raised in previous research regarding the validity of assessing menstrual history via self-report (Bean et al., 1979; but see Baker, Denning, Kostin, and Schwartz, 1998), after reporting the date of their most recent menses onset, participants were asked, “Within how many days are you 100% confident in your above estimate?”; they responded using a scale ranging from 1 to 7, where 1 indicated “0 days (I’m 100% confident in my answer),” 2 indicated “1 day,” 3 indicated “2 days,” 4 indicated “3 days,” 5 indicated “4 days,” 6 indicated “5 days,” and 7 indicated “More than 5 days (I’m not very confident in my above answer).” Using these confidence estimates, participants were assigned to one of two conception-risk categories, following the 28-day model of the menstrual cycle (Gangestad, and Thornhill, 1998): “high conception risk” (days 6–14; $n = 29$), or “low conception risk” (days 0–5 and 15–28; $n = 45$).⁴

All additional participants for whom category membership could not be determined (high vs. low conception risk) with 100% certainty ($n = 34$) were excluded. Specifically, we excluded, for example, any participant who indicated that her last menses began 12 days ago but that she was 100% confident of that estimate within 3 days. In such a case, it was assumed that her last period began 9–15 days ago, and thus that she could *not* be safely included in either the high-risk (days 6–14) or low-risk (days 0–5 and 15–28) category. In contrast, any participant who indicated that her last menses began 10 days ago and was 100% confident within 3 days would be included, because it could be assumed that her

² Sexual orientation is not binary; we thus measured this variable using a continuous rating scale (a 1–7 scale where 1 = “exclusively heterosexual,” 4 = “bisexual,” and 7 = “exclusively homosexual”), allowing participants to indicate the degree to which they are attracted to members of the opposite sex. Women were excluded from analyses if they rated themselves as a 4 or above on this rating scale; as a result, there were a relatively high number of non-exclusively heterosexual women included.

³ Though women with irregular cycles are, at times, “at risk for conception,” it is impossible to accurately estimate the window of high and low conception risk for these women, because our estimations are based on the variation that occurs within a regular 28-day cycle. For this reason, it was necessary to exclude these women from Study 1, in which the critical tests depended on estimating women’s conception risk as accurately as possible.

⁴ Several previous studies examining the effects of menstrual cycle stage have excluded women who are currently menstruating or premenstrual (days 0–4 and 24–28 since onset) to rule out the possibility that psychological effects observed (e.g., mood effects) might be due to hormonal changes associated with the menstrual phase or premenstrual symptoms (see Haselton and Gildersleeve, 2011). Here, we saw no reason to exclude these women ($n = 20$); however, all reported effects hold if these women are excluded from analyses, except where noted.

period began 7–13 days ago, placing her firmly within the high-risk category (days 6–14). This method of confidence estimation has been used effectively in previous research (Beall and Tracy, 2013; Tracy and Beall, 2014).⁵

Materials

Research methods were approved by the University of British Columbia Behavioral Research Ethics Board, and informed consent was obtained. Participants viewed photos, online, of 40 men displaying each of four expressions: shame, happiness, pride, and neutral (10 photos of each expression). Photos were taken from previous emotion research (*Sample B*, Tracy and Beall, 2011) and portrayed 40 different individuals either in full, from the waist up, or face only. These were collected from online sources (e.g., google.com) by research assistants blind to the hypotheses, who were trained to identify each expression. Emotion-FACS (Ekman and Rosenberg, 2005), as well as criteria developed by Tracy and Robins (2007), were used to ensure that each photograph accurately conveyed its intended emotion and not any other emotion. Targets portrayed in photos varied in age (approximately 18–49 years) and ethnicity (65% were Caucasian, 8% African American, 10% Asian, and 17% other). Photos were presented in a randomized order. For each photo, participants responded to the question, “How sexually attractive do you find this person?” using a 9-point scale ranging from 1 (Very Unattractive) to 9 (Very Attractive). Attractiveness ratings were completed after women responded to questions assessing their current risk for conception.

