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Status signals: Adaptive benefits of displaying and observing the nonverbal expressions of pride and shame

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A growing body of research suggests that pride and shame are associated with distinct, cross-culturally recognised nonverbal expressions, which are spontaneously displayed in situations of success and failure, respectively. Here, we review these findings, then offer a theoretical account of the adaptive benefits of these displays. We argue that both pride and shame expressions function as social signals that benefit both observers and expressers. Specifically, pride displays function to signal high status, which benefits displayers by according them deference from others, and benefits observers by affording them valuable information about social-learning opportunities. Shame displays function to appease others after a social transgression, which benefits displayers by allowing them to avoid punishment and negative appraisals, and observers by easing their identification of committed group members and followers.

Keywords: Pride; Shame; Emotion expression; Social signal.

"Of all the complex emotions", Darwin (1872/2007) wrote, "pride, perhaps, is the most plainly expressed." He went on to suggest that, "a proud man exhibits his sense of superiority over others by holding his head and body erect. He ... makes himself appear as large as possible, so that metaphorically he is said to be swollen or puffed up ... " (p. 276). Darwin (1872/2007) wrote about shame as well, and his description of it neatly illustrated his principle of antithesis—that certain expressions look the way they do because they emerged in opposition to other expressions. According to Darwin, shame expressions are characterised by "the head being averted or bent down, with the eyes wavering or turned askant" (p. 334). A prototypical shame expression should also include slumped posture, making it as antithetical as possible to pride.

Studies in recent years have supported all of these observations about pride and shame (e.g., Haidt & Keltner, 1999; Izard, 1971; Keltner, 1995; Tracy & Robins, 2004; Tracy & Robins, 2007, 2008b; Tracy, Robins, & Schriber, 2009). A growing body of evidence now suggests that both emotions are associated with distinct, cross-culturally recognised nonverbal expressions, which largely resemble Darwin's early observations. Also consistent with Darwin's functionalist account, new research suggests that the pride and shame expressions may have evolved to serve

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important adaptive functions. Here, we review evidence suggesting that both displays are adaptive social signals, which provide fitness benefits to those who display them and those who observe their presence in others. More specifically, the accumulated body of research suggests that the pride expression functions to signal high status, and the shame expression to signal a drop in status and a corresponding desire to appease onlookers after a social transgression. We argue that the automatic nonverbal communication of both of these messages ultimately benefits both senders and receivers.

WHAT ARE THE BEHAVIOURAL COMPONENTS OF THE PRIDE AND SHAME EXPRESSIONS?

Findings from numerous studies using a range of methods now demonstrate (quite conclusively in the case of pride) that both pride and shame are associated with reliably recognised nonverbal expressions. In contrast to so-called "basic" emotions, such as anger, fear, and happiness, which can be recognised from distinct configurations of facial muscle movements, the recognition of "self-conscious" emotions like pride and shame requires a combination of facial and body movements. The prototypical pride expression consists of an expanded and upright posture, head tilted slightly upward (about 20 degrees), a small smile, and arms either akimbo with hands on the hips or raised above the head with hands in fists (see Figure 1; Tracy & Robins, 2004, 2007). Consistent with Darwin's principle of antithesis, the shame expression consists of essentially the opposite set of behaviours: head tilted downward and lowered eye gaze, and, based on recent studies, slumped posture (see Figure 2; Izard, 1971; Keltner, 1995; Tracy & Matsumoto, 2008; Tracy et al., 2009).

Both of these displays are reliably recognised by individuals from educated, Western populations, and both have also been demonstrated to evoke at least above-chance recognition in non-Western, relatively isolated cultural groups.

Expression A

Expression B

Figure 1. *Prototypical pride expressions. Expression A is slightly better recognised than Expression B, but both are reliably identified as pride (reprinted from Tracy & Robins, 2004).*

Specifically, pride-recognition rates in educated North American and Western European samples typically range from about 80–90%, comparable to rates found for basic emotions such as happiness and sadness. Rates are lower in non-Western cultures, as they are for all emotions, but cross-cultural work has demonstrated reliable pride recognition in two highly isolated, traditional small-scale societies in disparate parts of the world: Burkina Faso and Fiji (Tracy & Robins, 2008b; Tracy, Shariff, Zhao, & Henrich, 2011). Given that the individuals in these samples are

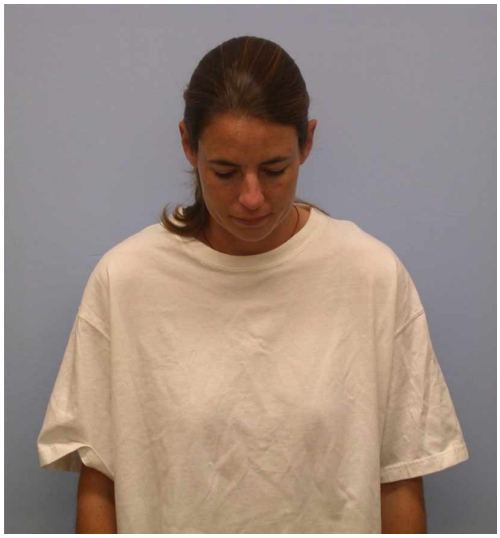

Figure 2. *Prototypical shame expression (reprinted from Tracy, Robins, & Schriber, 2009).*

unlikely to have learned about the pride expression from cross-cultural transmission (in both groups participants had never left the local community, and had no access to any kind of media—such as magazines, films, or television—from beyond their community), these findings suggest that pride recognition is likely to be universal. Also, like basic emotions, pride can be distinguished from other emotions quickly and efficiently, from a single snapshot image (Tracy & Robins, 2008a), and children acquire the ability to recognise pride at the same age (4 years old) at which they demonstrate accurate recognition (i.e., verbal labelling) for most other expressions (Tracy, Robins, & Lagattuta, 2005).

