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# Flustered and Faithful: Embarrassment as a Signal of Prosociality

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Although individuals experience embarrassment as an unpleasant, negative emotion, the authors argue that expressions of embarrassment serve vital social functions, signaling the embarrassed individual's prosociality and fostering trust. Extending past research on embarrassment as a nonverbal apology and appeasement gesture, the authors demonstrate that observers recognize the expression of embarrassment as a signal of prosociality and commitment to social relationships. In turn, observers respond with affiliative behaviors toward the signaler, including greater trust and desire to affiliate with the embarrassed individual. Five studies tested these hypotheses and ruled out alternative explanations. Study 1 demonstrated that individuals who are more embarrassable also reported greater prosociality and behaved more generously than their less embarrassable counterparts. Results of Studies 2–5 revealed that observers rated embarrassed targets as being more prosocial and less antisocial relative to targets who displayed either a different emotion or no emotion. In addition, observers were more willing to give resources and express a desire to affiliate with these targets, and these effects were mediated by perceptions of the targets as prosocial.

*Keywords:* prosociality, cooperation, embarrassment, trust, signaling

Embarrassment is an emotion people feel when they have violated a social convention or disrupted ongoing social interactions. Like shame, guilt, and pride, embarrassment is a self-conscious emotion, in the sense that individuals' appraisal and experience of the emotion hinges critically on their appraisals of others' evaluations (Keltner, 1995; Keltner & Buswell, 1997; Miller & Leary, 1992; Miller & Tangney, 1994; Tangney & Fischer, 1995). Embarrassed individuals report feeling scrutinized by others and sense that they have threatened their desired social identity (Semin & Manstead, 1982; Tangney, Miller, Flicker, & Barlow, 1996). Because of these subjective qualities of embarrassment, people go to great lengths to avoid experiencing the emotion. The anticipated anxiety at the prospect of being embarrassed can impair everyday social interactions, and even lead to clinical disorders in extreme cases (B. R. Brown, 1970; Leary & Kowalski, 1995; Miller, 1996; Schlenker & Leary, 1982).

Although often painful, embarrassment is claimed to serve important social functions (Goffman, 1956, 1971; Keltner & Buswell, 1997; Miller & Leary, 1992). More specifically, studies of observers' reactions to displays of embarrassment have revealed that this complex emotion can serve to mend social relationships following an accidental violation of social expectations (de Jong, 1999; Semin & Manstead, 1982; van Dijk, de Jong, & Peters, 2009). In the present research, we build on these past insights and findings to examine an

additional function of the embarrassment display: signaling an individual's underlying prosociality and commitment to social relationships, where *prosociality* is defined as caring about others' welfare and avoiding behaviors that may damage another's welfare (Penner, Dovidio, Piliavin, & Schroeder, 2005; Simpson & Willer, 2008). We derive our methodologies and hypotheses from recent accounts of the appeasement function of embarrassment, theory and methodology from evolutionary analyses of honest signaling, and the literature on social dilemmas to show that embarrassment displays signal prosocial intentions and bring about more cooperative interactions.

## Appeasement, Reconciliation, and the Nonverbal Display of Embarrassment

In a seminal analysis of embarrassment, Erving Goffman argued that when individuals violate social norms, they undermine the rules of demeanor and deference that are the substance of smooth-flowing social interactions (Goffman, 1956). Within such situations, the display of embarrassment is not a dysfunctional, irrational outburst, but in fact a patterned expression that restores social relations when they have gone awry. Displays of embarrassment, the argument goes, signal the individual's concern over the norms that underlie social relations and commitment to following those norms in the future. Past studies lend credence to Goffman's early claims. Compared with targets who fail to display embarrassment, targets who do display embarrassment after a social mishap redeem their positive standing in the eyes of observers (de Jong, 1999; Edelman, 1982; Miller, 1987; Semin & Manstead, 1982; van Dijk et al., 2009).

In a broader sense, Goffman's functional account of embarrassment paved the way for evolutionary theorizing about the origins of human embarrassment. In-depth analyses have documented that the human embarrassment display involves gaze aversion, smile controls and inhibition, downward and sideways head movements, and sometimes nervous face touching and laughter (Harris, 2001; Keltner & Buswell, 1997; Marcus, Wilson, & Miller, 1996). These

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closely resemble the submissive behaviors, such as bare teeth displays, head bowing and bobbing, and submissive grunts, involved in appeasement and reconciliation displays in many non-human animals (de Waal, 1989; Keltner, 2009; Keltner & Buswell, 1997). Thus, experimental findings and cross-species comparisons together suggest that embarrassment acts as a nonverbal apology, reducing the likelihood of harsh judgment and aggression.

### **Beyond Appeasement: Embarrassment as a Signal of Prosociality**

The symbolic interactionist account offered by Goffman and the appeasement analysis it inspired converge on a view of embarrassment as a socially restorative emotion, one that helps individuals reestablish their standing in the eyes of others following socially undesirable behavior. In this investigation, we extend this perspective by arguing that embarrassment serves not only to ameliorate the social effects of mistakes and mishaps, but further serves as a signal of an individual's underlying prosociality and commitment to social relationships.

When displaying embarrassment, we reason, the transgressor signals a commitment to the social order and that he or she is oriented toward others in prosocial fashion. Inherent in the embarrassment signal, therefore, is additional information about the signaler's other-oriented, prosocial disposition. More specifically, the embarrassment display signals a concern over potentially adverse consequences a norm violation might have on others, and that the individual has a general tendency to want to be seen as an upstanding, other-oriented member of the social group, and any failure to uphold such a reputation is an aberration (Goffman, 1956). Because caring about the welfare of others and striving to not harm others are foundational to prosociality (Penner et al., 2005; Simpson & Willer, 2008), embarrassment should serve as a signal of the predisposition to act in prosocial fashion and be committed to the social group.

### **Embarrassment and the Evolution of Prosocial Behavior**

Our hypothesis that embarrassment signals an individual's prosociality fits well with evolutionary claims regarding the roots of prosocial behavior. Many evolutionary theorists have argued that prosocial behavior emerged as a by-product of a more general tendency of individuals to internalize social norms (e.g., Gintis, 2003; Richerson, Boyd, & Henrich, 2003; Simon, 1990). These theorists have argued that the capacity for norm internalization would offer a variety of social benefits—for example, social approval, positive reputation—that compensate for the personal costs of altruistic behavior (Gintis, 2003). From this perspective, norm internalization and prosociality are tightly linked dispositional traits. Consistent with this perspective, involuntary signals of the sensitivity to norm violations serve as a reliable signal of an individual's trustworthiness and attractiveness as a group member.

Our hypothesis that embarrassment serves as a signal of prosociality also fits well with evolutionary game theory, and its more specific argument that evolutionary fitness increases from developing long-term bonds with others with whom one can trust and cooperate (Packer, 1977; Trivers, 1971; Wilkinson, 1984). Within this framework, it is posited that prosocial strategies can emerge

and proliferate within populations (i.e., social groups) when individuals can reliably detect others' prosociality, and selectively interact with those individuals (Axelrod & Hamilton, 1981; Macy & Skvoretz, 1998; Trivers, 1971). If prosocial individuals can reliably detect one another, then they can selectively interact, thereby enjoying the benefits of mutual cooperation and reciprocal altruism while avoiding the costs of exploitation by more egoistic individuals. Thus, accurate judgment of others' degree of prosociality is important. Like other social animals, then, humans should be attentive to "tell-tale signs" of others' prosociality and respond to such signs with trust and affiliation (Frank, 1988).

Some empirical studies support the prediction that humans can successfully detect others' prosociality. In these studies, researchers commonly present observers with either prosocial or egoistic targets in a zero-acquaintance paradigm and have them rate the targets on prosocial characteristics. Some of these studies involve exposure to video clips of the target engaged in a neutral task (e.g., retelling a nursery rhyme), whereas others present more impoverished stimuli such as a still photograph. In these paradigms, prosocial individuals signal their other-oriented intentions via subtle mannerisms and facial expressions. These same studies show, anticipating the nature of our own methods, that observers tend to successfully recognize these signals as indicators of prosociality (W. M. Brown & Moore, 2000; W. M. Brown, Palameta, & Moore, 2003; Oda, Yamagata, Yabiku, & Matsumoto-Oda, 2009; Schug, Matsumoto, Horita, Yamagishi, & Bonnet, 2010).

Moreover, since Darwin (1872/2009), theorists of emotion signaling have argued that involuntary emotional expressions serve social ends that are fitness-enhancing (W. M. Brown & Moore, 2002; Frank, 1988). Emotions, it is argued, are reliable signals because of their spontaneous, involuntary nature, making them difficult for potential imposters to feign (Vehrencamp, 2000). It is for these reasons that theorists have implicated social emotions, like sympathy, gratitude, and love, as a critical medium through which humans signal prosocial intentions (e.g., Frank, 1988; Hertenstein, Keltner, App, Bulleit, & Jaskolka, 2006; Sober, 2002). Past research has found evidence for such a claim. For instance, individuals can recognize another's prosocial intent through emotion-laden touching, smiling, and general emotional expressivity (Boone & Buck, 2003; W. M. Brown & Moore, 2002; W. M. Brown et al., 2003; Hertenstein et al., 2006; Schug et al., 2010). However, no studies to date have examined embarrassment as a signal of prosociality.

### **Overview of the Present Research**

On the basis of Goffman's (1956) early analysis of embarrassment and more recent evolutionary treatments of prosociality, we hypothesize that embarrassment signals an individual's underlying prosociality and trustworthiness, leading observers to perceive the embarrassed individual as more prosocial and therefore worthy of trust. We tested these hypotheses using the framework of a "lens model" as a communicative process (Boone & Buck, 2003; Brunswik, 1956), in which individuals with high levels of trustworthiness reliably signal cues of their prosocial tendencies to an observer who then decodes such cues and responds with enhanced trust. Importantly, in the lens model, certain relationships between underlying trait, signal behavior, and perceiver inference must exist for the communication process to function successfully. First,

there should be a valid relationship between possession of the trait and the strength of the signal of this trait, or what is known in the person perception literature as “cue validity.” If such a relationship does not exist, then there would be no reason to attend to the cues because they would be unreliable and meaningless. Second, observers of these cues should be able to accurately decode and act on them, a phenomenon known as “cue utilization” (Boone & Buck, 2003; Brunswik, 1956). If individuals cannot accurately utilize the cues, then conveying such information would be futile.

