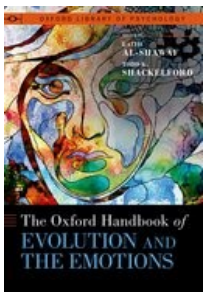

The Oxford Handbook of Evolution and the Emotions

Laith Al-Shawaf (ed.), Todd K. Shackelford (ed.)

https://doi.org/10.1093/oxfordhb/9780197544754.001.0001

Published: 2024 **Online ISBN:** 9780197544785 **Print ISBN:** 9780197544754

CHAPTER

7 Shame

Mitchell Landers, Daniel Sznycer, Laith Al-Shawaf

https://doi.org/10.1093/oxfordhb/9780197544754.013.8 Pages 145–162

Published: 22 May 2024

Abstract

A central adaptive problem for human ancestors was the potential or actual spread of reputationally damaging information about the self—information that would decrease the inclination of other group members to render assistance. The emotion of shame appears to be the solution engineered by natural selection to defend against this threat. The existing evidence suggests that shame is a neurocomputational program that orchestrates various elements of the cognitive architecture in the service of deterring the individual from making choices wherein the personal benefits are exceeded by the prospective costs of being devalued by others; preventing negative information about the self from reaching others; and minimizing the adverse effects of social devaluation when it occurs. While shame, like pain, causes personal suffering and sometimes leads to hostile behavior, an evolutionary psychological analysis suggests the shame system is elegantly designed to deter injurious choices and make the best of a bad situation.

Keywords: shame, emotion, adaptationism, audience effect, social evaluation

Subject: Clinical Psychology, Psychology

Series: Oxford Library of Psychology

Collection: Oxford Handbooks Online

Introduction

Shame appears to be a standard feature of human nature, found in all the world's cultures, past and present. But what is shame? And given the pain that shame causes to self and others, why do we have this emotion?

To answer this question, we take an evolutionary approach (Cosmides & Tooby, 2000; Tooby & Cosmides, 1992; Williams, 1966). Central to this approach is the view that humans, like other organisms, evolved via natural selection, a locally anti-entropic process that, through differential reproduction, turns heritable genetic differences into adaptations—design features that are retained because they reliably solved tasks tributary to survival or reproduction in ancestral environments (so-called adaptive problems). Human

nature thus consists of the set of adaptations and their byproducts developed over this time span (see, e.g., Al-Shawaf et al., 2020; Tooby & Cosmides, 1992, 2015). Therefore, it is possible to reverse-engineer an adaptation, guided by theories of the adaptive problem that shaped it and information about the structure of the ancestral environments in which it evolved (Tooby & Cosmides, 1992).

Reverse-Engineering Shame: The Adaptive Landscape

Our hunter-gatherer ancestors relied heavily on mutual aid (Burkart et al., 2009; Clutton-Brock, 2009; Kaplan et al., 2000; Tomasello et al., 2012). Research from behavioral ecology, hunter-gatherer archaeology, and contemporary forager societies indicates that our ↳ hominin ancestors evolved in environments characterized by high rates of mortality (Burger & Vaupel, 2012), resource scarcity (Hill & Hurtado, 1996), variance in food acquisition (Hill & Hurtado, 1996; Kaplan & Hill, 1985), disease and injury (Sugiyama, 2004), and aggression from predators and conspecifics (Keeley, 1997). Critically, and in contrast to most other animal species, humans have relied and still rely on the other members of their groups—including non-kin—for the assistance necessary for survival and reproduction (Clutton-Brock, 2009; Schrock et al., 2020).

p. 146

If these selection pressures characterized our species' evolution, then a central adaptive problem shaping human sociality would have been incentivizing one's mates, friends, allies, and fellow group members to render assistance in times of hunger, incapacitation, or interpersonal conflict (Sugiyama, 2004). Indeed, the extent to which other members of one's group valued an individual—and thus helped and refrained from exploiting her—would have had considerable impact on that individual's reproductive success (von Rueden & Jaeggi, 2016). Over the millennia, those individuals who attracted the goodwill and escaped the indifference, censure, and wrath of others would have left behind more copies of their genes. Natural selection would thus have differentially retained those neurocognitive variants (and their underlying genes) that reliably navigated the adaptive problems engendered by the importance of social valuation.