Shame, too, is reliably recognised and, at least in educated Western populations, distinguished from similar emotions such as embarrassment and sadness (both of which share features with shame; Babcock & Sabini, 1990; Keltner, 1995). The discrimination of shame from most other emotions can also occur rapidly and efficiently (Tracy & Robins, 2008a). Shame-recognition rates in North American samples are typically lower than those observed for pride, but, at 57% on average, they are comparable to rates often found for certain basic emotions such as anger and fear (Haidt & Keltner, 1999; Keltner, 1995; Tracy et al., 2009). Furthermore, one study found that shame recognition rates become slightly, though not significantly, higher when the display includes slumped posture in addition to downward head tilt (almost all other studies included only displays with downward head tilt, and no postural movement); it is possible that future studies using a wider range of targets and judges will find additional improvements in shame recognition when such bodily features are added (Tracy et al., 2009). Shame recognition rates are considerably lower in non-Western cultures, but recognition was significantly greater than chance in the same two traditional small-scale societies in Burkina Faso and Fiji where pride recognition was examined, providing at least initial evidence for the universality of shame displays (Tracy & Robins, 2008b; Tracy et al., 2011).

This accumulated evidence, for the reliable and cross-cultural recognition of the pride and shame expressions, suggests that both displays may pass the "gold standard" test typically accepted in the emotion literature for expressions to be considered evolved (e.g., Ekman, 1992). In this view, these expressions are likely to be adaptations (i.e., evolved to serve particular functions relevant to enhancing fitness), and, given that both send reliably perceived messages to observers, they are likely to serve functions relevant to communication. Below, we review recent research supporting this account, and suggest that both pride and shame expressions can be understood as social signals that provide adaptive benefits to displayers and perceivers.

ADAPTIVE BENEFITS OF *DISPLAYING* PRIDE: STATUS ACQUISITION

In all known human societies, even those with a strongly egalitarian structure, social status is unevenly distributed, such that status (i.e., influence over others) is a resource that varies among individuals (Ellis, 1995; Fried, 1967). Those who

are higher in social rank tend to have greater access to a wide range of valued resources, which in turn promotes fitness and well-being (Adler, Epel, Castellazzo, & Ickovics, 2000; Barkow, 1975; Cowlishaw & Dunbar, 1991; Ellis, 1995; Hill, 1984). Consequently, the ability to effectively communicate that one deserves higher status is likely to confer adaptive advantages.

Several lines of research are consistent with the expectation that pride is associated with the attainment of high status (see Tracy, Shariff, & Cheng, 2010, for a review). In one of the first studies to address this issue, it was found that individuals who were thought to be experiencing pride were assumed to be high status, suggesting an intuitive association between perceptions of pride and status (Tiedens, Ellsworth, & Mesquita, 2000). In subsequent studies, one of the mechanisms underlying this association was documented: subjective feelings of pride motivate achievement striving in socially valued domains, and socially valued achievements in turn boost perceived status. Indeed, pride feelings are reinforcing; there is no other emotion that not only makes individuals feel good, but makes them feel good *about themselves*. Supporting this account, Williams and DeSteno (2008) found that individuals manipulated to experience pride in response to task success were more likely to persevere at subsequent similar tasks, suggesting that the experience of pride directly promotes a desire and willingness to achieve. Similarly, Herrald and Tomaka (2002) found that participants manipulated to experience pride showed improved task performance both during and immediately following the pride experience, and Verbeke, Belschak, and Bagozzi (2004) found that salespeople who report a high likelihood of experiencing pride in response to work success tend to have a higher level of job performance, exert more effort at work, and report greater motivation toward productivity and success.

A second mechanism through which pride may promote high status is its associated nonverbal display. Behaviours consistent with the pride expression have been anecdotally and systematically observed in a number of nonhuman animals seeking to exert status or dominance. For example, high-ranking chimpanzees have been observed to show "inflated" or "bluff" displays after defeating a rival and prior to an agonistic encounter; these displays include behaviours such as arms raised and body expanded—two critical components of the human pride expression (de Waal, 1989; Martens, Tracy, Cheng, Parr, & Price, 2010). The chest-beating intimidation displays of mountain gorillas (Schaller, 1963) and the "strutting confident air" characteristic of dominant catarrhine monkeys (Maslow, 1936) also share behavioural similarities with the human pride expression. Given shared genetic ancestry between these animals and humans, these findings and observations suggest that conveying dominance may have been an early evolved function of human pride displays.