Such an approach generates several predictions that we tested in the present research. We anticipate that individuals who feel and display intense embarrassment should indeed behave in more prosocial and trustworthy ways (cue validity). In addition, we predict that perceivers of embarrassed targets will recognize that these individuals are more prosocial, and will trust, affiliate, and cooperate with them more in turn (cue utilization).

Some past research suggests the plausibility of our predictions. These studies typically present a context in which a target commits an unintended social mistake and then portrays the target as either embarrassed or unemotional. These studies have found that observers make more favorable global judgments of embarrassed individuals who have committed a social transgression, viewing them as more likable, relative to nonembarrassed, usually unemotional, individuals who have committed the same transgression (de Jong, 1999; Semin & Manstead, 1982; van Dijk, et al., 2009). These studies, however, have not taken the additional step of testing whether embarrassment also signals prosociality and commitment to social relationships as they conceptualize embarrassment solely as a means of returning one’s existing social standing back to where it was prior to a mishap. We therefore aim to advance the existing literature by documenting that, rather than simply erasing reputational blemishes, embarrassment also signals prosociality and commitment to social relationships.

These previous studies of the restorative effects of the embarrassment display are also limited by two alternative explanations for why observers rated embarrassed targets more favorably. First, in studies in which the comparison condition was an unemotional display (rather than a different emotional display), observers may simply have demonstrated a preference for individuals who are emotionally expressive (Boone & Buck, 2003; Schug et al., 2010). Second, when judging an embarrassed individual within an embarrassing situation, observers’ favorable ratings of the target may simply have reflected a preference for individuals whose emotions are congruent with the situation (see Keltner & Kring, 1998, for evidence relating poor emotional congruence to poor social adjustment). In the present research, we included appropriate control emotional displays and thin-slicing methods where embarrassment displays are judged in the absence of contextual information to rule out these alternative explanations.

We conducted five studies testing our hypotheses and ruling out alternative explanations. Study 1 tests whether those who tend to express and feel embarrassment more strongly are reliably more prosocial. Study 2 compares observer ratings of video targets who are either highly embarrassed or minimally embarrassed, examining whether observers perceive the highly embarrassed targets as more prosocial and less antisocial. Studies 3–5 replicate Study 2’s findings while also examining some behavioral implications of embarrassment signaling prosociality and social commitment.

## Study 1a

In Study 1a, we examined the relationship between participants’ underlying prosociality, both self-reported and behavioral, and their tendency to express embarrassment during a situation that evoked embarrassment. In the only study relevant to this question to date, young boys prone to “externalizing behavior”—aggression, vandalism, and socially disruptive behavior—displayed less intense nonverbal displays of embarrassment when making mistakes on an interactive IQ test (Keltner, Moffitt, & Stouthamer-Loeber, 1995). In Study 1a, we tested the complementary hypothesis: Individuals who report more prosocial intentions and demonstrate greater prosocial behavior will show more intense nonverbal displays of embarrassment. To measure participants’ prosociality, we used their self-reported resource allocation preferences on a standard measure of social value orientation and their actual allocation decision in a dictator game played with another participant.

## Method

**Participants.** Fifty-seven undergraduate students (20 men, 37 women) participated for credit in a psychology course. The sample was diverse, with 37% European American, 31% Asian, 11% Latino, 8% Black, and 13% of participants not fitting into one of the previous categories.

**Procedure.** A correlational design was used in this study, examining the potential association between participants’ prosocial tendencies and coder-rated intensity of embarrassment participants’ expressed while recounting a time they felt very embarrassed. Participants participated one at a time. The experimenter brought participants into a room and seated them facing a video camera 6 feet away. After participants consented to participate, the experimenter provided participants with a short prompt asking them to recall a time when they felt very embarrassed. Participants were given 2 min alone to prepare. The experimenter returned, pressed record on the camera, and left for 4 min while participants told their embarrassing story to the camera. Most participants described social mishaps that occurred (e.g., tripping, passing gas) while in public, which converge with past research on common elicitors of embarrassment (Keltner, 1995; Keltner & Buswell, 1997). When the videotaping of the story was done, the experimenter returned, turned off the camera, and pointed it away from the participant. Participants then completed two measures designed to gauge their prosociality—the Social Value Orientation questionnaire (Van Lange, 1999; Van Lange, Otten, De Bruin, & Joireman, 1997) and a dictator game played with another participant in the study.

**Social value orientation.** The Social Value Orientation questionnaire (Van Lange, 1999; Van Lange et al., 1997) is a nine-item measure of respondents’ preferences for how they believe resources should be distributed between oneself and a hypothetical other. The instructions specify that answer choices are hypothetical and have no effect on either the participant or the hypothetical other. Each item provides respondents with three distribution options to choose from. One option represents a prosocial preference where resources are distributed to maximize joint gain between the respondent and the hypothetical other. Another option represents a selfish preference where resources are distributed to maximize payoff to self. Finally, the third option represents a competitive preference where resources



are distributed to maximize relative difference in payoff between self and other. The number of times participants chose the prosocial option was used as a continuous measure of prosociality (Piff, Kraus, Côté, Cheng, & Keltner, 2010).

**Dictator game.** This economic game was used to measure participants' generosity (Forsythe, Horowitz, Savin, & Sefton, 1994; Ledyard, 1995). In the exercise, participants are assigned the roles of "Sender" and "Receiver." The Sender is given an allocation of resource units (e.g., money, raffle tickets) and has the option to give any amount of them (including zero) to the Receiver. All participants were assigned the role of Sender and were told that their decision would be anonymous and that they would never meet the Receiver. Instructions informed participants that they had been allocated 10 raffle tickets, each worth one entry into a drawing for a \$50 gift certificate, and that they could send any number of tickets to the Receiver. At the bottom of the form, the participants circled how many from 0 to 10 raffle tickets they wanted to send to the Receiver. On average, participants gave 3.58 raffle tickets ( $SD = 2.34$ ) to Receivers.

**Video coding.** Four coders blind to our hypotheses watched each video and rated the targets on three variables: (a) how embarrassing their story was, (b) how much they expressed embarrassment, and (c) how attractive they were (collected for use as part of Study 2). Coders were instructed to make their ratings based on their general impression of each target. Each variable was rated on a scale from 0 (*not at all*) to 6 (*extremely*). Interrater reliabilities for judgments of *embarrassing story*, *embarrassed expression*, and *attractiveness* were moderate to high ( $\alpha = .79, .65, .71$ , respectively).

## Results

To ensure that the predicted association between embarrassment display and prosocial behavior was not simply due to a tendency to disclose more embarrassing events, we ran partial correlations controlling for coder ratings of how embarrassing the story was. Doing so isolates the association between the extent of participants' embarrassment expression and their prosocial behavior, over and above how embarrassing their stories were.<sup>1</sup> The analysis revealed that embarrassment expression was positively associated with both self-reported prosocial preferences on the Social Value Orientation scale ( $r = .27, p < .05$ ) and giving behavior in the dictator game ( $r = .27, p < .05$ ).<sup>2,3</sup>

### Study 1b

Study 1a's results demonstrate a positive association between prosocial tendencies and coders' perceptions of targets' embarrassment. However, the study does not directly test whether the tendency to *feel* embarrassed correlates with prosociality. Although past research demonstrates that the feeling and expression of emotions are closely linked (e.g., Ekman, 1984; James, 1884), there is still the possibility that only the tendency to display embarrassment and prosociality are related. Thus, in Study 1b, we examined the relationship between the tendency to feel embarrassed and prosociality.

## Method

**Participants.** Thirty-eight participants (14 men, 24 women) were recruited via an advertisement posted on the craigslist.org

websites offering participants the chance to win a \$50 gift certificate for their participation. The sample consisted of 74% European American, 13% Asian, 12% Latino, and one participant who did not fit into any of the previous categories.

**Procedure.** After completing a basic demographic questionnaire, participants filled out three questionnaires. The first was a measure of embarrassability modeled after existing measures of self-conscious emotions such as the Test of Self-Conscious Affect (Tangney, Wagner, & Gramzow, 1989) and the Guilt and Shame Proneness Scale (Cohen, Wolf, Panter, & Insko, 2011). Participants were asked to imagine themselves in 12 separate situations, each of which involved them hypothetically committing a social faux pas that could elicit embarrassment (see the Appendix for a copy of the questionnaire). After each scenario, participants indicated on a scale from 1 (*not at all*) to 7 (*very much*) how likely they would be to feel embarrassed if the scenario had really occurred. The reliability across these 12 scenarios was high (Cronbach's  $\alpha = .86$ ).

Participants then completed two measures of prosociality. One was the dictator game described in Study 1a ( $M = 4.92, SD = 2.61$ ). The other was an eight-item altruism measure taken from the agreeableness component of the NEO Personality Inventory-Revised (McCrae & Costa, 1992). Sample items from this measure include "I think of myself as a charitable person" and "I go out of my way to help others if I can." Participants responded to each of the inventory items on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Reliability for this measure was high (Cronbach's  $\alpha = .82$ ).

## Results

To examine whether there was a relationship between participants' tendency to feel embarrassed and their prosocial tendencies, we conducted zero-order correlation analyses. The results revealed that embarrassability correlated positively with both the number of tickets participants shared ( $r = .38, p < .05$ ) and self-reported altruistic tendency ( $r = .32, p < .05$ ).

<sup>1</sup> Running the analysis as a zero-order correlation yielded almost identical results. Additionally, the correlation between ratings of story embarrassment and Social Value Orientation was  $-.03$  ( $p = .83$ ), and the correlation between ratings of story embarrassment and dictator game behavior was  $.07$  ( $p = .59$ ).

<sup>2</sup> It should be noted that the correlation between dictator game giving and Social Value Orientation prosociality was  $.52$ , suggesting significant overlap between these two measures. We report results for both measures separately because one is a real-stakes behavioral measure and the other a hypothetical self-report measure. The correlation between the two measures of prosociality used in Study 1b, dictator game giving and the altruism facet of the NEO Personality Inventory-Revised, was  $.14$  and not significant.