A growing body of evidence suggests that in humans, decisions about whether to deliver or deny help to others are computed by an array of specialized cognitive mechanisms that take in available information about an interaction partner and implement self–other welfare trade-off decisions—decisions that adaptively weigh the costs borne by the actor relative to the benefits received by the beneficiary (Delton & Robertson, 2016; Lieberman et al., 2007; Sznycer et al., 2019; Sznycer, De Smet, et al., 2016; Tooby et al., 2008). Key inputs that humans use to make welfare trade-off decisions include cues of genetic relatedness between self and other, the ability and willingness of the other to confer benefits on the self (e.g., skills, willingness to help), and the ability and willingness of the other to inflict costs on the self (e.g., physical formidability). The mind uses cue-based estimates of these inputs to compute the social value of a target individual to the self (e.g., as sibling, as mate, as friend) and how much weight to attach to the target's welfare when making welfare trade-off decisions.

These estimates of social value are used by internal regulatory mechanisms to guide behavior precisely because they contain useful information (Tooby et al., 2008). For example, self-esteem appears to reflect an internal estimation of the degree to which others acknowledge and include the self (Leary et al., 1995) and can therefore be thought of as barometer for tracking social inclusion. Self-esteem and other internal indices of an individual's value to others (e.g., social status; Mahadevan, 2018) are used by emotional, motivational, and reasoning systems to manage others' impressions of the self, to regain acceptance when one has been excluded, and so on.

Other people value or devalue us on the basis of our behaviors and characteristics. When others detect new information indicating that a target individual is more or less valuable than previously estimated, they

recalibrate how much they value the target—upward or downward—with correspondingly positive or negative effects on the target's fitness (Tooby et al., 2008).

The Information Threat Theory of Shame

When new information comes to light that reveals an individual to be less socially valuable to others (or less able to defend their interests) than previously supposed, audiences react by attaching less weight to that
p. 147 person's welfare. Over evolutionary time, individuals devalued ↳ in this manner would have been helped less and harmed more, incurring fitness costs. For instance, devalued individuals may be avoided, shunned, denied help, and ostracized (Hales et al., 2016; Kurzban & Leary, 2001). From the perspective of the discredited individual, the adaptive problem of being devalued can be the difference between life and death. This intense selection pressure would have selected for regulatory adaptations to prevent or minimize the spread of negative information about the self and the costs associated with any ensuing devaluation (Fessler, 1999; Gilbert, 1997; Sznycer, 2016; Tooby & Cosmides, 2008; Weisfeld & Dillon, 2012). Preventing social devaluation—and minimizing its costs when it did occur—was thus a major adaptive problem for our species.

This selection pressure is the backdrop for the *information threat theory of shame*: Shame is an adaptation that evolved to defend against information-triggered social devaluation (Sznycer, 2010, 2021; Sznycer, Tooby, et al., 2016; see also Baumeister & Tice, 1990; Fessler, 1999; Gilbert, 1997; Schlenker & Leary, 1982; Weisfeld & Dillon, 2012). If this hypothesis is correct, then we would expect shame to be well-designed to minimize and counteract the threat of devaluation. An adaptation engineered to defeat devaluation would be activated by the prospect of devaluation or by cues of actual devaluation. Once activated, it would coordinate psychology and behavior to: (1) deter the individual from taking courses of action that likely yield more costs from social devaluation than the personal benefits the action would yield; (2) limit the extent to which others learn or spread potentially discrediting information about the self; (3) minimize the degree and scope of any social devaluation that does occur; and, if devaluation occurs, (4) motivate behavior geared toward mitigating its costs.