More direct evidence that human nonverbal pride expressions function to promote status attainment comes from a study showing that individuals manipulated to experience pride prior to engaging in a group task were subsequently perceived by others in the group and by outside observers as behaving in a more "dominant" manner. This finding suggests that something about the pride experience promotes interpersonal behaviours that increases perceived status (Williams & DeSteno, 2009). Other studies confirm that these critical interpersonal behaviours are likely to be components of the nonverbal pride expression; behaviours such as head tilt upward, erect posture, and arms stretched upward and out from the body are reliably displayed by preschool children who have won a fight (Strayer & Strayer, 1976), high-school students who have performed well on a class exam (Weisfeld & Beresford, 1982), and children as young as 3 years old in response to task success (Belsky, Domitrovich, & Crnic, 1997; Lewis, Alessandri, & Sullivan, 1992; Stipek, Recchia, & McClintic, 1992)—all situations that should promote higher social rank. Moreover, this tendency to display pride in response to a socially valued success generalises across a wide range of cultures; the expression was found to be spontaneously displayed in response to victory at the

Olympic Games by athletes from individualistic countries such as Canada and Estonia, collectivistic countries such as China and Iran, countries with "secular-rational" values such as Belgium and Finland, and countries with "traditional" values such as Ireland and Poland (Tracy & Matsumoto, 2008). These individuals were substantially more likely than Olympic Games losers to display all behaviours associated with the prototypical pride expression: head-tilt back, smile, arms extended out from the body or raised above the head, expanded posture, and torso pushed out. Perhaps most important, these findings were replicated in a sample of congenitally blind athletes participating in the Paralympic Games, who could not have learned to display pride through visual modelling. This study provides perhaps the strongest evidence in support of the suggestion that the pride display is a universal and innate behavioural response to status-raising events.

The most direct evidence that pride displays function to *communicate* high status comes from a series of studies that used several implicit measures—the Implicit Association Test (IAT; Greenwald & Banaji, 1995), the single-target variant of the IAT (Penke, Eichstaedt, & Asendorpf, 2006), and the Affect Misattribution Procedure (AMP; Payne, Cheng, Govorun, & Stewart, 2005) to directly address this question (Shariff & Tracy, 2009). These studies found that an automatic, unavoidable tendency to perceive pride displays as conveying high status emerged when pride was compared with low-status emotions—shame and embarrassment—and when it was compared with emotions not theoretically relevant to status (e.g., disgust and fear). This association also emerged when pride was compared with happiness and anger expressions, suggesting that the association between pride and high status cannot be attributed to the positive valence of the pride expression, nor to a tendency to view certain emotions, including pride and anger, as particularly powerful. In a final study, the implicit association between high status and pride emerged even when pride displays were compared with displays in which the actor's face was neutral but his arms were extended from his body, making him appear larger. This last finding demonstrates that the association between pride and high status cannot be attributed to specific artefacts of the expression's appearance, such as expanded body size or outstretched arms. Together, these studies demonstrate that the pride display uniquely and powerfully signals high status (effects were large; all Cohen's *d*s exceeded 1.0 and most were greater than 2.0).

It is noteworthy that these pride display/high status associations were measured implicitly, and ultimately shown to be automatic, in that they were unavoidable and occurred without intention (Bargh, 1994). The automaticity of the pride–high status association is relevant to our evolutionary account of pride displays; if the expression evolved as a pre-linguistic, pre-conscious form of communication, then its perception is a task that brains have been completing for millions of years, and likely occurs through low-level cognitive processes that can elicit adaptive behavioural responses without any need for conscious reflection (Bargh & Pietromonaco, 1982). If understanding pride's functional message required conscious deliberation, the expression would be less effective as a rapid source of information. More practically, these findings also suggest that the human ability to rapidly and involuntarily assess the social status of others may be due, in part, to our ability to automatically recognise and interpret displays of pride (Tracy & Robins, 2008b).

Indeed, other research suggests that the pride expression may shape status judgements more powerfully than one might expect. These studies suggest that the high-status signal automatically sent by the pride expression is often strong enough to overpower competing cues derived from situational context, even when that contextual information directly contradicts pride's high-status message (Shariff, Tracy, & Markusoff, in press). Specifically, a series of studies pit two cues—contextual status information about a target and pride expressions displayed by the target—against each other to test the strength of the pride expression on implicit and explicit status judgements in real-world contexts, where

conflicting cues are often present. In each study, participants were presented with two otherwise identical targets, each displaying different "context-incongruent" emotion expressions. That is, one target was portrayed as obviously high status (i.e., a skilled and respected soccer team captain), but was shown displaying a shame expression; in contrast, the other target was portrayed as obviously low status (i.e., the soccer team's unskilled, disrespected water boy) but was shown displaying pride. When participants were probed for their implicit status associations with each target, using the IAT and the AMP, the low-status but pride-displaying water boy was more strongly associated with high-status concepts than the high-status but shame-displaying captain, suggesting that in certain cases pride (and shame) expressions can outweigh contextual information in informing status judgements.