<sup>3</sup> To further ensure that the content of the targets' stories did not influence coders' ratings, and to verify that the coders' ratings of embarrassment were accurate, a separate set of coders, trained to recognize the prototypical display of embarrassment, watched a silent version of each video and rated how much embarrassment the targets expressed. The Cronbach's  $\alpha$  for the muted coding was  $.74$ . The muted coding of embarrassment was positively correlated with both the Social Value Orientation measure of prosociality ( $r = .33, p = .01$ ) and giving in the dictator game ( $r = .23, p = .08$ ). Additionally, the correlation between this muted coding and the original nonmuted coding was  $.40$  ( $p = .002$ ).

## Discussion

In Study 1a, people who displayed more intense embarrassment when talking about an embarrassing episode reported greater prosociality and gave more resources to an unknown other. Likewise, in Study 1b, participants who self-reported a greater tendency to feel embarrassed also demonstrated higher levels of prosociality. These data are the first to indicate that more embarrassed individuals are in fact more prosocial. In the remaining studies, we examined whether observers in fact use the embarrassment displays of others to infer their underlying prosociality.

## Study 2

As an initial test of our second hypothesis, that observers perceive embarrassment expressions as signals of prosociality, we presented new participants with videos of participants from Study 1a who expressed either intense or minimal embarrassment. We then asked participants to rate how prosocial and antisocial these targets were, predicting that observers would find the more embarrassed targets to be more prosocial and less antisocial than the less embarrassed targets.

## Method

This study involved two components—the selection of video targets and observer judgment components—described separately below.

### Selection of video targets.

**Participants.** Participants were the same 57 undergraduate students (20 men, 37 women) as in Study 1a.

**Procedure.** Four targets were selected from the original 57 participants according to the following criteria. First, the target's story was rated by the blind coders as above average in embarrassment ( $M = 3.52$ ,  $SD = 1.38$ ), to control for the content of the story. Second, a pool of targets who expressed intense nonverbal displays of embarrassment (the top 15% of the sample in rated intensity of expressed embarrassment; cutoff score for highly embarrassed targets = 4.14) and a pool of targets who expressed minimal embarrassment (the bottom 15% of the sample in rated intensity of expressed embarrassment; cutoff score for minimally embarrassed targets = 1.75) were identified. From these two pools, a highly embarrassed female and minimally embarrassed female and a highly embarrassed male and minimally embarrassed male were selected, all of whom were Caucasian (to control for ethnicity), and who were matched in terms of their rated physical attractiveness.

### Observer judgments.

**Participants.** Ninety-four undergraduate students (24 men, 70 women) took part in the study for extra credit. The ethnic distribution of the sample was the following: 31% European American, 35% Asian, 12% Latino, 3% Black, and 19% who did not fit into any of the other categories.

**Procedure.** A  $2 \times 2$  mixed factor design (between: exposed to high/low embarrassment)  $\times$  (within: ratings of male and female target embarrassment) was used. Participants were run in groups of six to 10 at a time in a computer laboratory. Participants wore headphones and worked at individual stations separated by dividers. The participants were told that they would watch videos of

individuals telling stories and would later be asked to rate each individual on a variety of characteristics. Then the computer randomly assigned participants to watch either the two highly embarrassed targets or the two minimally embarrassed targets. Which video participants watched first, male or female, was randomly assigned. Participants were exposed to both male and female targets, given evidence indicating perceivers tend to attribute more embarrassment—a low-status emotion—to female targets (Keltner, 1995) and judge female targets to be more prosocial than male targets (Eagly & Mladinic, 1989; Simpson & Van Vugt, 2009; Van Lange et al., 1997; Van Vugt, De Cremer, & Janssen, 2007). The experimental design allowed us to explore whether gender interacts with the predicted effects of intensity of embarrassment display on attributions of prosociality.

Following each video, participants filled out a survey asking them to indicate the extent to which the following descriptors characterize the target: generous, cooperative, morally upright, follows rules and norms of society, trustworthy, manipulative, cunning or sly, selfish, and likely to cheat on a significant other. Each item was rated on a scale from 1 (*not at all*) to 7 (*a whole lot*). Ratings of generous, cooperative, morally upright, follows rules and norms of society, and trustworthy were averaged to form a composite measuring how *prosocial* each target was perceived (all Cronbach's  $\alpha$ s  $\geq .72$ ); ratings of manipulative, cunning or sly, selfish, and likely to cheat were averaged to form a composite measuring how *antisocial* each target was perceived (all Cronbach's  $\alpha$ s  $\geq .73$ ). Participants also indicated how much they liked each target on a scale from 1 (*not at all*) to 7 (*a whole lot*) and completed a manipulation check that asked them to rate on this same scale how much each video target expressed embarrassment.

## Results

**Manipulation check.** As a manipulation check, we first ran a  $2 \times 2$  mixed design analysis of variance (ANOVA), with one between-subjects factor (the level of embarrassment displayed by the target, high or low) and one within-subjects factor (gender of target, female or male). The analysis yielded no significant interaction effect,  $F(1, 92) = 2.55$ ,  $p = .11$ , but did reveal a significant main effect of gender,  $F(1, 92) = 8.90$ ,  $p < .01$ ,  $\eta_p^2 = .09$ , and embarrassment expression,  $F(1, 92) = 93.94$ ,  $p < .001$ ,  $\eta_p^2 = .51$ . The main effect of gender demonstrated that the female targets were rated as more embarrassed than the male targets, replicating similar trends in past research (e.g., Keltner, 1995).<sup>4</sup> The significant difference in perceived embarrassment expression revealed that, in line with the coders' impressions, participants' ratings of embarrassment for highly embarrassed targets ( $M = 5.31$ ,  $SD = 1.17$ ) were higher than their ratings for the minimally embarrassed targets ( $M = 3.01$ ,  $SD = 1.13$ ).

**Prosocial ratings.** To test our hypothesis that observers will find individuals expressing embarrassment to be more prosocial, we ran a  $2 \times 2$  mixed design ANOVA, with the target level of embarrassment (high or low) as a between-subjects factor and the target gender as a within-subjects factor. We found a significant main effect for exposure to highly versus minimally embarrassed targets,  $F(1,$

<sup>4</sup> In Studies 2–5, we also examine the effects of participant gender. We find no significant differences due to participant gender across all analyses for all studies.

92) = 25.00,  $p < .001$ ,  $\eta_p^2 = .21$ , such that participants found the highly embarrassed targets to be more prosocial ( $M = 4.74$ ,  $SD = 0.72$ ) than the minimally embarrassed targets ( $M = 4.06$ ,  $SD = 0.58$ ). We also found a main effect of gender,  $F(1, 92) = 4.70$ ,  $p < .05$ ,  $\eta_p^2 = .05$ . Observers rated the female targets as more prosocial ( $M = 4.54$ ,  $SD = 0.97$ ) than the male targets ( $M = 4.25$ ,  $SD = 0.98$ ), a finding in line with previous studies of attributions of prosociality (e.g., Eagly & Mladinic, 1989). We found no significant interaction effect,  $F(1, 92) = 0.26$ ,  $p = .62$ , suggesting that the effect of embarrassment expression on ratings of prosociality did not differ for male and female targets. Simple comparisons contrasting the two male targets and the two female targets are shown in Table 1.

**Antisocial ratings.** As a further test of our hypotheses that observers will perceive embarrassed targets as less likely to put their self-interest over group interest and less likely to cheat in social relationships, we examined observers' ratings of targets' antisocial characteristics. As predicted, a  $2 \times 2$  mixed design ANOVA similar to the one described above revealed a significant main effect of exposure to highly versus minimally embarrassed targets,  $F(1, 92) = 19.06$ ,  $p < .001$ ,  $\eta_p^2 = .17$ . Observers found the highly embarrassed targets to be less antisocial ( $M = 2.98$ ,  $SD = 0.83$ ) than the minimally embarrassed targets ( $M = 3.71$ ,  $SD = 0.79$ ). We also found a significant main effect of gender,  $F(1, 92) = 16.12$ ,  $p < .001$ ,  $\eta_p^2 = .15$ , where female targets were found to be less antisocial ( $M = 3.08$ ,  $SD = 1.03$ ) than the male targets ( $M = 3.62$ ,  $SD = 1.16$ ). Again, we found no significant interaction effect,  $F(1, 92) = 0.09$ ,  $p = .76$ , suggesting that the effect of expressing embarrassment on observers' ratings of antisociality did not vary by target's gender. Table 1 presents the simple comparisons, individually contrasting the male targets and the female targets.<sup>5</sup>

## Discussion

As predicted, social perceivers judged highly embarrassed targets to be more prosocial than their less embarrassed counterparts. Our confidence in the conclusions drawn from this study, however, is limited by certain features of Study 2's design. The content of the stories told by the highly embarrassed and minimally embarrassed targets, although equally embarrassing, could have varied on other dimensions, leading to the differences in attributions of prosociality we observed. Similarly, the targets may have conveyed their prosociality through certain mannerisms, gestures, or tone of voice, or other facial muscle actions or movements of the body—all of which we could not control. Previous research, for example, has shown that prosocial individuals subtly signal their prosociality in various ways, including smiles (W. M. Brown et al., 2003; Scharlemann, Eckel, Kacelnik, & Wilson, 2001) and overall levels of emotional expressivity (Boone & Buck, 2003; Schug et al., 2010). In a similar vein, targets who expressed more intense embarrassment may have been more likely to express other emotions that signal prosociality, like gratitude or fear (Bartlett & DeSteno, 2006; Marsh & Ambady, 2007). These possible confounds motivate the design of our ensuing studies.

## Study 3

In Study 3, we limited the behavior observers were to make inferences on to static facial poses in photographs of targets. If observers rate embarrassed targets as more prosocial in this para-

digim, then we can more confidently rule out the possibility that Study 2's results were due to the embarrassed targets conveying prosocial information about themselves through the content of their stories, mannerisms, tone of voice, or other qualities of the dynamic portrayal of embarrassment. In addition, it is possible that the targets in Study 2 were viewed as more prosocial simply because they expressed more emotion than the low-embarrassment targets. To account for this, we added a control condition in which a target expressed another self-conscious emotion—pride—in addition to a neutral expression control condition. Furthermore, in Study 3, we also gathered data on participants' interest in affiliating with each target to test the hypothesis that because observers recognize embarrassed targets as more prosocial, they will also perceive them as more desirable partners and group members.