Existing evidence is consistent with this information threat theory of shame. For instance, when faced with the prospect of devaluation, people feel pain (Eisenberger, 2012; McDonald & Leary, 2005), avoid behaving in ways that could exacerbate devaluation (De Hooge et al., 2008; Fehr & Gächter, 2000), and conceal reputationally damaging information (Rockenbach & Milinski, 2011; Sznycer et al., 2015). When others discover this information, the shamed individual withdraws (Leach & Cidam, 2015), appeases (Keltner et al., 1997), apologizes (Schniter et al., 2013), and produces a phylogenetically ancient nonverbal display (Fessler, 1999; Weisfeld & Dillon, 2012; Landers & Sznycer, 2022) of subordination—signaling that less weight on his or her welfare is expected and acceptable (Gilbert, 2000b). Compared to other displays (e.g., the anger display) or the absence of any display, the shame display effectively mollifies those who observed the transgression (Keltner et al., 1997). Furthermore, the threat of being devalued by others upregulates pro-inflammatory cytokines (Dickerson et al., 2009)—a possible advantage given the increased likelihood of being punished or ostracized and developing an infection, the decreased likelihood of being cared for by others if one gets sick, or both. Importantly, experimentally manipulating (prospective or actual) devaluation reliably elicits shame (Dickerson et al., 2008; Robertson et al., 2018; Smith et al., 2002), even when an individual knows that she hasn't done anything wrong (Robertson et al., 2018). In other words, it is not objective wrongdoing, but rather the *threat of social devaluation*, that is the true trigger of shame (Robertson et al., 2018). As expected if shame is an adaptation designed to limit the threat of (negative) information spread, common knowledge (as opposed to lower levels of knowledge) between the individual and the audience exacerbates shame in the individual (Thomas et al., 2018). Shame sometimes leads to appeasement and enhanced cooperation (De Hooge et al., 2008; Gausel et al., 2016)—an expected response

for a system designed to restore one's positive image as a cooperative partner in the minds of others (Leary & Kowalski, 1990). However, shame can also lead to verbal and physical aggression (Fessler, 2001; Tangney
p. 148 et al., 1992; Zhu et al., 2018)—expected if one's cooperative overtures land on ↳ deaf ears, if one has limited capacity to generate the benefits that would appease the audience, or if one has the requisite formidability to intimidate the audience.

The information threat theory can also make sense of context effects (see Al-Shawaf et al., 2021). For instance, from the fact that shame is tuned to the devaluative threat from others, it follows that certain acts or traits are likely to elicit devaluation only among specific individuals or groups. For example, an individual's refusal to help a rival of his best friend may cause devaluation by the rival but not by the individual's best friend (see Lukaszewski & Roney, 2010), whereas other acts or traits (e.g., incompetence, dishonesty) may produce fitness costs for broader audiences and thus elicit more widespread reputational harm (and shame). A well-designed shame system—one designed to mitigate these consequences—should therefore be sensitive to partner-choice effects (Baumard & Sperber, 2013; Noë & Hammerstein, 1995; Tooby & Cosmides, 1996) and aim to minimize the total costs of devaluation arising from one's social world. Data assessing the relationship between shame and partner choice are scarce, but the existing evidence is consistent with this argument (Feinberg et al., 2014; Shaw et al., 2014; Sznycer et al., 2012).

The adaptive problem of being devalued is both general (cues of being devalued lead to being helped less) and specific (cues of being devalued are particularly problematic if one has low social support to begin with). Given this, the shame system is expected to incorporate both a general architecture and open parameters that can account for differences in shame across situations, individuals, and populations (Sznycer et al., 2012). For instance, individuals with many socially valued characteristics can impose more costs on others before being devalued and can also more effectively limit the cost of devaluation when it does occur. As expected from this fact, individuals with such characteristics are less prone to shame (Sznycer et al., 2012). Likewise, variation in the characteristics of the audience is expected to elicit variation in the degree of shame activation. A more aggressively formidable audience, for instance, should be more shame-provoking than a weaker audience, all else being equal (see Fessler, 2007). Also, to the extent that devaluation can be mitigated by forming new alliances, the information threat theory predicts that shame-proneness should partly depend on the ease with which one can form new relationships to compensate for those that have been lost. In line with this prediction, when shame responses between Western and Eastern populations[1] were compared, research found that perception of relational mobility—the extent to which people feel they can easily form new relationships—strongly moderated the difference between the two cultures (Sznycer et al., 2012).