Results

Mean attractiveness scores for each emotion expression were computed across attractiveness ratings of all exemplars of each expression (interrater α s ranged from .78–.84). Replicating previous findings (Tracy and Beall, 2011), an examination of results across ovulatory stage demonstrated that women found shame-displaying men to be significantly more attractive than happy-displaying men, $t(71) = 5.23$, $d = 0.59$, and neutral-displaying men, $t(71) = 10.48$, $d = 1.03$; both $ps < .001$. Also replicating previous findings, there was no significant difference in attractive judgments between shame-and pride displaying men, $t(72) = -1.21$, $d = 0.12$, $p = .23$. Pride was judged as significantly more attractive than happiness, $t(71) = 6.64$, $d = 0.71$, and neutrality, $t(71) = 10.77$, $d = 1.14$, both $ps < .001$. Male happiness displays were judged as more attractive only than neutral displays, $t(71) = 3.84$, $d = 0.41$, $p < .001$.

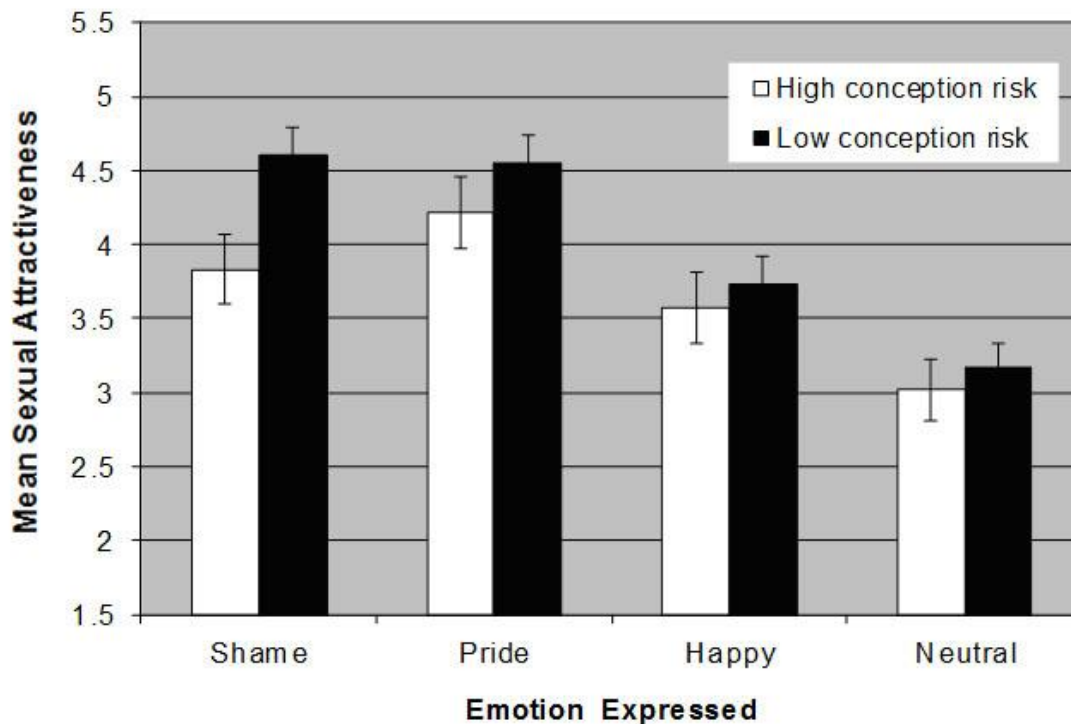
To examine whether the effects of emotion expressions on attractiveness varied across ovulatory stage, we conducted a 4 (emotion) x 2 (conception risk) mixed measures ANCOVA (controlling for SOI-R). There was no main effect of conception risk on attractiveness judgments overall, $F(1, 64) = 1.96$, $p = .17$, $d = 0.35$, suggesting that women at high conception risk did not show a general tendency to find men more attractive regardless of their emotional display. However, there was a significant emotion x

⁵ In all cases except where noted, reported effects held when women’s self-reported confidence estimates were not taken into account in determining category membership (i.e., when women were assigned to a high or low risk category on the basis of their reported first day of last menses alone).

conception risk interaction, $F(3, 62) = 3.23$, $p = .028$, $d = 0.79$,⁶ indicating that the effect of conception risk on attractiveness varied by emotion expression. To understand this interaction, we separately examined the effect of conception risk on attractiveness judgments of each expression.