## Method

**Participants.** One hundred ninety-six undergraduate students (79 men, 117 women) participated for credit in either a psychology or a sociology course. Ethnicity information was not collected for this study.

**Procedure.** Participants completed the study online. They were e-mailed the study link and were asked to complete it alone in a single sitting. A two-factor mixed design was used, with all participants being exposed to and rating three separate female targets.<sup>6</sup> One target displayed embarrassment, another pride, and finally the third had a neutral expression. The target pictures were of actors whose expressions and movements were directed by experts in emotion expression, and were modeled on previous studies of embarrassment and pride (Haidt & Keltner, 1999; Tracy & Robins, 2007). The embarrassment display involved gaze aversion, head movements down and to the left, and an inhibited, compressed smile (Haidt & Keltner, 1999; Keltner, 1995). The pride display involved a low-intensity smile and the head slightly tilted upward so the chin protrudes outward (Tracy & Robins, 2007).<sup>7</sup>

Past research suggests that target ethnicity influences perceptions of the intensity of embarrassment displays (Keltner, 1995), so the three targets that were used each had different ethnic backgrounds: African American, Asian, and European American. Par-

<sup>5</sup> There is a possibility that the effect of embarrassment on observer behavior and ratings of prosociality is due to embarrassed individuals being more likable. To rule this possibility out, in Studies 2–5, we asked observers to indicate how much they liked the targets. In all of these studies, our reported results remain significant even after controlling for ratings of liking.

<sup>6</sup> We recognize that observers may rate female targets expressing embarrassment differently than male targets expressing embarrassment. In Study 4, we use both genders as targets.

<sup>7</sup> A validation study using an online sample recruited through postings on craigslist.org websites for 15 major American cities ( $N = 78$ ) using a forced-choice paradigm modeled after Haidt and Keltner (1999) with nine choices (Embarrassment, Shame, Fear, Pride, Surprise, Disgust, Sadness, Sympathy, Amusement) revealed that participants rated our embarrassed targets as being embarrassed, on average, 68% of the time. Likewise, 62% of participants rated the proud targets as expressing pride. For each of the targets, omnibus chi-square tests were significant (all  $ps < .001$ ), and comparisons between target emotion and each of the other emotions verified that the target emotion (i.e., embarrassment or pride) was significantly more likely to be selected than any of the eight other emotions (all  $ps < .001$ ).



Table 1  
Means (and Standard Deviations) of Prosocial and Antisocial Ratings Divided up by Gender

Rating	Highly embarrassed males	Minimally embarrassed males	Highly embarrassed females	Minimally embarrassed females
Prosocial ratings	4.56 <sub>a</sub> (1.06)	3.95 <sub>b</sub> (0.80)	4.92 <sub>a</sub> (0.85)	4.17 <sub>b</sub> (0.95)
Antisocial ratings	3.27 <sub>a</sub> (1.17)	3.96 <sub>b</sub> (1.04)	2.69 <sub>a</sub> (0.82)	3.46 <sub>b</sub> (1.08)

Note. Significant differences (critical  $\alpha < .05$ ) are denoted by differing subscripts.

Participants were randomly assigned to one of three conditions that differed only in which of the three targets was making each display. Thus, although every participant saw an embarrassment, pride, and neutral display, the ethnic background of the target making each display was randomly determined.

Participants were told that they would be shown photos of various targets and be asked to rate the targets on a variety of attributes. After looking at a target picture, participants indicated how much they believed the target had the following characteristics and tendencies on a scale from 1 (*not at all*) to 7 (*a whole lot*): trustworthy, morally upright, prosocial, and follows rules and norms of society. Responses to these items were averaged to form a composite measure of how *prosocial* targets were perceived to be (all Cronbach's  $\alpha$ s  $\geq .78$ ). Following these ratings, participants filled out a five-item *desire to affiliate* composite (all Cronbach's  $\alpha$ s  $\geq .84$ ; e.g., "If this person were a fellow student, how likely is it that you would ask her to join a study group that you were a part of?"). The items were all rated on a scale from 1 (*not likely at all*) to 7 (*very likely*).

## Results

**Prosocial ratings.** A  $3 \times 3$  mixed design ANOVA, with prosociality ratings of embarrassed, neutral, and pride expressing targets entered as the within-subjects factor and the ethnicity of target presented (which ethnicity was expressing which emotion) entered as the between-subjects factor, revealed neither a main effect of ethnicity,  $F(2, 192) = 0.23, p = .80$ , nor a significant interaction,  $F(4, 384) = 1.52, p = .20$ , suggesting that differences in observers' prosociality ratings of each target were not influenced by target ethnicity. Thus, we collapsed across the ethnicity conditions and more directly examined observers' ratings due to each target's emotional expression. This analysis yielded a significant effect of emotional expression,  $F(2, 388) = 8.12, p < .001, \eta_p^2 = .04$ . Subsequent simple comparisons revealed that observers rated the embarrassed target as more prosocial ( $M = 4.69, SD = 0.89$ ) than both the proud target ( $M = 4.52, SD = 1.05$ ),  $F(1, 194) = 3.92, p < .05, \eta_p^2 = .02$ , and the neutral target ( $M = 4.38, SD = 0.95$ ),  $F(1, 194) = 28.12, p < .001, \eta_p^2 = .13$ .

**Desire to affiliate.** A comparison of observers' stated desire to affiliate with each of the targets also revealed a significant effect,  $F(2, 388) = 11.13, p < .001, \eta_p^2 = .05$ . Simple comparisons indicated that observers expressed more desire to affiliate with the embarrassed target ( $M = 4.45, SD = 1.07$ ) than the proud target ( $M = 4.20, SD = 1.18$ ),  $F(1, 194) = 6.77, p < .01, \eta_p^2 = .03$ , and the neutral target ( $M = 4.02, SD = 1.10$ ),  $F(1, 194) = 27.45, p < .001, \eta_p^2 = .12$ .

**Mediating link between embarrassment displays, inferred prosociality, and desire to affiliate.** We tested the mediating role of observer prosocial ratings on desire to affiliate using

multilevel modeling (prosocial rating within emotion expression within participant). For the sake of parsimony, we present here the analysis comparing desire to affiliate ratings of the embarrassed target relative to the pride target, coding embarrassment as 1 and pride as 0.<sup>8</sup> In the first step, emotion expression predicted desire to affiliate,  $t(390) = 2.63, p < .01$ . In the second step, emotion expression predicted prosocial ratings,  $t(390) = 2.02, p < .05$ . Then, in the third, when entering both predictors simultaneously, we found that observers' prosocial ratings remained significant,  $t(389) = 22.68, p < .001$ , whereas emotion expression did not,  $t(389) = 1.68, p = .09$ . A Sobel test confirmed the significant indirect effects ( $z = 2.12, p < .05$ ). This mediation analysis is portrayed in Figure 1. The mediation suggests that the observers desired to affiliate more with the embarrassed target because they viewed that target to be more prosocial.

## Discussion

In Study 3, observers attributed greater prosociality to a target displaying embarrassment in a static photo compared with targets displaying pride or a neutral expression, suggesting that the static display of embarrassment, and not just any emotion, evokes prosocial inferences. Observers also indicated a greater interest in affiliating with the embarrassed targets relative to the other targets, an effect that was mediated by perceptions of the embarrassed targets as more prosocial.

## Study 4

In Studies 2 and 3, observers reported that embarrassed targets appeared more prosocial. In Study 4, we examined whether observers will trust embarrassed targets as opposed to proud or neutral targets by giving them more of their resources in an economic game with real money stakes (Berg, Dickhaut, & McCabe, 1995). If embarrassment does signal prosociality and commitment to social relationships, then we would expect observers to act on this signal by entrusting more resources to the embarrassed target relative to either a neutral or proud target. Additionally, for Study 4, we included both male and female targets to test how target gender might influence participants' perceptions and behavior.

## Method

**Participants.** Six hundred eighty-eight (180 men, 508 women) undergraduate students participated for credit in either a

<sup>8</sup> Parallel results are obtained for mediation analyses comparing the embarrassed target with the neutral target.



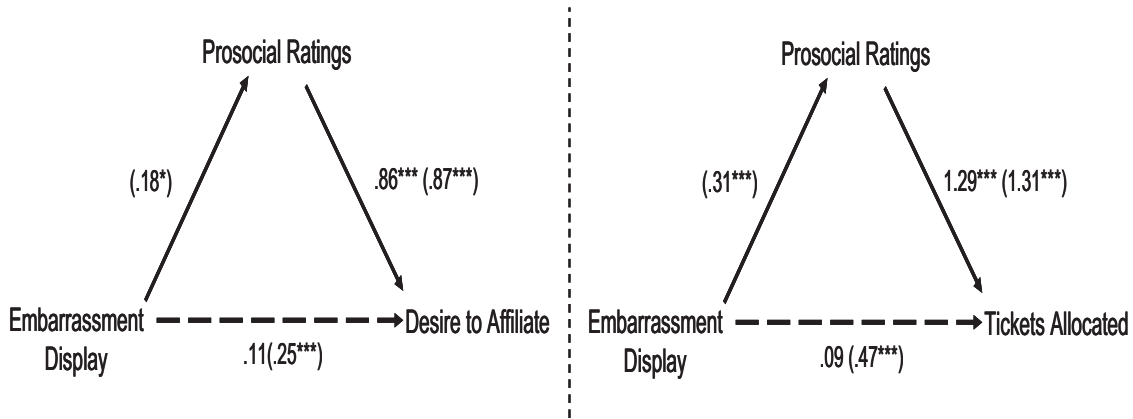


Figure 1. The relationship between embarrassment display and desire to affiliate (Study 3), and ticket allocation in the trust game (Study 4), mediated by prosocial ratings. Values presented without parentheses are standardized multiple regression coefficients. Values in parentheses are zero-order correlations. \*  $p < .05$ . \*\*\*  $p < .001$ .

psychology or sociology course. The ethnic makeup of the sample was 26% European American, 38% Asian, 16% Latino, 5% Black, and 15% who did not fit into one of the previous categories.