In a subsequent study, contextual information was made even stronger—one target was portrayed as a neatly groomed businessman wearing an expensive suit jacket, yet displaying shame, while the other was portrayed as an unclean, shabbily dressed homeless vagrant, who nonetheless displayed pride. Even with such a strong contextually derived status differential (the difference in status associations between the two targets, when both showed neutral expressions, was very large; $d = 5.85$), the pride display's status signal was still powerful enough to overcome the contextual difference. That is, participants' implicit status associations with the businessman showing shame were equal to those with the homeless man showing pride, suggesting that, in this case, emotion expressions nullified the strong effect of context. In subsequent studies examining explicit status judgements and real-world status-related decisions (i.e., hiring), pride and shame displays were again found to minimise or even negate the effects of context. This was the case despite the fact that participants were not only given time to consciously deliberate about their decisions, but were financially motivated to do so. Follow-up analyses suggested that participants were largely unaware of the impact of the emotion expressions on their decision making; they believed that their judgements were based on the relevant contextual information. Importantly, though pride was compared with shame in all of these studies, those that also included a neutral-display condition demonstrated that the differences found were largely driven by pride, rather than shame.

Together, these studies demonstrate that pride powerfully conveys high status, so much so that it can neutralise, and in certain cases override, contradicting contextual information in determining implicit status judgements. Moreover, even when people are given time to rationally deliberate over status-related judgements, displaying pride dramatically improves how high-status an individual appears.

Perhaps most important for our account of pride as an *evolved* status signal is evidence suggesting that the automatic association between pride displays and high-status concepts generalises across diverse populations. Tracy and colleagues (2011) replicated several of the IAT studies discussed above in a population of villagers living on a remote island in Fiji, essentially cut off from the rest of the global population. These studies found that the pride expression is strongly implicitly associated with high status among both highly educated North American university students and traditional small-scale society Fijian villagers, despite the fact that Fijians hold a set of cultural practices and rituals that suppress personal status displays by individuals of both high and low ascribed statuses. That is, Fijian cultural rules sharply prohibit any nonverbal behaviours that communicate an individual's belief that he or she deserves increased status, making Fiji a "tough test" of the question of whether pride is a universal status signal. If the pride display did *not* evolve as a status signal, there are few cultural explanations as to why status and pride would have become tightly interconnected in Fiji. As a result, the finding that pride displays are strongly and automatically associated with high status in Fiji provides compelling support for the evolutionary account.

It is noteworthy that, despite these apparent benefits, displaying pride does not come without

costs. Proverbs across numerous cultures hold that those who express pride are subsequently viewed in a negative light, at least in certain contexts (Tracy et al., 2010). Both Fijian villagers and Canadian undergraduates tend to *explicitly* rate pride displayers less positively than those who show happiness, and no higher in status than those who show a neutral expression (Tracy et al., 2011). Considering these costs, displaying pride is likely to be a risky strategy. In particular, showing it without clear evidence of its deservedness may lead to temporary gains in status but losses in social inclusion or respect. For this reason, the pride display may be considered a "costly signal", which, based on evolutionary accounts, increases its reliability. In other words, those who fake the display—show it in absence of actual successes—are likely to be disliked, and thus may face group rejection when it becomes clear that they do not, in fact, deserve high status. The threat of social disapproval or outright rejection raises the cost of pride displays and should (for the most part) deter would-be fakers. The social norms that prohibit inappropriate pride displays likely vary across cultures—for example, they may be more prominent in collectivistic cultures emphasising an interdependent view of self, where pride is considered a socially disengaging emotion (Kitayama, Markus, & Kurokawa, 2000; Mosquera, Manstead, & Fischer, 2000). However, if these norms emerged to counter the benefits that would otherwise accrue to those who can effectively fake the display, they may be found in cultures everywhere. Based on the two culturally disparate and geographically separated populations studied thus far in this context, this seems to be the case (Tracy et al., 2011).

ADAPTIVE BENEFITS OF *DISPLAYING* SHAME: APPEASING OTHERS

At first glance, it might seem counterintuitive to suggest that displaying shame, a negative and clearly low-status emotion, could be beneficial. Indeed, studies have shown that shame displays are automatically perceived as low status (Shariff & Tracy, 2009), and perceptions of low status can reduce an individual's fitness in a number of ways (e.g., Barkow, 1975; Cowlishaw & Dunbar, 1991; Leary, Tambor, Terdal, & Downs, 1995). Furthermore, shame is one of the most painful emotions to subjectively experience (Izard, 1971), probably in part because it involves feeling physically smaller and inferior to others (Tangney, 1993). Dispositional shame-proneness is positively associated with feelings of anger, resentment, and a tendency to blame others (Tangney, Wagner, Fletcher, & Gramzow, 1992), and with psychological maladjustment more broadly (Tangney, Wagner, & Gramzow, 1992). However, despite the many negative outcomes associated with experiencing shame, nonverbal displays of shame may nonetheless provide certain benefits to displayers, by functioning to appease onlookers after a social transgression (Keltner & Buswell, 1997).

Appeasement is essential to the long-term survival of interpersonal relationships, and to the maintenance of one's place within a social group (i.e., avoiding social rejection). Keltner, Young, and Buswell (1997) defined appeasement as "the process by which individuals placate or pacify others in situations of potential or actual conflict" (p. 360). When individuals violate social norms, they risk unpleasant reactions from others (e.g., anger, retaliation), and these reactions can be dangerous (Gilbert, 2007). By signalling to others that they recognise and regret their own unfavourable actions, social transgressors can effectively minimise the severity of negative responses. Appeasing higher status or more powerful others is a cost-efficient way of dealing with conflict; though it may come at the cost of social status, appeasing a more formidable opponent saves valuable resources that would be lost from fighting him or her. Furthermore, the time and energy saved by submitting and appeasing rather than fighting can be used for other pursuits that can enhance fitness, such as resource and mate acquisition and retention (Gangestad & Simpson, 2000). MacLean (1990) went so far as to call appeasing submissive displays "the most important

of all displays, because without [them] numerous individuals might not survive" (p. 235).