Specifically, we conducted four ANCOVAs (controlling for SOI-R), with level of conception risk as the fixed factor, predicting attractiveness judgments for each expression. This revealed a significant effect of conception risk for shame-displays; men expressing shame were judged as less attractive by women who were at a high risk for conception than those at low risk, $F(1,64) = 6.81$, $p = .011$, $d = 0.65$.⁷ In contrast, for pride, happiness, and neutral displays, no significant effects of conception risk emerged, $F(1, 64) = 1.17$, $p = .28$, $d = 0.27$; $F(1, 64) = 0.27$, $p = .61$, $d = 0.13$; and $F(1,64) = 0.30$, $p = .58$, $d = 0.14$, respectively (see Figure 1).

Figure 1. Estimated marginal mean sexual attractiveness ratings of emotion expressions (controlling for SOI-R) shown by 40 different men, viewed by women at high and low conception risk—Study 1



Note. $n = 74$. Error bars represent standard errors of the mean.

⁶ This interaction was reduced to marginal significance when we based estimates of conception-risk category membership on reported dates without regard to women's estimates of how confident they were in those dates, $F(3, 79) = 2.34$, $p = .08$, $d = 0.60$. The interaction was also reduced to non-significance when women who were menstruating or premenstrual were excluded from the analysis, $F(3, 44) = 2.07$, $p = .12$, $d = 0.75$. Notably, in both cases effect sizes were not substantially reduced.

⁷ We also tested whether the effect of conception risk on attractiveness ratings of male shame was moderated by SOI. No interaction emerged, $b = -.195$, $SEb = .150$, $\beta = -.159$, $p = .20$.

This pattern of results suggests that women at high risk for conception found shame-displaying men particularly *unattractive*. This finding is consistent with the hypothesis that shame displays signal poor-quality genes, such that women who are most likely to conceive benefit from *not* mating with these men. Given that the observed effect was a reduced level of attraction reported by high-risk women, it cannot be attributed to a general tendency for high-risk women to find men more attractive. Furthermore, this effect seems to be specific to the shame expression.

These results lend no support to our account of male shame as attractive because the display indicates good genetic fitness. Instead, they suggest that displaying shame may be an indicator of poor genetic fitness among men. Thus, the current and previous finding that North American women find shame-displaying men particularly attractive may be best explained as a byproduct of specific cultural values present in a North American ecology.

To support that conclusion, however, we need to examine judgments of shame-displaying men made by women from other cultural contexts. As mentioned previously, American women tend to prioritize a potential male partner's status less than do women from cultures where women have reduced reproductive freedom (i.e., little access to birth control or abortion) and fewer educational or economic opportunities (Li et al., 2011; Kasser and Sharma, 1999). As a result, North American women may be attracted to men expressing shame because their cultural values allow them to disregard shame's low-status signal (which conveys poor fitness) and instead focus on shame's more pro-social messages of appeasement and trustworthiness. In contrast, women from countries where women have fewer educational opportunities and a lesser representation in the labor force than in the U.S., such as India (UNDP, 2011), might show a relatively weaker attraction to shame-displaying men. If so, this would support the conclusion of Study 1 that the previously documented finding of the attractiveness of male shame displays is attributable to cultural factors specific to North American women.

To test this possibility, in Study 2 we examined whether the attractiveness of male shame displays varies by culture; that is, whether North American women's attraction to male shame differs from that of Indian women.

Study 2

Materials and Methods

Participants, materials, and procedure

Research methods were approved by the University of British Columbia Behavioral Research Ethics Board, and informed consent was obtained. Participants (total $N = 229$) were: (a) the 138 American heterosexual women who were recruited for Study 1 (aged 18–42; 73% Caucasian, 10% Asian, 17% Other), including those who had been excluded from Study 1 due to ovulatory stage, irregular menstrual cycles, hormonal birth control use, or pregnancy; and (b) a new sample of 91 Indian women (aged 18–39; 100% Indian) who volunteered to participate in exchange for monetary compensation on Amazon Mechanical Turk™. All additional participants (i.e., not included in Study 1) reported being heterosexual.