**Procedure.** Participants took part in the study over the Internet. They were instructed to complete the study alone, in one sitting. Participants first completed a short demographic questionnaire and then were presented with instructions for playing the trust game (Berg et al., 1995). The trust game involves two players, Decision Maker 1 (DM1) and Decision Maker 2 (DM2). DM1 receives an initial endowment, usually 10 units (dollars, points, or tickets, depending on the game currency). DM1 then has the opportunity to send any number of these units to DM2. Whatever amount DM1 does not send over is automatically his or hers to keep, but whatever amount DM1 sends to DM2 is immediately tripled by the experimenter and given to DM2. Then DM2 decides what number, if any, of the units he or she would like to return to DM1. The amount that DM1 entrusts to the second decision maker offers a behavioral measure of his or her level of trust for DM2, whereas the amount DM2 returns offers a behavioral measure of DM2's trustworthiness.

For our study, the participant was always assigned the role of DM1. As DM1, each participant received an initial endowment of 10 raffle tickets. Each raffle ticket was worth a single entry into a raffle for a \$50 gift certificate. Because the trust game was not conducted in real time, but rather between the participant and nonpresent targets, participants were informed that the targets had already submitted their decisions in the trust game for each possible amount a participant might choose to send.

After learning how to play the trust game, participants were presented with pictures of three targets, ostensibly other participants in a previous study, displaying embarrassment, pride, or a neutral expression, and rated each on the same four-item composite of prosociality as in Studies 2 and 3 (all Cronbach's  $\alpha$ s  $\geq .83$ ).<sup>9</sup> Following these ratings, participants played the trust game with each of the targets. About half the participants viewed pictures of male targets, whereas the other half viewed pictures of female targets. As in Study 3, participants were randomly assigned to conditions that differed only in which of the three targets was

making each display. The nature of the design allowed us to expose each participant to a target of each ethnic group. At the end of the study, participants were asked what they thought the study was about. Responses indicated that none thought the study explored different perceptions of the targets' emotional expressions.

## Results

**Ratings.** As in Study 3, we checked to see whether there was a significant interaction between the emotions expressed by the targets and the ethnicity of the targets. A  $3 \times 3$  mixed design ANOVA entering prosociality ratings of embarrassed, neutral, and pride expressing targets as the within-subjects factor, and the ethnicity of target presented (which ethnicity was expressing which emotion) as the between-subjects factor, revealed that there was neither a significant effect of ethnicity,  $F(2, 650) = 1.06, p = .35$ , nor a significant interaction,  $F(4, 1300) = 1.44, p = .22$ . For the remainder of the analyses, we collapsed across ethnicity. We then conducted a  $3 \times 2$  ANOVA entering prosociality ratings of embarrassed, neutral, and pride expressing targets as the within-subjects factor and target gender as the between-subjects factor. The analysis yielded a significant main effect for prosociality ratings for emotion expressed,  $F(2, 1302) = 63.59, p < .001, \eta_p^2 = .09$ ; a main effect for gender,  $F(1, 651) = 13.91, p < .001, \eta_p^2 = .02$ ; and a significant interaction,  $F(2, 1302) = 3.41, p < .05, \eta_p^2 = .01$ . Simple comparisons revealed that observers rated the embarrassed targets as more prosocial ( $M = 4.55, SD = 0.87$ ) than either the proud ( $M = 4.23, SD = 0.93$ ),  $F(1, 651) = 73.05, p < .001$ ,

<sup>9</sup> The female targets for this study were identical to those in Study 3. For the male targets, the same validation study reported in Footnote 5 revealed that participants rated our embarrassed targets as being embarrassed, on average, 77% of the time. Likewise, 71% of participants rated our proud targets as expressing pride. For each of the targets, omnibus chi-square tests were significant (all  $ps < .001$ ), and comparisons between target emotion and each of the other emotions verified that the target emotion (i.e., embarrassment or pride) was significantly more likely to be selected than any of the eight other emotions (all  $ps < .001$ ).

$\eta_p^2 = .10$ , or the neutral target ( $M = 4.17$ ,  $SD = 0.96$ ),  $F(1, 651) = 107.06$ ,  $p < .001$ ,  $\eta_p^2 = .14$ . A closer look at the significant main effect of gender revealed that women, regardless of emotional expression, were rated overall as being more prosocial ( $M = 4.43$ ,  $SD = 0.77$ ) than men ( $M = 4.20$ ,  $SD = 0.72$ ), consistent with the results from Study 3.

At first glimpse, the significant interaction between ratings of emotion expressed and gender seems to suggest that ratings of prosociality based on emotion expression differed depending on target gender. However, a closer look at the means reveals that the interaction is primarily due to differences in observers' ratings of males' and females' prosociality when expressing pride and a neutral expression; observers rated proud males as more prosocial than neutral males, whereas observers rated proud females as less prosocial than neutral females. However, for both male and female targets, observers rated the embarrassed target as being significantly more prosocial than both the neutral and proud targets. Table 2 presents observers' ratings of target prosociality divided up by target gender.

**Trust game behavior.** As with prosocial ratings, a  $3 \times 3$  ANOVA revealed that there was neither a significant effect of ethnicity,  $F(2, 641) = 0.72$ ,  $p = .49$ , nor a significant interaction,  $F(4, 1282) = 1.23$ ,  $p = .30$ , so we collapsed across ethnicity for the remainder of the analyses.<sup>10</sup> We then ran the same 3 (embarrassed target, proud target, neutral target)  $\times$  2 (male, female) ANOVA, but with resources entrusted as the dependent variable. The analysis yielded a significant main effect of expressed emotion,  $F(2, 1284) = 22.91$ ,  $p < .001$ ,  $\eta_p^2 = .03$ ; no main effect of gender,  $F(1, 642) = 0.002$ ,  $p = .97$ ; and no interaction effect,  $F(2, 1284) = 1.51$ ,  $p = .22$ . Simple comparisons revealed that the observers entrusted more of their resources to the embarrassed target ( $M = 6.26$ ,  $SD = 2.81$ ) than to either the neutral ( $M = 5.75$ ,  $SD = 2.81$ ),  $F(1, 642) = 37.22$ ,  $p < .001$ ,  $\eta_p^2 = .06$ , or proud target ( $M = 5.78$ ,  $SD = 2.83$ ),  $F(1, 642) = 29.04$ ,  $p < .001$ ,  $\eta_p^2 = .04$ . Table 2 presents resource allocations broken down by target's gender and expressed emotion.

**The mediating role of perceived prosociality.** Using multi-level modeling (prosocial rating within emotion expression within participant), we examined whether observers' ratings of targets' prosociality mediated the relationship between embarrassment display and behavior in the trust game. For the sake of parsimony, we present here the results for the ratings of embarrassed targets versus proud targets, with embarrassed coded as 1 and pride coded as 0.<sup>11</sup> First, emotion expression predicted allocating more tickets in the trust game,  $t(1300) = 5.40$ ,  $p < .001$ . Next, emotion expression predicted prosocial ratings,  $t(1349) = 8.44$ ,  $p < .001$ . Finally, entering both predictors simultaneously revealed that observers' prosocial ratings remained a significant predictor,  $t(1276) = 15.12$ ,  $p < .001$ , whereas emotion expression did not,  $t(1276) = 1.22$ ,  $p = .22$ . A Sobel test confirmed the mediating role of perceived prosociality ( $z = 7.33$ ,  $p < .001$ ), suggesting that observers entrusted more of their resources to the embarrassed targets because they perceived them as being more prosocial. This mediation analysis is portrayed in Figure 1.

## Discussion

In Study 4, observers not only recognized the prosocial intentions of the target displaying embarrassment but also acted on the

decoding of that display in systematic ways. Observers entrusted more of their resources to the embarrassed targets than to either neutral or proud targets. Furthermore, results of a mediation analysis suggested that they did so because they perceived the embarrassed targets to be more prosocial than the proud or neutral targets. These findings support our predictions that individuals who express embarrassment are viewed as more prosocial and that this signal leads observers to trust and affiliate with them more.

## Study 5

The first four studies demonstrate that individuals who display higher levels of embarrassment tend to be more prosocial and that observers attribute more prosocial intention and express greater trust toward individuals who express greater embarrassment. Importantly, the data we gathered in Studies 2, 3, and 4 involved participants judging individuals on video or in static photos, which may limit the external validity of our findings. Would displays of embarrassment evoke greater attributions of prosocial intention and trust in observers in the context of spontaneous social interactions? To answer this question, in Study 5 we conducted a live interaction study involving a participant and a confederate. In the study, the experimenter singled out and congratulated the confederate for getting a perfect score on an unusually difficult task. Such "overpraise" can plausibly elicit either embarrassment or pride displays (Keltner & Buswell, 1997; Lewis, 2006; Reissland, 1990; Webster, Duvall, Gaines, & Smith, 2003). Accordingly, the confederate either responded to being overpraised with a display of pride or embarrassment. The participant then engaged in a series of economic games with the confederate designed to measure trust. We predicted that participants would entrust more of their resources to confederates who expressed embarrassment. We also expected coding of the confederate's display to reveal a positive association between the intensity of the embarrassment expressed and participants' trust and affiliative behavior.

In addition to testing this central hypothesis, the nature of Study 5 allowed us to test potential alternative explanations for the preceding results. First, there is the possibility that rather than signaling prosociality, embarrassment might signal an individual's vulnerability or weakness. For example, participants in Study 4 may have given more resources in the trust game to embarrassed targets not because they perceived the targets as more prosocial, but because they perceived them to be too weak or vulnerable to behave exploitatively. To address this possibility, in Study 5 we gathered participants' observations of the embarrassed target's vulnerability to assess whether that perception, rather than perceived prosociality, drives the relationship between embarrassment displays and trust.

A second alternative interpretation of our prior results is that observers of an embarrassment display experience compassion and sympathy for the target, which would lead to more entrusting behavior; that is, embarrassment may trigger trusting behavior out

<sup>10</sup> Further analyses exploring whether prosocial ratings and giving in the trust game might vary due to an interaction between participant, and target ethnicity yielded no significant effects.

<sup>11</sup> Parallel results are obtained for mediation analyses comparing the embarrassed target with the neutral target.