Shame is part of a functionally interlinked nexus of social emotions that also includes anger, gratitude, pride, guilt, and perhaps others. Although by hypothesis each of these emotions has a distinct evolved function, each also fundamentally depends on an evolved welfare trade-off psychology (Al-Shawaf et al., 2016; Al-Shawaf & Lewis, 2017; Delton & Robertson, 2012; Schniter et al., 2020; Scrivner et al., Chapter 4 in this volume; Sznycer, Cosmides, & Tooby, 2017; Sznycer & Lukaszewski, 2019; Sznycer et al., 2021; Tooby & Cosmides, 2008; Tooby et al., 2008). For example, the function of anger is to orchestrate bargaining tactics geared toward raising the weight another person places on the welfare of the self when cues indicate that the weight is insufficient; the function of gratitude is to consolidate cooperation with a partner and is activated when the system detects that a target values the welfare of the focal individual; the function of pride is to motivate the individual to capitalize on reputational gains by publicizing (and achieving) traits or acts that enhance valuation by others; the function of shame, or so we argue, is to limit the extent to which an audience reduces the weight placed on one's welfare; and the function of guilt is to prevent (before the
p. 149 fact) or ↳ remedy (after the fact) situations in which one placed too little weight on another's welfare (often unintentionally), irrespective of whether the other person will ever find out.

While guilt and shame are somewhat similar to each other, an adaptationist approach can distinguish them functionally while also outlining when they should co-activate. With guilt, the outcome to be avoided is *imposing harm on others we value*; even in cases where our misdeeds are never discovered, the harm we have done remains. In shame, the outcome to be avoided is *being devalued by others.* Thus, while one can simultaneously feel both shame and guilt about the same act, the functions, internal recalibrations, activating cues, and behavioral outputs are distinct. For example, consider the predicament of an unfaithful spouse: One who felt both guilt and shame about infidelity might refrain from it, while one who felt shame but not guilt might continue to be unfaithful but conceal it. We expect that future work will profitably shed light on similarities and differences between shame, guilt, and other social emotions (see Keltner, 1996; Smith et al., 2002; Tangney et al., 1996; Tangney et al., 1992).

Mapping Shame

The information threat theory not only can explain known facts about shame, but also can be used to generate novel, testable hypotheses. Given that the structure of shame reflects the statistical complex of regularities that crafted it over evolutionary time, knowledge of those regularities (and inferences derived from knowing them) can lead to novel a priori predictions about shame's unique design features. We describe an application of this logic next.

As previously discussed, a well-engineered shame system should activate not only reactively but also prospectively, before any devaluation occurs, to minimize the negative fallout that would result from an action likely to bring about social devaluation (Leary, 2015; Sommerville et al., 2013; Sznycer, Tooby, et al., 2016; see also Fehr & Gächter, 2000). In prospective mode, the system must estimate the magnitude of audience devaluation following any socially devalued act (e.g., lying), as well as the likelihood of being detected by an audience, and weigh the resultant expected cost against the payoff of the act to the actor himself (e.g., the benefit derived by the actor's lying). Performing this computation is necessary if the actor is going to forgo net costly courses of action in favor of more profitable ones, irrespective of whether such courses of action are desirable from the perspective of others or not. Furthermore, this calculation must be made *before* one decides to engage in the act itself—the shame system would be severely handicapped indeed if one needed to experience the devaluation of others first in order to know (ex-post) the magnitude of that devaluation. On this account, then, the anticipatory feeling of shame is a reflection of the shame system's internal prediction of the cost of audience devaluation that would occur if one were to engage in a socially disfavored act (Sznycer, Tooby, et al., 2016; see also Crocket et al., 2017). Because it is precisely calibrated to forecast audience devaluation—and in contrast with analyses emphasizing bias in affective forecasting (Wilson & Gilbert, 2005)—such an internal signal of anticipatory shame is predicted to allow an individual to avoid two possible errors: (1) shame under-activation, producing insufficient measures aimed at minimizing devaluation (and thus excessive devaluation from others), and (2) shame over-activation, deterring the individual from taking actions that yield more direct benefits than the costs they'd incur from audience devaluation.