All participants viewed the same photos, online, as were used in Study 1: 40 men displaying each of four expressions: shame, happiness, pride, and a neutral control (10

males showing each expression). Photos were again presented in a randomized order, and for each photo, participants responded to the question, “How sexually attractive do you find this person?” using a 9-point scale ranging from 1 (Very Unattractive) to 9 (Very Attractive).⁸ Women who participated in Study 1 did not make these judgments twice; rather, Study 2 draws on these same data, such that 63 participants and their responses overlapped between the two studies.

Results

As in Study 1, mean attractiveness scores for each emotion expression were computed across ratings of all exemplars of each expression (interrater α s ranged from .81–.88). To examine whether the effect of emotion expression on attractiveness varied across cultural background, we conducted a 4 (emotion) \times 2 (cultural identity) mixed measures ANCOVA (controlling for SOI-R) predicting mean attractiveness ratings. No main effect of culture emerged, $F(1, 211) = 0.73$, $p = .39$, $d = 0.11$, suggesting that Indian and American women do not differ in the extent to which they judge men sexually attractive across the emotion expression displayed.

However, a significant interaction emerged between emotion expression and culture, $F(3, 209) = 10.22$, $p < .001$, $d = 0.77$, suggesting that the effect of emotion expressions on attractiveness varied by culture. To better understand this difference, we examined results separately for the U.S. and Indian samples. In the U.S. sample, the same pattern observed in Study 1 emerged: Shame displays were judged to be more attractive than happy displays, $t(135) = 6.59$, $d = 0.48$, and neutral displays, $t(135) = 11.90$, $d = 0.85$, both $ps < .001$. In addition, shame-displaying men again did not differ significantly in attractiveness from pride-displaying men, $t(136) = -1.53$, $d = 0.10$, $p = .13$. Pride-displaying men were judged as significantly more attractive than happy-displaying men, $t(135) = 7.42$, $d = 0.57$, and neutral-displaying men, $t(135) = 12.18$, $d = 0.90$, both $ps < .001$. Finally, happy displays were judged as significantly more attractive than neutral, $t(136) = 4.62$, $d = 0.34$, $p < .001$.