Table 2  
*Means (and Standard Deviations) of Dependent Variables Divided up by Gender*

Variable	Embarrassed males	Proud males	Neutral males	Embarrassed females	Proud females	Neutral females
Prosocial ratings	4.46 <sub>a</sub> (0.86)	4.16 <sub>b</sub> (0.87)	4.01 <sub>c</sub> (0.95)	4.64 <sub>a</sub> (0.87)	4.31 <sub>b</sub> (0.98)	4.33 <sub>b</sub> (0.93)
Trust behavior	6.27 <sub>a</sub> (2.90)	5.84 <sub>b</sub> (2.87)	5.67 <sub>b</sub> (2.87)	6.24 <sub>a</sub> (2.71)	5.83 <sub>b</sub> (2.78)	5.72 <sub>b</sub> (2.75)

Note. Significant differences (critical  $\alpha < .05$ ) are denoted by differing subscripts.

of pity rather than inferred prosociality. If so, it would suggest that individuals act more prosocially toward embarrassed targets due to the emotions the targets evoke in the observer, and not because the embarrassment display conveys information about the target's underlying prosociality. Although we found that embarrassed targets were rated as more prosocial (Studies 2–4) and that such ratings drove the effect of the target's embarrassment display on participants' trust game behavior (Study 4), we have not examined the role feelings of compassion might have in explaining our findings. To address this, in Study 5 we asked participants to indicate how much compassion they felt for their interaction partner.

Third, Study 5's design also allowed us to examine the possibility that participants in Studies 2–4 mistakenly perceived our embarrassed targets as expressing shame, because these two emotions are closely related and have similar, though unique, displays (Haidt & Keltner, 1999; Keltner, 1995; Keltner & Buswell, 1997). We did this in two ways. First, we used an overpraise situation in this study in part because it would not logically elicit shame; that is, shame would be an inappropriate and unlikely emotional response to finding out one had just received a perfect score on a difficult exam. Second, along with coding of how much the confederate expressed embarrassment and pride, we also had coders code for intensity of confederates' shame expression. By doing so, we can compare ratings of embarrassment and shame intensity to see whether participants perceived the confederate's emotional expression as shame rather than embarrassment.

Finally, in the present study we chose to not have participants rate their interaction partner on prosociality prior to completing the behavioral dependent measures to avoid the possibility that participants in the embarrassment condition might behave more prosocially after giving these ratings due to a commitment and consistency dynamic.

## Method

**Participants.** Forty-eight undergraduates (11 men, 37 women) participated for credit in either a psychology or sociology course. The sample was diverse, with 31% European American, 27% Asian, 21% Latino, 6% Black, and 15% of participants not fitting into one of the previous categories.

**Procedure.** An experimental manipulation was used with three conditions (embarrassment, pride, and control). Upon arrival, the experimenter seated the participant and confederate across from one another at a table in a small room. As a cover story, the experimenter told the participants that the study involved examining how different evaluative situations influence social perceptions and attitudes. The experimenter assigned participants a "subjective opinion task" that had no right or wrong answers. This task

involved answering questions about their five favorite websites. Meanwhile, the experimenter assigned the confederate the "objective testing task," which involved completing a portion of a practice Graduate Record Exam that involved very difficult math and verbal problems.

After 8 min, the experimenter collected the participant's and confederate's written responses and had them complete a survey of their impressions of the tasks. In the embarrassment and pride conditions, the experimenter returned and enthusiastically announced that the confederate had received a perfect score on the objective testing task, something that had never been done in the study before. The experimenter excitedly congratulated the confederate for performing so well and placed the graded exam paper directly in front of the confederate in order to draw the participant's attention to the confederate. Depending on condition, the trained confederate reacted to the experimenter with either a prototypical embarrassment (i.e., gaze aversion, down and sideways head movements, inhibited smile, and nervous face touching) or a pride display (i.e., expanded posture, arms raised, low-intensity smile, and head tilted slightly upward). In the control condition, the experimenter collected the confederate's test but never reported the results.

The experimenter informed participants that they would next fill out questionnaires in separate rooms and interact with one another remotely during some economic exercises. The experimenter escorted the confederate out of the room. Participants then filled out a brief questionnaire, including several filler items and questions asking them to rate how *vulnerable* and *weak* they perceived their partner to be, as well as how much they felt *compassion* and *sympathy* for their partner. Participants responded to each of these questions using a 7-point scale ranging from 1 (*not at all*) to 7 (*a whole lot*). Responses to the *weak* and *vulnerable* items were averaged to form a *weakness composite* (Cronbach's  $\alpha = .73$ ), and the *compassion* and *sympathy* items were averaged to form a *compassion composite* (Cronbach's  $\alpha = .84$ ).

The computer next provided instructions on how to play two economic games: the trust game and the continuous prisoner's dilemma, both of which used tickets for a raffle for a \$50 prize as the game currency. The trust game instructions were identical to those described in Study 4, with participants serving as DM1.

The continuous prisoner's dilemma game (Barclay & Willer, 2007; Roberts & Renwick, 2003; Roberts & Sherratt, 1998) is modeled after the classic prisoner's dilemma and involves both players deciding how many of an allotted 10 raffle tickets they want to transfer to their interaction partner. Whatever number of tickets they choose to transfer is doubled by the experimenter. Players keep all tickets they choose not to transfer to their partner.

The game measures both participants' motivation to cooperate with a partner and trust that a partner will not be exploitative.

After completing the two economic exercises, participants were debriefed, paid, and thanked for their participation.

**Video coding.** Because the confederate's emotion display was ostensibly an unplanned event, it was not possible to ask participants to rate the confederate's emotional reaction to the test score feedback without revealing the true nature of the study. Instead, each session was filmed, and coders blind to study hypotheses rated confederates' emotion displays for either the period immediately after the test score feedback or, in the control condition, the period when the experimenter announced that the confederate and participant would move to separate rooms. Coders rated how much the confederate expressed *embarrassment* and *pride* on 7-point scales ranging from 1 (*not at all*) to 7 (*extremely*). Interrater reliability was high for both embarrassment (Cronbach's  $\alpha = .97$ ) and pride (Cronbach's  $\alpha = .98$ ), so the coders' ratings were combined to form composite measures of *embarrassment intensity* and *pride intensity*. In addition, coders rated how much the confederate expressed shame on the same scale (Cronbach's  $\alpha = .68$ ).

## Results

**Manipulation check.** A one-way ANOVA comparing ratings of embarrassment intensity across the three conditions yielded a significant effect of condition,  $F(2, 44) = 668.57, p < .001, \eta_p^2 = .97$ . Simple comparisons of the means for each condition confirmed that the confederate displayed significantly more embarrassment in the embarrassment condition ( $M = 4.52, SD = 0.63$ ) than in either the pride ( $M = 0.16, SD = 0.21$ ),  $t(44) = 30.93, p < .001, d = 9.29$ , or control condition ( $M = 0.00, SD = 0.00$ ),  $t(44) = 32.03, p < .001, d = 10.15$ . A similar analysis of ratings of pride intensity across the three conditions also yielded a significant effect,  $F(2, 44) = 454.46, p < .001, \eta_p^2 = .96$ . Simple comparisons demonstrated that the confederate displayed significantly more pride in the pride condition ( $M = 5.07, SD = 0.84$ ) than in either the embarrassment ( $M = 0.40, SD = 0.30$ ),  $t(44) = 25.34, p < .001, d = 7.40$ , or control condition ( $M = 0.02, SD = 0.09$ ),  $t(44) = 26.94, p < .001, d = 8.45$ . Finally, a paired samples  $t$  test comparing coder ratings of embarrassment and shame revealed that confederates in the embarrassment condition were rated as expressing shame significantly less ( $M = 1.38, SD = 0.97$ ) than embarrassment ( $M = 4.52, SD = 0.63$ ),  $t(16) = 14.93, p < .001, d = 7.47$ . Thus, it was apparent that the confederate successfully displayed the intended emotion in each condition.

**Trust game and continuous prisoner's dilemma.** A one-way ANOVA comparing the amount participants contributed across conditions in the trust game yielded a significant overall effect,  $F(2, 45) = 3.73, p < .05, \eta_p^2 = .14$ . Simple comparison analyses revealed that participants contributed significantly more to a target displaying embarrassment ( $M = 8.41, SD = 2.58$ ) than to either the target displaying pride ( $M = 6.40, SD = 2.20$ ),  $t(45) = 2.42, p < .05, d = 0.84$ , or the target in the control condition ( $M = 6.56, SD = 2.20$ ),  $t(45) = 2.26, p < .05, d = 0.77$ .

Likewise, a one-way ANOVA examining the effect of condition on resources transferred in the continuous prisoner's dilemma yielded a significant overall effect,  $F(2, 45) = 7.00, p < .01, \eta_p^2 = .24$ . Simple comparisons of the means revealed that participants sent significantly more resources to partners who had previously

expressed embarrassment ( $M = 8.53, SD = 2.72$ ) than to partners who previously expressed pride ( $M = 5.33, SD = 2.72$ ),  $t(45) = 3.45, p = .001, d = 1.18$ , or to partners in the control condition ( $M = 5.88, SD = 2.39$ ),  $t(45) = 3.45, p = .001, d = 1.04$ . These results show that participants interacting with a confederate who expressed embarrassment were more willing to invest in cooperation and felt greater trust that their interaction partner would not exploit them (see Figure 2).

**Embarrassment intensity and behavior.** As an ancillary test of our hypotheses, we examined whether the strength with which the confederate expressed embarrassment predicted participants' behavior in the trust and continuous prisoner's dilemma games. We predicted that variability in how intensely confederates displayed embarrassment *within* the embarrassment condition might be related to participants' levels of cooperation and trust. Correlation analyses examining the relationship between embarrassment intensity and both trust game and continuous prisoner's dilemma game contributions for participants within the embarrassment condition revealed strong positive associations (trust game:  $r = .58, p < .05$ ; continuous prisoner's dilemma:  $r = .60, p < .05$ ). Thus, not only did participants exposed to embarrassed confederates trust and cooperate with them more, they did so proportional to the intensity of the embarrassment expression displayed by the confederates.