The above analysis suggests that the shame system may be designed (1) to accurately forecast the precise magnitude of devaluation those in one's social ecology would express if one behaved in a way that others disvalue, and (2) to generate an internal signal of anticipatory shame in proportion to that forecast. To test this prediction, Sznycer and colleagues presented participants with an array of potentially devaluative acts or traits and asked them to rate, in a between-subjects design, either the intensity of shame they would feel
p. 150 if the act or trait were ↳ true of them, or how negatively they would view another individual if the act or trait were true of the other individual (a measure of audience devaluation). The stimuli included acts and traits such as stinginess, unattractiveness, and poor table manners. Across three industrial societies (United States, India, and Israel), the intensity of anticipatory shame closely tracked the magnitude of devaluation

expressed by local audiences in each country (Figure 7.1A–c). Moreover, shame in each country tracked the devaluation ratings in the other two countries, suggesting that both the structure and the content of shame are (in part) universal (Sznycer, Tooby, et al., 2016; see also Cohen et al., 2020; Durkee et al., 2019). Additional studies showed that this effect is specific to shame: other negatively valenced emotions did *not* track audience devaluation (Sznycer, Tooby, et al., 2016). Further, in a replication of this work in 15 traditional small-scale societies, shame was found to track the devaluation expressed by audiences both within and between each of those 15 societies (Sznycer, Xygalatas, Agey, et al., 2018; Figure 7.1D–r). This suggests that shame's tracking of audience devaluation is a pan-human adaptation and not merely a product of cultural contact or convergent cultural evolution.