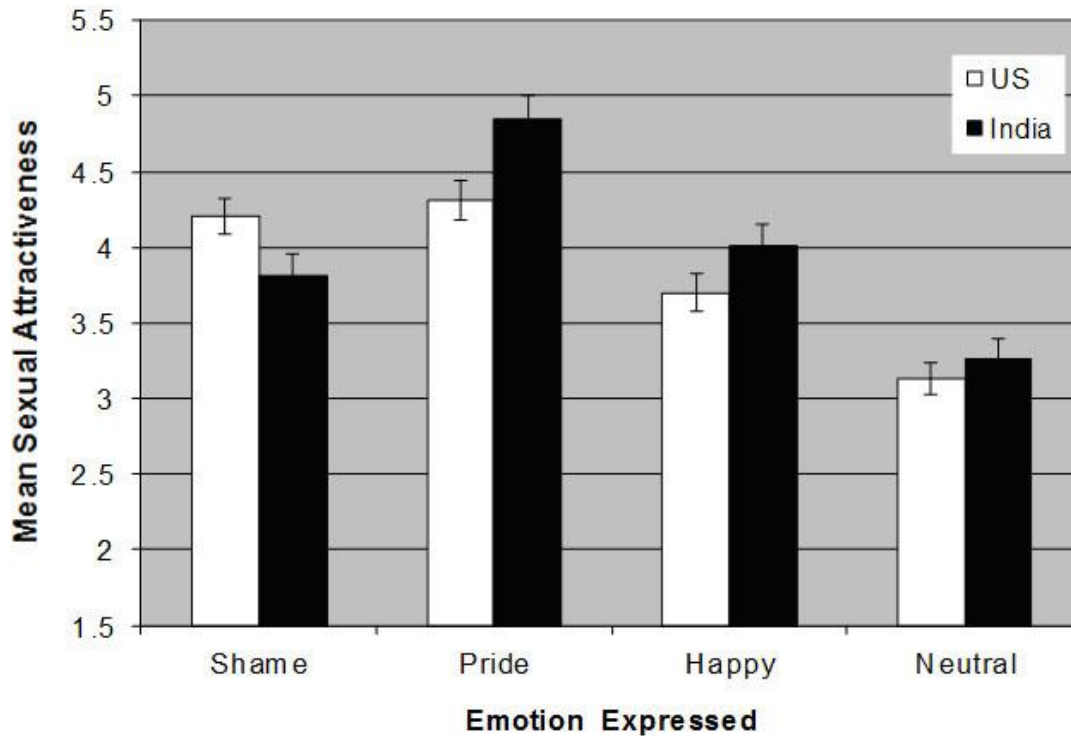
However, in the Indian sample, a notably different pattern emerged. Here, shame-displayers were judged to be significantly *less* attractive than pride-displayers, $t(90) = -7.06$, $d = 0.67$, $p < .001$, and no more attractive than happy-displayers, $t(90) = -1.38$, $d = 0.15$, $p = .17$. Shame-displayers were more attractive than neutral-displayers, $t(90) = 4.44$, $d = 0.40$, $p < .001$. Pride-displayers were more attractive than happy displayers, $t(90) = 8.86$, $d = 0.57$, and neutral-displayers, $t(90) = 13.74$, $d = 1.09$; both $ps < .001$, and happiness displayers were significantly more attractive than neutral displayers among Indians as well, $t(90) = 7.09$, $d = 0.47$, $p < .001$.

To more directly test the hypothesis that the attractiveness of male shame displays varies across cultures, we next performed four ANCOVAs with cultural background as the fixed factor, controlling for SOI-R, predicting the attractiveness of each expression separately (see Figure 2). Results revealed a significant effect of culture for shame; Indian women judged men displaying shame to be significantly less attractive than did American

⁸ One additional participant was excluded for giving a rating of “1” to 39 of the 40 target photographs.

women, $F(1,211) = 4.57$, $d = 0.29$, $p = .03$.⁹ Interestingly, a significant culture effect also emerged for pride, but in the opposite direction; Indian women judged men displaying pride to be significantly more attractive than did American women, $F(1,211) = 6.44$, $d = 0.35$, $p = .01$. No cultural differences emerged for happiness $F(1,211) = 2.32$, $d = 0.21$, $p = .13$, or neutrality $F(1,211) = 0.61$, $d = 0.11$, $p = .44$.

Figure 2. Estimated marginal mean sexual attractiveness ratings of emotion expressions (controlling for SOI-R) shown by 40 different men, as judged by women in the United States and India—Study 2



Note. $n = 229$. Error bars represent standard errors of the mean.

Thus, Indian women found shame-displaying men relatively unattractive compared to American women, despite the fact that Indian culture places a high value on shame and shame displays. More broadly, this result suggests that the shame display's attractiveness varies by culture, possibly due to differences in the mate-relevant trait characteristics prioritized within each local ecology. Interestingly, the reverse pattern emerged for male pride displays; Indian women found male pride-displayers more attractive than did American women. Given that there was no overall cultural difference in attractiveness

⁹ As in Study 1, we also tested whether SOI moderated the effect of conception risk on women's attraction to male shame. We found a significant interaction, $F(3, 210) = 6.30$, $p < .001$, indicating that Indian women who were higher in SOI felt a stronger attraction to shame-displaying men, $b = -.184$, $SEb = .093$, $\beta = -.133$, $p < .05$. However, this same interaction emerged for judgments of neutral expressions, $b = -.198$, $SEb = .083$, $\beta = -.163$, $p < .05$, suggesting that this effect was not due to any impact of shame, in particular, but rather to a general tendency for high SOI Indian women to be particularly attracted to men, regardless of the emotion they are expressing (in fact, a marginal interaction emerged for judgments of pride displays, as well).

ratings across all targets, these results cannot be attributed to broader cultural differences in women's ratings of male attractiveness. Rather, this difference seems to be specific to the shame and pride displays—the two displays that most strongly convey status information. These results are thus consistent with the hypothesis that shame displays' attractiveness in American cultural contexts is partly due to the fact that American women do not place a high value on the status of a potential mate compared to women from cultures where there is less female economic freedom, such as India.