**Weakness and compassion.** To examine whether perceptions of weakness or compassion might explain participants' increased contributions to the embarrassed targets in the economic games, we first conducted separate one-way ANOVAs examining whether our experimental manipulation influenced participants' ratings on these dimensions. Both ANOVAs yielded nonsignificant omnibus effects, suggesting that, compared with the proud or neutral targets, the embarrassed targets did not evoke greater perceptions of weakness,  $F(2, 45) = 0.41, p = .67$ , nor feelings of compassion,  $F(2, 45) = 1.82, p = .17$ . Additional correlational analyses revealed that perceptions of weakness and feelings of compassion felt by the participant were not significantly correlated with the number of raffle tickets participants in the embarrassment condition transferred to their partner in either the trust game or the continuous prisoner's dilemma game. Furthermore, the direction of all these correlations was negative ( $-.22 < rs < -.02, ps > .39$ ). These null results suggest that participants' heightened levels of trust and affiliation in the economic games were not due to beliefs that their partner was too weak to be exploitative, nor to feelings of compassion.

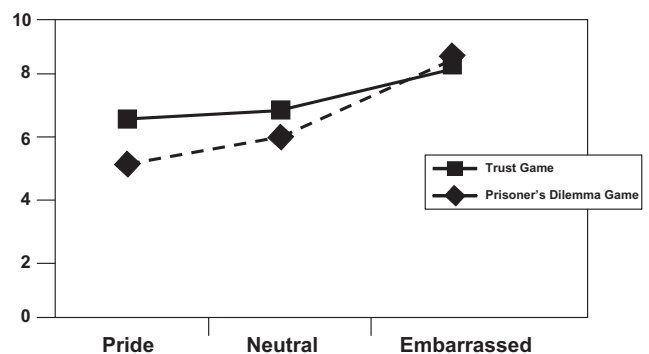


Figure 2. Resources allocated by participants in the Trust and Continuous Prisoner's Dilemma games as a function of experimental manipulation (Study 5).



## Discussion

Study 5 yielded parallel results to those found in Studies 2–4, although within a semistructured, live social interaction. Participants who interacted with another individual who spontaneously displayed embarrassment upon being overpraised were more trusting and cooperative toward that individual in economic games than if the individual displayed pride or no emotion. The perceived intensity of a target's embarrassment was also positively correlated with how trusting and cooperative participants were toward the target. The prosocial inferences and actions the spontaneous displays of embarrassment evoked in observers, furthermore, could not be attributed to observers' perceptions of vulnerability or feelings of compassion, consistent with our claim that embarrassment elicits trust and cooperation in others because it is a signal of the target's prosocial intention, rather than weakness or need.

### General Discussion

Embarrassment is a complex emotion, one that people find unpleasant and often go to great lengths to avoid. Given recent studies of embarrassment, and evolutionary theorizing about the origins of generosity, we hypothesized that embarrassment signals an individual's prosociality. The present investigation provides some of the first definitive evidence germane to this hypothesis. In Study 1, individuals who displayed more nonverbal embarrassment while telling a 4-min story and individuals who reported higher chronic tendencies for feeling embarrassed indeed demonstrated greater prosocial tendencies, both in terms of self-reported traits and behavior in an economic game with real money stakes. Studies 2 through 5 documented with different methodologies that observers infer an individual's prosociality from displays of embarrassment and, based on these inferences, expressed a greater willingness to affiliate with and trust the embarrassed targets.

Importantly, we also found that these results remained statistically significant when how much participants liked the targets was controlled for, suggesting that embarrassment specifically signals information about a target's prosociality and not just general likability. Furthermore, results of Studies 3 and 4 demonstrate that the effects of embarrassment expression were fully mediated by participants' ratings of the embarrassed targets being more prosocial, and Study 5 showed a positive relationship between the intensity of the embarrassment display and the extent to which observers trusted and cooperated with the embarrassed target. Additionally, by removing the presentation of any information about the social context in which the embarrassment display is perceived (Studies 3 and 4), our studies show that the embarrassment display itself is sufficient to evoke these inferences, thus eliminating confounds present in previous research.

Our study results also help address several potential alternative explanations. For instance, our studies aimed to ensure that it was embarrassment and not another self-conscious emotion (e.g., shame) that led perceivers to attribute prosocial intention and respond with trust and cooperation to targets. The confusion between shame and embarrassment is pervasive (e.g., Darwin, 1872/2009), and in some languages, there is only a single word for both emotions (Haidt & Keltner, 1999). However, past research has found strong evidence that individuals successfully differentiate embarrassment from shame (Keltner, 1995; Keltner & Buswell,

1996). Such research has shown that the prototypical displays of embarrassment and shame differ, with embarrassment involving moving the head to the side and smile inhibition, whereas shame involves lowering the head straight down and more of a frown (e.g., Keltner, 1995; Keltner & Buswell, 1997; Tangney et al., 1996). Moreover, even cultures that do not linguistically differentiate the two emotions still hold differing conceptualizations of the two emotions (Haidt & Keltner, 1999; van Dijk et al., 2009).

For the present research in particular, there is reason to believe that participants did not mistakenly view targets as expressing shame instead of embarrassment. Study 2's videos involved targets describing events that were embarrassing rather than shameful (e.g., tripping in public) and were, in fact, selected on the basis of coders' ratings of embarrassment. The still photos used in Studies 3 and 4 were validated as prototypical embarrassment displays, distinct from the canonical head and gaze movement down behaviors of shame (Keltner, 1995). And, in Study 5, coder ratings of shame and embarrassment indicated that observers perceived the confederate in the embarrassment condition as expressing embarrassment and not shame. Overall, then, we feel confident that the present research specifically investigated embarrassment as a signal of prosociality.<sup>12</sup>

Our findings also help address the possibility that our results were driven by emotional processes observers experienced upon witnessing embarrassment. Specifically, it is possible that embarrassment triggers certain emotional responses that, in turn, lead observers to view embarrassed targets as more prosocial and to trust them more. A likely emotional response that could play an influential role might be compassion because it is so closely linked with prosocial behavior (Goetz, Keltner, & Simon-Thomas, 2010). However, in Study 5, we found no differences in reported compassion in the embarrassment condition compared with the pride or neutral conditions, suggesting that feelings of compassion cannot explain our results.

Overall, our findings are consistent with Goffman's early analysis of the function of the embarrassment display, supporting the view that it is not a sign of social disorder but a display that helps restore fluid social interaction where it has gone awry. More specifically, our data are the first to reveal that people who feel and show intense embarrassment are indeed more prosocial (Study 1) and that this display triggers prosocial inferences and actions. These results, along with recent evidence concerning the prosocial inferences the blush evokes (de Jong, 1999; van Dijk et al., 2009), point to the prosocial qualities of this complex emotion.

More generally, the results from the present five studies are in keeping with a broader analysis of emotions, that emotions serve vital social functions (Condon & DeSteno, 2011; DeSteno, Bartlett, Baumann, Williams, & Dickens, 2010; Keltner & Haidt, 1999, 2001). Within social functional analyses of emotion, a broadly accepted assertion is that emotion displays provide critical information about a communicator's intentions and trigger systematic responses in observers. One more specific line of thought within this framework is that emotional displays evoke trust and cooperation (Boone & Buck, 2003; Frank, 1988; Trivers, 1971).

<sup>12</sup> It should also be noted that shame may be more of an inward and less of a social emotion, and therefore less likely to serve as a signal, considering unlike embarrassment, which hinges on other people being present, shame occurs regardless of whether others are present.

The present research strongly suggests that embarrassment displays are one potent elicitor of prosocial inferences, trust, and cooperative behavior.

### Limitations and Future Directions

Although the present studies speak to the prosocial underpinnings of embarrassment, they were also limited in various ways. In many of our studies (Studies 2–4), we placed participants in settings that may have artificially forced them to scrutinize targets. It is possible that the same inferences would not have been made spontaneously. Similarly, the way we operationalized trust and cooperation, using highly structured economic games, might be an artificial means for measuring these variables, and more ecologically valid measures might offer different insights. In general, because we did not collect field data or conduct observational studies, we cannot be sure that the effects we found would necessarily generalize to real-world settings. Also, because we only used pride as a comparison emotion, we cannot be certain how robust our effects would be were other emotions used as comparisons. Future research should address these limitations.

In addition, the results of our studies raise some important questions that future research might examine. For instance, although we feel confident that our study participants did not mistakenly perceive the embarrassment stimuli as shame, our data do not directly address the possibility that shame as well as embarrassment signals prosociality. It will be important for future research to answer whether shame also serves such a signaling function. Our own intuitions are that shame does not signal prosociality because of the information inherent in the shame display. A person observing a shame display is likely to infer that the target, although apologetic, committed some type of moral transgression that hurt others, because this seems to be the primary elicitor of shame (Tangney et al., 1996). Observers have demonstrated a strong tendency to search for and focus on negative and immoral tendencies (Chiappe et al., 2004; Martijn, Spears, Van Der Pligt, & Jakobs, 1992; Rozin & Royzman, 2001). Given these findings, we might expect observers to attribute some positive traits to individuals expressing shame (e.g., they are capable of feeling sorry), but not to trust them or be prosocially inclined in their actions.

Another unexplored question pertains to the cognitive processes engaged when observers react to an embarrassed target. That observers still rated embarrassed targets as prosocial even when they were only shown a still picture suggests that the context for embarrassment is not necessary for observers to infer that the target is prosocial. Such a finding may suggest that observers create their own contexts to understand why a target is expressing embarrassment. Alternatively, it is possible that observers have an automatic mental association between the embarrassment expression and perceptions of prosociality. Moreover, research into automatic recognition and reaction to emotions, such as pride and fear, has found that people not only recognize emotional expressions accurately at an implicit level, but they are also compelled to think and act in line with these emotions even when they are unaware that they saw them (Dimberg & Öhman, 1996; Dimberg, Thunberg, & Elmehed, 2000; Marsh & Ambady, 2007; Shariff & Tracy, 2009; Tracy & Robins, 2008). For instance, Marsh and Ambady (2007) found that individuals primed with fear expressions demonstrated greater sympathy and desire to help a pro-

taganist, even though clearly no danger was apparent and the prime was presented subliminally. Together, such results suggest that the default response is to automatically infer that the emotion is occurring in an appropriate context. To better understand the cognitive processing behind reactions to embarrassed faces, then, future research might measure implicit association with the embarrassment expression or use subliminal priming of embarrassment to test for an automatic association between embarrassment and prosociality.