Several lines of research suggest that shame is one of a suite of emotions that function to appease and help individuals respond adaptively to failure or social transgression (Keltner, 1995). First, though dispositional proneness to shame may be maladaptive, in certain situations the negative experiential nature of momentary state shame is likely to be functional. These experiences may motivate transgressors to behave in accordance with social norms in the future, in order to avoid such unpleasant states (Fessler, 2007). In the same way that pride's pleasurable affective properties reinforce success, a single episode of shame's displeasurable properties may serve to prevent future failure (Barrett, 1995; Ferguson & Stegge, 1995; Kahan, 1997; Zahn-Waxler & Robinson, 1995).[1]

Second, the nonverbal expression associated with shame may have evolved as a functional social signal, to inform onlookers of (a) a transgressing individual's awareness that social norms have been violated, and (b) his or her respect for those norms. This communication likely increases perceptions of trustworthiness; the transgressor is choosing to acknowledge his or her error, rather than pretending it did not happen, and thus indicating his or her sincere acknowledgment of, and respect for, the transgressed norm. This is an important message to send after a transgression, as those who break a social rule without communicating an admission of norm violation may be perceived as disrespectful of the group's norms, and likely to violate other norms in the future. Thus, if social transgressors do not quickly convey their admission and apology, they risk being perceived as untrustworthy, antisocial, and potentially unfit for future social interactions (Gilbert, 2007). Consistent with this logic, researchers have argued that displaying shame indirectly promotes fitness by allowing for the formation of cooperative social ties that provide protection and allow for the sharing of resources (Barkow, 1989; Baumeister & Leary, 1995; Gilbert, 1997). Individuals who are perceived as trustworthy will be included in social groups, and will benefit from this membership by acquiring access to shared social and material resources.

A growing body of research is consistent with this account of shame displays as appeasement signals. First, behaviours associated with the human shame expression have been observed in a number of nonhuman animals during situations of submissive appeasement, suggesting that shame displays may have originated as submission displays shown by our nonhuman ancestors. Appeasement displays in nonhuman primates have received a good deal of research attention (e.g., de Waal, 1989); these behaviours are thought to prevent or reduce aggression in others and help re-establish social ties. Submissive chimpanzees have been observed to lower their bodies or crouch toward more dominant conspecifics during agonistic encounters (de Waal, 1989; van Hooff, 1973), and similar constricted body postures have been observed in the submissive displays of stumptail macaques, and hamadryas and yellow baboons (Adams, 1981; Kummer, 1968; Leresche, 1976; Silk, 1987).

In humans, shame displays tend to occur in response to events that should lower status and indicate an absence of threat, such as failure. In particular, shame behaviours such as head tilted downward and slumped posture or narrowed shoulders have been documented in response to failure or loss of a fight in children as young as 2.5–3 years old (Belsky et al., 1997; Lewis et al., 1992; Stipek et al., 1992), older children aged 3–10 (Ginsburg, 1980; Strayer & Strayer, 1976), high-school students (Weisfeld & Beresford, 1982), and adult Olympic athletes from a number of countries (Tracy & Matsumoto, 2008). One interesting finding that emerged from the last study was that though athletes were found to reliably narrow their chests and slump their shoulders—two components of the prototypical

[1]In contemporary human societies, guilt may serve the same function, and may do so even more effectively (Tangney & Dearing, 2002).

shame display—in response to Olympic defeat, this was the case only if they were from countries outside of North America and Western Europe. This cultural difference—the absence of failure-based shame displays by individuals from the most individualistic and self-expression valuing nations—suggests that just as Fijian cultural norms may discourage the expression of pride, other cultural groups may impose strict "display rules" on the appeasing, but status-lowering expression of shame. The finding that congenitally blind athletes across cultures—including several from Western nations—did reliably display shame in response to loss at the Paralympics supports this emotion-regulation interpretation, and suggests that shame displays may be an innate behavioural response to failure or social transgression, situations where an appeasing communicative signal would be adaptive.

More direct evidence for shame's appeasement function comes from several studies that have tested whether shame does, in fact, function to appease others in the face of failure. One such study asked participants to read hypothetical scenarios about a fictitious CEO who apologised for a negative ecological incident (i.e., a chemical spill) caused by his company. Participants who learned that the CEO verbally expressed feelings of shame while apologising were more satisfied with the apology than those who learned that he communicated guilt, or no emotion (Giner-Sorolla, Castano, Espinosa, & Brown, 2008). Similarly, Proeve and Howells (2006) found that participants applied weaker penalties to fictitious sex offenders who were described as feeling ashamed than to offenders described as feeling sad and remorseful, or as feeling no emotion. These studies support the hypothesis that shame serves an appeasing function, but are limited by their reliance on verbal descriptions of ashamed transgressors, leaving it unclear whether the shame nonverbal expression serves this function.