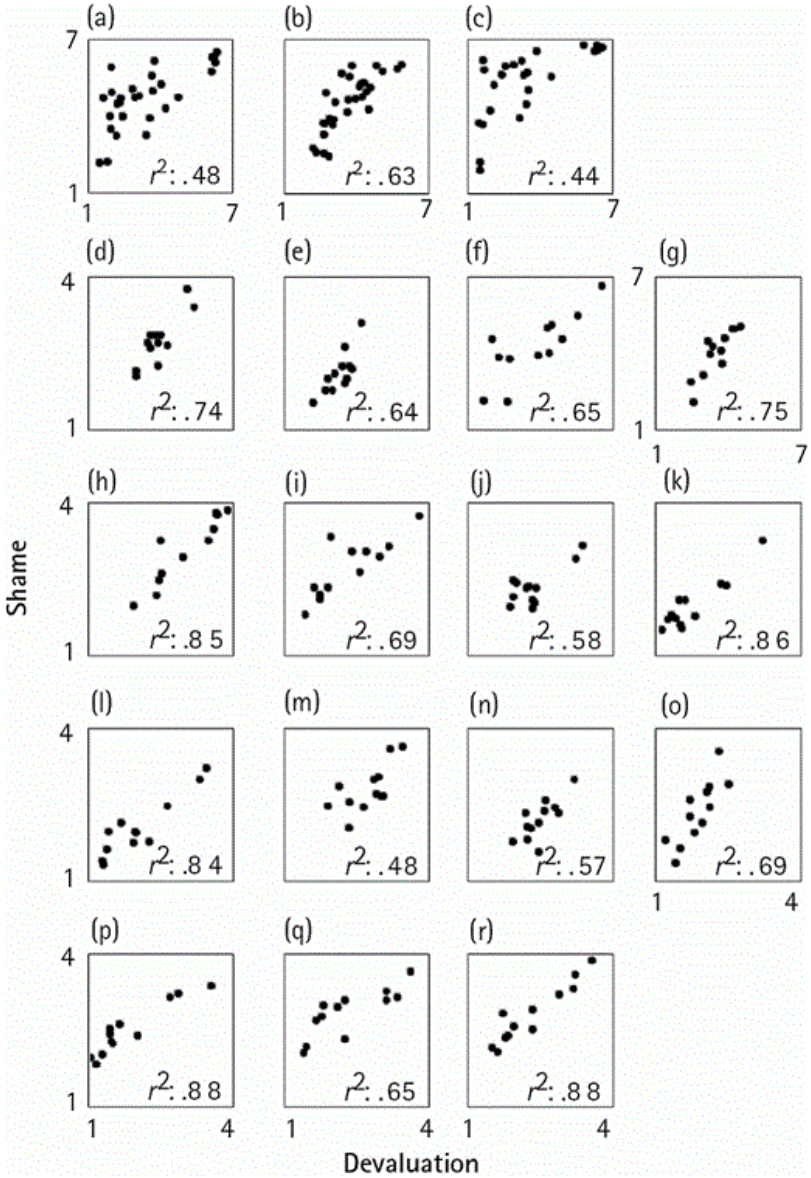

Figure 7.1. The intensity of anticipatory shame tracks the intensity of audience devaluation. Scatterplots A–C: Data from three mass societies (adapted from Sznycer et al., 2016. Shame closely tracks the threat of devaluation by others, even across cultures. *Proceedings of the National Academy of Sciences, 113*(10), 2625–2630). The stimuli were a set of brief hypothetical scenarios describing socially devalued actions and personal characteristics. The scenarios were phrased either from the perspective of the focal individual (e.g., "You are not generous with others"; *shame* condition) or from the perspective of an observer vis-à-vis the focal individual (e.g., "He is not generous with others"; *audience* condition; between-subjects design). For each scenario, participants rated either their feeling of shame if they took those actions or had those characteristics (*shame*), or the degree to which they would negatively view the individual in the scenarios if the individual took those actions or had those characteristics (*audience*). Each point represents the mean shame rating and mean devaluation rating of one scenario.

Data from (N of scenarios): A: United States (29); B: India (29); C: Israel (24). Scatterplots D–R: Data from 15 small-scale societies (adapted from Sznycer et al., 2018. Cross-cultural invariances in the architecture of shame. *Proceedings of the National Academy of Sciences, 115*(39), 9702–9707). Same experimental design, but with a set of 12 scenarios that were different from the ones used in Sznycer et al. (2016). D: Cotopaxi, Ecuador; E: Morona-Santiago, Ecuador; F: Coquimbo, Chile; G: Drâa-Tafilalet, Morocco; H: Enugu, Nigeria; I: Chalkidiki, Greece; J: Ikland, Uganda; K: Le Morne, Mauritius; L: La Gaulette, Mauritius; M: Dhading, Nepal; N: Tuva, Russia; O: Khövsgöl, Mongolia; P: Shaanxi, China; Q: Farming Communities, Japan; R: Fishing Communities, Japan. In all cases, shame ratings and devaluation ratings were given by different participants. Effect sizes: r^2 linear.

The Evolved Concept of Audience

The shame system may have co-evolved with, and in its operation may interact with, specialized concepts. One such concept may be *audience*

A dissection of the *audience* concept with respect to shame has been hampered by several factors. Some researchers doubt that the threat of being devalued by others is causally linked to shame (e.g., Tangney et al., 2007a). Moreover, even among those who do acknowledge the importance of audience in shame, it has rarely been acknowledged that the same event may be viewed as affording negative social value, neutral social value, or positive social value by different observers—that is, that social valuation is individual and relationship-specific (Lukaszewski & Roney, 2010). As Darwin put it, "persons who are exceedingly shy are rarely shy in the presence of those with whom they are quite familiar, and of whose good opinion and sympathy they are perfectly assured—for instance, a girl in the presence of her mother" (1872, p. 331). Indeed, shame mobilizes conditionally as a function of properties of the audience, the focal (ashamed) individual, and the nature of the relationship between them. For example, pulling a blasphemous prank in a church elicits more shame when caught by one's pious mother than by irreligious friends. And when controlling for the audience's piety, the prank elicits more shame when caught by one's pious mother than by an annoying, pious stepmother (Sznycer, Tooby, et al., in prep.).