The present set of studies also does not specifically explore what aspect(s) of prosociality embarrassment signals. Do observers perceive the embarrassed target as someone who is altruistic, who strives for fairness, who will provide help in time of need? On the basis of our theorizing and results, we would hypothesize that embarrassment signals many dimensions of prosociality. Overall, the composite measures of prosociality we used consist of multiple aspects of prosociality, including cooperation and generosity (Study 2), moral virtue and trustworthiness (Studies 2, 3, 4), and actual generosity (Studies 4 and 5). Future research, however, could also investigate how the embarrassment expression leads individual to be perceived as prosocial in other ways (e.g., as fair, egalitarian, empathic, and likely to reciprocate).

One might also wonder what other social consequences embarrassment might produce. An examination of instances in which individuals commonly display embarrassment may provide insight. Many individuals find interacting with a person they are attracted to embarrassing (Keltner & Anderson, 2000). It may be the case that embarrassment, by signaling individuals' prosociality, advertises their fidelity as a mate. Consistent with this, in Study 2 we found that observers rated the embarrassed targets as less antisocial—a composite that included ratings of how likely the target was to cheat on his or her significant other. In addition, we asked the participants from Study 1a who were recorded talking about a time they felt embarrassed a follow-up question: "What is your opinion of monogamy (i.e., having romantic interactions solely with one person)?" We found a significant association between embarrassed expression (controlling for how embarrassing their story was) and support for monogamy ( $r = .30, p < .05$ ). That embarrassment signals being a high-quality mate is consistent with observations that people when flirting display embarrassment (e.g., Keltner & Anderson, 2000). Future research might examine whether observers find embarrassed targets more attractive and also empirically establish that when people wish to attract or impress a potential mate, they increase their tendency to display embarrassment. Also, considering the increasing popularity of online dating websites, it would be interesting to examine whether daters whose profile pictures display embarrassment are more sought after by other users.

The present research also generates questions about when embarrassment does not signal prosociality. Although our research suggests that the default inference about embarrassed targets is that they are prosocial, there may be situations in which the mishap or transgression that evoked the embarrassment display is so egregious that observers disassociate the target's embarrassment from prosociality. It is also likely that embarrassment will not signal prosociality when expressed inappropriately in place of a more appropriate emotion. For instance, if a man observes an awe-inspiring sunrise and oddly, in response, expresses embarrassment, observers presumably would not infer that he is prosocial. Thus,

there is reason to believe that there are boundary conditions in which embarrassment fails to signal prosociality, and this stands out as an important area for future inquiry.

It is also important to note that the present studies were conducted within a Western European context (although a significant proportion of participants were Asian American). Self-conscious emotions clearly vary in their meaning, elaboration, and focus across different cultures, in particular in Asian and other more interdependent cultures (e.g., Goetz & Keltner, 2007). In light of these findings, it will be important to test the hypothesis that embarrassment is a reliable sign of prosociality in different cultures. Although evolutionary theory would suggest that the embarrassment–prosociality perception link should be generally present across cultures, social factors could also foster cultural variance in the strength of this association (e.g., Goetz & Keltner, 2007; Tracy & Matsumoto, 2008). In light of how prominent and focal the self-conscious emotions are in interdependent cultures, one might even expect a greater reliance on embarrassment displays as signs of prosociality in those cultures.

What about the blush, which tends to occur during embarrassment (Keltner & Buswell, 1997)?<sup>13</sup> Our present findings fit well with recent work on blushing (de Jong, 1999; van Dijk et al., 2009). However, the fact that our studies did not involve blushing targets suggests that the blush is not required for the display of embarrassment to serve as a signal of prosociality. Even so, recent research on the blush suggests that the embarrassment display and the blush together may have an additive effect, heightening the signaling value of embarrassment (van Dijk et al., 2009). If this is the case, then we would expect observers to perceive blushing embarrassed targets to be even more prosocial than nonblushing embarrassed targets and, in turn, trust and affiliate with these blushing targets more.

Additionally, as with all signaling arguments, it is important to assess how reliable the signal is. The fact that across four studies, we found evidence that observers perceive embarrassed individuals as more prosocial suggests that observers find the expression to be an honest and reliable signal. Moreover, Study 1a and 1b's findings that those who tend to feel and express embarrassment at higher levels were also more likely to behave prosocially, and self-report prosocial motivations suggests the reliability of the signal. However, from an evolutionary perspective, if it is a reliable signal, it should also be difficult to fake (Frank, 1988; Zahavi & Zahavi, 1997). There are good reasons to think that the embarrassment expression is difficult to fake: Several coordinated movements are involved in its characteristic display (averted gaze, compressed smile, head tilted away and down), and it is often accompanied by a blush. It is also possible that components of the embarrassment display, such as smile inhibition, use muscles that are beyond conscious control (W. M. Brown & Moore, 2002; Gazzaniga & Smylie, 1990). However, there is some reason to think that the expression can be at least partially faked. For example, the fact that we were able to effectively train confederates to express embarrassment shows that it is not impossible to feign it. Direct empirical research on this question is needed to establish whether and to what extent individuals can strategically express this emotion, and whether naïve observers can detect these expressions as insincere, unreliable indicators of an individual's prosociality. Just as interesting is to consider individual differences related to the ability to fake convincing nonverbal displays of

embarrassment, and what social outcomes (e.g., manipulation, deception) covary with this ability.

## Conclusion

Most of us view the experience of embarrassment as synonymous with an unpleasant visceral feeling. Even so, there is clear evidence that the emotion can also function in our favor, helping to advertise some of our better, more desirable qualities. Thus, even though embarrassment's valence is strongly negative, from a social-functionalist perspective, it seems that embarrassment serves important, positive ends, helping us navigate our way through the missteps of our sometimes awkward social lives.

<sup>13</sup> Some researchers point out that blushing makes embarrassment difficult to fake (e.g., de Jong, 1999; van Dijk et al., 2009). However, blushing usually occurs 15–20 s after a mishap (Sheam, Bergman, Hill, Abel, & Hinds, 1990), whereas the embarrassment display immediately follows the event, and blushing can accompany the expression of other emotions beside embarrassment (e.g., anger; Leary, Britt, Cutlip, & Templeton, 1992; Lewis, 1993). Thus, it cannot be blushing alone that authenticates the embarrassment display, though there is definitely reason to believe it plays a role (see Keltner & Buswell, 1997, for a review).

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(Appendix follows)

**Appendix**

**Measure of One’s Tendency to Feel Embarrassment (Study 1b)**

Instructions: In this questionnaire, you will read about situations that people might encounter in day-to-day life. As you read each scenario, try to imagine yourself in that situation. Then indicate the likelihood that you would feel embarrassed in this situation.

1.) You are walking on a crowded public street. Suddenly, your foot catches on the sidewalk and you awkwardly fling your body forward barely preventing yourself from falling over. Many people see you trip.

What is the likelihood that you would feel embarrassed in this situation?

*Very Unlikely* 1 2 3 4 5 6 7 *Very Likely*

2.) You are sitting in a crowded theater and accidentally fall asleep. Before you realize it, you snore loudly which causes you to wake yourself up, and you notice many people looking at you.

What is the likelihood that you would feel embarrassed in this situation?

*Very Unlikely* 1 2 3 4 5 6 7 *Very Likely*

3.) You see a person sitting on a bench in a park. He looks shabby and is holding out a cup. You walk up to him and put some coins in his cup, but it turns out he was not begging, but just a man sitting on the bench drinking coffee.

What is the likelihood that you would feel embarrassed in this situation?

*Very Unlikely* 1 2 3 4 5 6 7 *Very Likely*

4.) Your friend introduces you to a woman who has a protruding stomach. You assume she is pregnant and ask her when she is due. She informs you that she is not pregnant.

What is the likelihood that you would feel embarrassed in this situation?

*Very Unlikely* 1 2 3 4 5 6 7 *Very Likely*

5.) You are in a restaurant eating dinner and you reach to grab some bread, but you accidentally knock over the water glass causing it to break on the floor with a crash.

What is the likelihood that you would feel embarrassed in this situation?

*Very Unlikely* 1 2 3 4 5 6 7 *Very Likely*

6.) You give a presentation in front of a large audience. Everything goes well, but at the end you look down and notice that your zipper has been down the whole time.

What is the likelihood that you would feel embarrassed in this situation?

*Very Unlikely* 1 2 3 4 5 6 7 *Very Likely*

7.) You are at a friend’s house for a party. The party is outside on the patio. Your friend asks you to grab something from inside. You

don’t notice that the sliding glass door is closed and you walk right into it causing it to make a very loud rumbling noise. Everyone at the party looks over and sees what you’ve done.

What is the likelihood that you would feel embarrassed in this situation?

*Very Unlikely* 1 2 3 4 5 6 7 *Very Likely*

8.) You just got out of the shower and are drying yourself off in your room when you realize that your window shades are open and your neighbors, who are walking by, can see you naked.

What is the likelihood that you would feel embarrassed in this situation?

*Very Unlikely* 1 2 3 4 5 6 7 *Very Likely*

9.) You go to the gym one afternoon for a particularly intense workout. Afterwards, you talk to a few people before leaving. As you leave the gym, you notice that you forgot to use deodorant and smell terribly as a result. You realize that the people you spoke with must have noticed.

What is the likelihood that you would feel embarrassed in this situation?

*Very Unlikely* 1 2 3 4 5 6 7 *Very Likely*

10.) A coworker sends out a request for ideas for a new project. You write an email back to your coworker referring to an inside joke between the two of you that others would find very inappropriate. You realize after you sent it that you actually pressed reply all.

What is the likelihood that you would feel embarrassed in this situation?

*Very Unlikely* 1 2 3 4 5 6 7 *Very Likely*

11.) You give your mom a call to wish her a happy birthday. When she answers you enthusiastically wish her a happy birthday. She thanks you and informs you that, actually, her birthday was yesterday. You were a day late.

What is the likelihood that you would feel embarrassed in this situation?

*Very Unlikely* 1 2 3 4 5 6 7 *Very Likely*

12.) You run into a friend in a store who you haven’t seen for years. You ask her how her husband is doing. She informs you that she actually divorced him a year ago.

What is the likelihood that you would feel embarrassed in this situation?

*Very Unlikely* 1 2 3 4 5 6 7 *Very Likely*

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