In fact, we are aware of only two studies that directly examined the appeasement capacity of the shame nonverbal display (Keltner et al., 1997). In a first study, these researchers found that participants were more sympathetic toward hypothetical students who failed a class presentation when they displayed shame than when they displayed embarrassment (embarrassment displays differ from shame displays in several ways; the former includes a smile and face touching, whereas in the latter there is clearly no smile; Keltner, 1995). Although this finding is informative, it is not clear whether the increase in sympathy would translate to less punitive actions directed toward students. Addressing this concern, these researchers next conducted a mock-trial study, in which they found that a hypothetical convicted drug dealer was judged as less guilty, and given a weaker penalty (i.e., briefer prison sentence and earlier parole) when displaying shame and embarrassment compared to contempt or a neutral expression. There is thus at least preliminary evidence suggesting shame displays are more appeasing than an absence of emotional displays or contemptuous displays. However, more research is needed in this area, as it is unclear whether shame displays, in particular, reduced punishment in the mock-jury study, and whether shame displays would more powerfully trigger forgiveness than other potentially appeasing displays such as sadness. It is also unclear whether shame displays serve an appeasing function across cultures. Future studies are thus needed to manipulate the various appeasing emotion expressions separately, in a range of populations, to determine the extent to which shame uniquely and universally functions to appease.

More broadly, although the extant body of evidence is most consistent with the appeasement-function account of shame displays, there is also another possible adaptive benefit to displaying shame. By openly deferring to higher status individuals, through the display of an expression readily recognised as conveying low-status and failure, individuals may effectively gain greater access to powerful and knowledgeable others who might otherwise be threatened by them (i.e., if they were perceived as potentially high-status competitors). Access to high-status prestigious individuals is crucial to social learning, given the important role that expert social models play in the transmission of cultural knowledge (Henrich

& Gil-White, 2001). Thus, the shame expression may be used to communicate low status for the purposes of deference, in addition to appeasement.

In sum, both pride and shame serve important—possibly essential—social signalling functions that benefit those who display these emotions. Pride displayers are automatically perceived as successful, high-status group members, and may be given greater access to valued resources as a result. Shame displayers are viewed as low-status group members who, despite a transgression, respect social norms, and need not be severely punished for their error or treated with the wariness accorded to high-status rivals. However, if these signals are adaptive, they must be functional for both displayers and observers; it is difficult to account for the evolution of a signal that benefits displayers but not those who reliably interpret and respond to it. Below, we discuss several new lines of research examining this side of the social-signal coin; the benefits of pride and shame displays accrued by those who readily understand them.

ADAPTIVE BENEFITS OF *OBSERVING* PRIDE: CUEING LEARNING OPPORTUNITIES

Humans learn, in large part, by copying the behaviours of others (Tomasello, 1999). However, given that others can be deceitful or simply unskilled, indiscriminate copying would be maladaptive. Indeed, studies suggest that from early childhood humans are systematically selective copiers, acquiring a vast array of essential skills and knowledge by copying conspecifics they know to be more knowledgeable than themselves (Bloom, 2000). Furthermore, evolutionary accounts of cultural learning suggest that natural selection likely favoured a tendency to copy the most skilled or knowledgeable group members (Henrich & Gil-White, 2001). This tendency may be motivated by innate biases in information acquisition, but it is not clear precisely how these mechanisms work. That is, how do people quickly and efficiently determine which social group members are skilled, knowledgeable, or wise, and thus should be copied?

Given the evidence reviewed above, that the pride expression is reliably recognised, spontaneously displayed in response to success, and automatically interpreted by individuals across cultures as a signal of high status, the pride display may also function to guide the social learning of observers. The automatic interpretation of pride displays may allow observers to effortlessly determine which group members are high status, likely to have knowledge or expertise, and thus would make good social models to copy. If this is the case, the ability to rapidly detect and understand the pride expression would benefit observers by biasing their social learning, such that individuals would selectively copy the behaviours and knowledge of those displaying pride.

Several lines of work provide evidence for this expectation. First, studies on persuasion and marketing have found that adults are more often persuaded by the arguments of experts—defined on the basis of education or other credentials—compared to non-experts, even when the arguments made are constant across persuaders (e.g., Biswas, Biswas, & Das, 2006; Hovland, Janis, & Kelley, 1953; Maddux & Rogers, 1980). This suggests that an individual's expertise is taken into account when determining from whom to learn. Second, and more directly supportive of our claim that pride displays might signal expertise, Birch, Akmal, and Frampton (2009) found that 2- to 3-year-old children choose to learn from an adult who demonstrates nonverbal cues of confidence more than one who demonstrates uncertainty. Specifically, when children observed confident and uncertain models selecting different objects to use to move a ball, the children were subsequently more likely to select the same object as the confident model when they were asked to move the ball. The confident model's nonverbal behaviour in this study was consistent with the pride expression (e.g., upright posture and chin up); however, the model was simply instructed to act

"knowledgeable", making it unclear which specific behaviours enacted were causally related to children's responses.[2]