Discussion

The present research tested competing explanations for the previous finding that North American women are particularly attracted to men displaying shame. Specifically, we examined whether the attractiveness of male shame displays is best explained by the hypothesis that shame displays indicate good genetic fitness, or the hypothesis that North American women, in particular, are attracted to male displays of shame as a result of particular features of their local ecology. Results across two studies provide consistent support for the latter hypothesis.

More specifically, Study 1 demonstrated that women at highest risk for conception—who tend to be particularly attuned to signals of genetic fitness—are less attracted to men displaying shame compared to women at low conception risk. This suggests that the expression's appeal is not likely to be biologically driven and, in fact, that shame-displaying men have low mate value, from a genetic standpoint. Past research suggests that women at peak fertility are especially attracted to men who exhibit dominant characteristics (Little et al., 2007), and given that shame is a low-dominance display, this could be a potential explanation for the findings of Study 1.

Study 2 demonstrated a cultural difference in the attractiveness of male shame displays, with American women showing greater attraction to these displays than Indian women. This cultural difference may be due to several factors. Specifically, these two cultures likely differ in the importance placed on a man's ability to attain high status. Prior research suggests that women in cultures that allow them the opportunity to acquire the resources needed to support themselves and their offspring can be more tolerant of potential mates who are low in status (Kasser and Sharma, 1999). Thus, North American women may be able to find men who display shame attractive, despite the expression's communication of low-status, because they set aside this implication of the expression and focus on its other, more attractive qualities (e.g., trustworthiness, respect for social norms). Future studies are needed to test whether the perception of these qualities in fact account for the attractiveness of male shame displays among North American women.

Implications

The present findings contribute to a deeper understanding of the evolution of human emotion expressions and their impact on mate selection. Many emotion expressions communicate fitness-relevant information to observers, and this may have been an important factor in their early evolution and persistence. The present findings, however, suggest that the male shame display may indicate poor genetic fitness, and thus that the expression of shame, at least when shown by men, has evolved and persisted for reasons other than communicating one's mate value. Given prior research suggesting that shame functions as an appeasement signal, the shame expression is more likely to have evolved to

serve this function; displaying shame in response to social transgression or failure may help minimize harm and antagonism from others by communicating the displayer's respect for social norms and/or others' greater relative power or dominance (Keltner et al., 1997; Martens et al., 2012). In situations where such displays are necessary, shame expressions have likely provided a net fitness gain, despite the reproductive fitness loss that may be incurred.

These findings also have implications for our understanding of the role of status signaling in romantic attraction. Our explanation for American women's propensity to find shame-displaying men attractive is that these women do not need to mate with high-status men in order to ensure their own and their offspring's survival, given that American women typically have equal access to economic and education opportunities (see Kasser and Sharma, 1999). The finding that Indian women are less attracted to men showing shame (and more attracted to men showing pride) provides some support for this explanation, given that India has considerably lower gender equality than the US (UNDP, 2011), though more work is needed to directly test this account.