Two new studies more directly addressed this issue, by testing whether the pride expression functions as a cue of expertise that biases the social learning of adults who observe it (Martens & Tracy, 2011). Specifically, we examined whether observers were more likely to acquire valued information from targets who displayed pride than from those who displayed other emotion expressions. Participants were financially motivated to correctly answer a difficult trivia question, after first viewing another participant—who was actually a confederate—answer the same question. For example, participants were asked, "Which number is closest to the actual value of pi (π)?", and given the response options: "(A) 3.141592652; (B) 3.141592635; (C) 3.141592654; (D) 3.141592665; or (E) 3.141592721". Confederates responded with B, but the correct answer in this case is C, so this design ensures that participants' tendency to copy or not copy targets would be driven entirely by the emotion condition, and not by any prior knowledge about the correct answer. By using very difficult trivia questions, we were able to assess whether those who display pride are copied in situations where knowledge is sought but not possessed. In the first study, participants were shown a photograph image of the confederate, with a caption stating the confederate's response to the trivia question. In the second study, participants watched a video of a live confederate answering the trivia question. The use of videos allowed us to manipulate dynamically displayed expressions, such that they would be perceived in an ecologically valid manner. Across both studies, using these different methods, the answers of confederates who displayed pride were copied significantly more frequently than those of confederates displaying other expressions, including happiness—a positive emotion, like pride, which tends to elicit higher liking and is *explicitly* judged higher in status than pride displays (Tracy et al., 2011)—as well as shame (which signals low status), and neutral (a display that is irrelevant to status). These findings thus suggest that when individuals are motivated to acquire the best information possible, they choose to learn from others who display pride. To the extent that pride displays are a reliable signal of knowledge—an important question for future research—these studies suggest that the expression is likely to benefit observers who automatically interpret it.

ADAPTIVE BENEFITS OF *OBSERVING* SHAME: IDENTIFYING COMMITTED GROUP MEMBERS AND FOLLOWERS

Considerably fewer studies have examined the adaptive benefits of observing shame. Given that shame displays are not as reliably or cross-culturally recognised as other emotions expressions (see Haidt & Keltner, 1999), it is possible that recognising these displays is, in fact, less ultimately beneficial compared to recognising displays of pride (or showing displays of shame). However, there are several benefits that would be likely to accrue to those who can effectively infer shame in others.

First, because shame displays communicate an individual's commitment to social norms and his or her trustworthiness, observers may use these displays to quickly decipher which group members would make the best interaction partners. Observers who do so would reap the many benefits associated with cooperating with a trustworthy, committed group member. Studies have shown that the benefits of cooperation are often multiplicative, not merely the sum of the efforts of those involved, making cooperation a highly adaptive social strategy for each separate individual involved (Fessler, 2007). For example, a

[2]If these results can be attributed to pride displays shown by confederates, it suggests that 3-year-old children implicitly understand the communicative meaning of the pride display despite not yet being able to explicitly identify it as pride (Tracy, Robins, & Lagattuta, 2005).

cooperative group can more successfully hunt for food than any individual group member could on his or her own (Boesch, 2005). Consequently, there may be numerous survival-related benefits to effectively observing shame in others, using it to infer their level of commitment to the group, and choosing interaction partners on this basis. It may be for this reason that a recent series of studies found shame expressions to be one of the most attractive emotion expressions shown by both men and women—more attractive than happiness in men, and pride in women (Tracy & Beall, 2011).

Another benefit likely accrued by observers who reliably identify others' shame displays is knowledge about the social hierarchy. For group cooperation to be effective, it needs to be clear who has the power to make decisions. Having a clearly delineated status hierarchy—that is, knowing who is a leader and who is a follower—aids coordination among group members (Van Vugt, Hogan, & Kaiser, 2008). Thus, a quick and reliable means for higher status leaders to identify subordinates who are likely to support their decisions rather than fight them, and follow orders rather than question them, allows for a streamlined decision-making process and more effective group. Knowing who subordinates are may also facilitate leaders' ability to keep followers happy, an essential part of maintaining influence (Van Vugt et al., 2008).

There is good reason to expect that shame displays do function as a reliable signal of followership, despite being recognised at lower rates than other emotion expressions. In the IAT studies discussed above, shame displays were found to automatically communicate low status, when shame was compared with pride, though not when it was compared with sadness, suggesting that, in contrast to pride, shame may not be a *unique* status signal (Shariff & Tracy, 2009). Furthermore, because of the social status costs associated with displaying shame, it is unlikely that the expression would be faked. That is, despite the potential positive benefits of displaying shame, the expression clearly has a negative impact on status perceptions, which tends to result in reduced fitness by endangering individuals to social rejection and making them less likely recipients of group resources. As a result, shame is presumably only displayed when *not* displaying it would be more costly (i.e., when a transgression has actually occurred, and the failure to respond with shame would lead to judgements of low trustworthiness).

Finally, reliably recognising shame displays in others can be vitally beneficial for conflict avoidance. Just as appeasing reduces conflict for those who display shame, it also reduces conflict for those who observe it. Even if observers are higher status than the shamed other, and thus likely to win an agonistic encounter, they will still save valuable resources by recognising that the other is willing to submit and appease, and thus that no fight is necessary. That is, knowing others' status can de-escalate conflict, which is highly adaptive (Kemeny, Gruenewald, & Dickerson, 2004).

FUTURE DIRECTIONS

The findings reviewed here suggest that the pride expression may be an adaptation for communicating critical social information between group members. Not only does the expression benefit displayers by increasing their perceived social status and, thus, their likely access to valuable resources, it also benefits observers, who learn which social group members they should turn to for valuable cultural knowledge. Together, these findings suggest that pride is the emotion underlying status acquisition and cultural learning. Much more than any other animal, humans rely on culture to acquire information (Richerson & Boyd, 2004), so a mechanism that distinguishes and attracts attention to higher status individuals, like pride displays, would be highly adaptive in humans (Henrich & Gil-White, 2001).