Limitations and future directions

One potential limitation of the current research is that the baseline attractiveness of men in our photo set may have differed by emotion expression condition purely as a result of chance (e.g., men showing shame may have been more attractive than those showing pride regardless of the expression they displayed). However, as noted above, the photo collection procedure used involved the collection of photos by research assistants who were blind to hypotheses (see Tracy and Beall, 2011). Therefore, there is no reason to suspect that the photos chosen of individuals displaying shame would be any more or less attractive than the photos of individuals displaying other emotions for any systematic reason, especially given the large number of photos collected. More broadly, by demonstrating differences in the attractiveness of *shame* displays (by conception risk and cultural group), but not for *overall* attractiveness ratings irrespective of emotion (there was no overall effect of conception risk or cultural group on attractiveness ratings), our results suggest that the present findings would not emerge irrespective of emotion expression. In other words, if men displaying shame in the photos we used happened to be more attractive than men displaying other expressions for reasons other than their emotion expression, it is difficult to explain why we would have observed the specific effects we did—that women at high conception risk found these shame-displaying men *less* attractive, and that women from India found these shame-displaying men *less* attractive.

Another methodological limitation, relevant to Study 1, was our assessment of women's ovulatory cycle using a self-report rather than a hormonal method. Although the reliability of the self-report assessment of ovulation has been disputed (Bean et al., 1979; but see Baker et al., 1998), our invocation of a relatively new method to assess women's confidence in their self-reported menses onset helps ameliorate these concerns. Specifically, we asked women to report how confident they were in their estimate of the date of the first day of their last period of menses, and women who could not be included in one category or the other with 100% confidence were excluded from analyses. Although it is likely that women do make errors in their self-reported menses dates, they are also likely to have a good sense of their own level of accuracy on this topic, and our method takes advantage of that self-insight in a way that few prior studies have (see also Beall and Tracy, 2013; Tracy and Beall, 2014). As a result, although the self-report method used here is still

vulnerable to concerns regarding individual differences in when ovulation occurs in the cycle, it is substantially less vulnerable to concerns about the potential for inaccurately estimating the date of ovulation, as a result of women's failure to accurately report their prior date of menses.

A limitation of Study 2 is that India and the U.S. differ in many cultural and demographic features beyond the critical difference presumed to account for the present results—female economic freedom. Additional research is thus needed to more directly target the mechanism that accounts for these effects. For example, future studies might compare groups that vary in economic freedom within the same population. If American women of higher socio-economic status are found to be more attracted to male shame displays compared to American women of lower socio-economic status, this would provide support for the proposed mechanism underlying the cultural difference observed in Study 2.

In addition, future research is needed to directly address other possible explanations for the now well-replicated finding that American women do not find shame expressions particularly unattractive.¹⁰ In addition to trustworthiness and sensitivity to social norms, shame may also communicate rebelliousness, given that it occurs in response to social transgression. Rebelliousness connotes risk-taking—behaviors men are known to engage in when they are motivated toward romantic goals, presumably because they believe it will increase their attractiveness (Baker and Maner, 2008). It is thus possible that in ecologies where male assertiveness and/or independence are more highly valued, such as American culture, shame's appealing "rebel" message may override some of the less alluring messages sent by the display. Future work is needed to test this account, and to examine which of shame's various other social cues (e.g., trustworthiness, social sensitivity, rebelliousness) may best explain the extant results. Additional research on this topic would benefit from directly asking women, within various cultural groups, to report the reasons for their attraction to men showing shame. Although mate preferences are largely guided by signals of reproductive fitness that tend to be perceived without conscious awareness (Buss, 1994; Geary Vigil, and Byrd-Craven, 2004), simply asking women to explain their attraction to men displaying shame may be useful for generating additional, culturally specific hypotheses regarding the expression's attractiveness.

Regardless of these important future directions, the present findings provide new insights on the robust attractiveness of male shame found among North American women (Tracy and Beall, 2011).

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¹⁰ Combining all data we have collected thus far testing North American women's attractiveness to male shame displays, from four separate American samples (American participants in the present research, as well as Samples A, B, and C, from Study 2 of Tracy and Beall, 2011), we found that male shame-displays were judged to be significantly *less* attractive than male pride-displays, $t(639) = -7.35, p < .001, d = -0.21$, 95% CI [-0.28, -0.14], but significantly (and substantially) more attractive than happy-displays, $t(638) = 18.29, p < .001, d = 0.59$, 95% CI [0.53, 0.66] and neutral displays, $t(638) = 26.76, p < .001, d = 0.82$, 95% CI [0.75, 0.88].

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