The findings reviewed here also suggest that the shame expression may be an adaptive social signal. By appeasing other group members after a social transgression, shame displays seem to communicate that the shamed individual is a committed and trustworthy group member. This message may benefit displayers by sparing them

from attack or other punishment, and it may benefit observers by informing them which group members would make good interaction partners and followers. Research is only beginning to address how these appeasement mechanisms function in humans, so this remains an important area for future research. However, given the frequency of deadly conflict in human history, and the importance of group cooperation and coordination, an evolved display that serves a function along these lines is likely to be adaptive.

That said, the theoretical account of shame presented here is somewhat incongruous with the large body of research demonstrating that shame is maladaptive (e.g., Tangney, Wagner, & Gramzow, 1992). One possible means of reconciling these seemingly discrepant literatures is to distinguish between a maladaptive dispositional proneness to experiencing shame, and the potentially adaptive momentary shame episodes that occur *in response* to specific situations of transgression. That is, just as sadness is generally adaptive outside of mood disorders (Nesse & Williams, 1996), it may be problematic to regularly and repeatedly experience and display shame across a wide range of situations, but nonetheless be beneficial to experience and display shame in certain, seldom occurring situations. Indeed, a social transgressor who regularly commits crimes or demonstrates some other social flaw, and always responds with shame, is unlikely to repeatedly benefit from his or her otherwise appeasing display. Much of this discussion is speculative, however, and is thus an area where future research is very much needed.

Another important direction for future research is to examine the original adaptive functions of the pride and shame expressions; that is, whether they emerged in humans or other mammals to serve the signalling functions discussed here, or whether they originally emerged to serve some other, more internal function. This is a question that is currently being addressed for other emotion expressions, and extant results are consistent with a "two-stage" account (Shariff & Tracy, 2011). According to this view, emotion expressions originated for largely physiological purposes that benefited the expresser, then later became co-opted to serve more interpersonal social communicative functions. For example, the disgust expression includes a constriction of the facial orifices, which has the physiological effect of reducing air intake. Based on this finding, Chapman and colleagues have argued that the expression originated to prevent the inhalation of noxious fumes—an adaptive response to potentially toxic environmental stimuli (Chapman, Kim, Susskind, & Anderson, 2009). After being regularly associated with such stimuli, disgust displays came to serve a secondary signalling function. Similarly, fear expressions function to widen the eyes, providing greater visual information about potential environmental threats (Susskind et al., 2008). Once fear displays became reliably associated with these threats, they likely came to serve a communicative function as well, informing onlookers of danger.

From this perspective, the pride and shame expressions may have originated to promote physiological benefits for displayers, and only later became co-opted for the communicative benefits described here. In particular, pride displays may have originally functioned to promote a set of physiological changes that would facilitate an individual's ability to maintain high status or dominance. Several studies suggest that posing pride has a number of internal effects that could, in fact, serve this purpose; holding the display has been found to promote increases in testosterone, airflow, and pain threshold (Bohns & Wiltermuth, 2012; Carney, Cuddy, & Yap, 2010; Martens, Tracy, & Anderson, 2011). All of these physiological changes would likely be advantageous for dominant individuals preparing to engage in an agonistic encounter, by physically readying them to cope with attack.

There is less evidence for a non-communicative physiological function of displaying shame; however, recent research suggests that the constricted posture associated with the display decreases airflow (Martens et al., 2011). A reduced ability to inhale oxygen in response to failure or social transgression could adaptively decrease individuals' motivation to engage in conflict with a

more formidable opponent, making this a potential early physiological benefit of shame. However, given the importance of the message simultaneously sent by that display (i.e., "I'm submitting!"), shame displays may represent a case where the two-stage account does not apply, and associated physiological changes are fitness-unrelated by-products.

In general, questions about both the early functional origins of these emotion expressions and their later more social functions are only beginning to be addressed empirically, making this an important area for future research. The theoretical account outlined here is, in our eyes, most consistent with the existing body of research, but studies are needed to further test a number of the ideas discussed. Most relevant to the viability of the two-stage account, studies should examine whether nonhuman dominance and submission displays that appear morphologically similar to human pride and shame are in fact homologous (i.e., the result of shared ancestry) or analogous (i.e., the result of convergent evolution with similar pressures leading to similar adaptive solutions); research along these lines will be essential for determining where, precisely, the early origins of these displays are to be found. Similarly, research is needed to test whether the presumed physiological benefits of posing these displays in fact promote real-world benefits; for example, whether increased airflow or testosterone resulting from pride displays promotes greater success or further improved status, and whether decreased airflow from shame displays decreases motivation.

Finally, given the evidence discussed above for the adaptive benefits of displaying both pride and shame, an important direction for future research is to consider why numerous cultural norms discourage both displays, with implicit or explicit display rules. Furthermore, why do these rules differ across cultures—that is, why do Fijians, for example, seem to discourage pride displays, while North Americans and Europeans avoid expressing shame even during failure? Regardless of what such future work uncovers, the research reviewed above allows us to conclude that both displays hold a deserving place in humans' evolved toolbox of nonverbal social signals.

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