We distinguish between three subconcepts relevant to the role of audience in the operation of shame: (1) the firsthand audience, (2) the perceived audience, and (3) the effective audience. The firsthand audience is the set of individuals who have (sufficient) firsthand perceptual access to the devaluative situation—regardless of whether the cues they register lead them to devalue the focal individual. These are the people who, for example, see or hear an act of theft firsthand. For instance, three individuals may have witnessed an act of theft committed by person X (they are firsthand audiences), even when person X believes (falsely) that no one saw him. The perceived audience is the set of individuals the focal individual perceives as having (sufficient) firsthand perceptual access to the devaluative situation (regardless of whether the focal individual thinks these observers will devalue him). That is, from the perspective of person X who committed theft, the perceived audience represents *those individuals whom X believes saw or heard what X did firsthand*. The effective audience includes both (a) those individuals in the perceived audience who, in X's estimation, are likely to devalue him, and (b) those individuals outside the perceived audience whom X

p. 151 believes *would* socially devalue ↳

p. 152 ↳

him if they learned about the socially disvalued act. From the standpoint of shame, individuals outside the effective audience are either allies or neutral parties, a distinction determined by whether the focal individual (X) expects their interests to align with his or not. Meanwhile, the effective audience can be disaggregated further by the anticipated extent of devaluation, relative status, formidability, and so on. We expect for each of these sub-concepts (except the firsthand audience) to have psychological counterparts in the cognitive architecture of shame.

The proper target of the shame system is the effective audience (i.e., aiming to reduce the likelihood of, or costs emanating from, devaluation by this set of individuals). However, two complications arise for a system designed to counter this devaluation: (1) language enables the transfer of information over time and space, and (2) the perceived audience may include allies or neutral parties who are themselves allied with individuals in the effective audience but who lack firsthand perceptual knowledge of the discrediting act. Thus, even if the perceived audience is exclusively made up of allies or neutral parties, there is a non-zero risk that information about the situation will reach others who *will* subsequently devalue the focal individual. Such a risk persists even when neutral parties or allies in the perceived audience have no incentive to disclose the devaluative information to third parties. And so one may expect the shame system

to operate even when the focal individual is observed only by neutrals or allies in the perceived audience: In the event that information about a discrediting act does leak to the effective audience, the shame system will have already activated prospectively to motivate behaviors designed to limit costs from any possible devaluation. Indeed, a focal individual facing the threat of devaluation from third parties is uniquely positioned, given his direct knowledge of the discrediting act, to make the case that the discrediting act is (a) low cost to others and/or (b) of high benefit to the self (either of which, if believed, would lessen the extent to which the effective audience downregulates their valuation of the focal individual (Sell, Sznycer, Al-Shawaf, et al., 2017). Likewise, the focal individual is well positioned to request that allies and neutral parties not divulge the discrediting act by making the case that (c) divulging would not benefit them much, (d) that the focal individual has or could develop a mutually beneficial relationship with those allies or neutral parties who observed the disfavored act, and (e) that divulging the information would harm the focal individual and thus all of their mutually beneficial relationships. Therefore, to prevent discrediting information from spreading, and to maintain control over the narrative applied to any devaluative information leaked, the shame system is expected to aim to silence perceived audiences, even in social configurations that only involve allies and neutral parties.

We note, however, that human alliances shift dynamically: A moral panic may turn those who were once neutrals and allies into members of the effective audience; those in the effective audience today may be bought off or otherwise converted into allies or neutrals—the shame system is expected to be sensitive to these dynamics and to respond accordingly. Lastly, those individuals in the firsthand audience who go unrecognized as part of the perceived audience (that is, those individuals who are aware of the discrediting information but unknown to the focal individual) represent a potential threat. Therefore, we expect the shame system to upregulate attention to exhaustively identify the full extent of the perceived audience. Importantly, however, there is a trade-off between this goal and the goal of avoiding drawing (negative) attention from the firsthand audience (see Rapee & Heimberg, 1997).

Alternative Theories of Shame

According to an alternative theory, shame is an intrapersonal emotion (as opposed to an interpersonal one) that activates in response to how individuals understand, or "attribute," events relevant to their identity goals (i.e., who a person wants to be) (Lewis, 1971; Tangney, 1990; ↳ Tracy & Robins, 2004). The nature of these attributions then specifies which of several emotions is elicited. For instance, when an event occurs that is incongruent with one's identity goals (e.g., failing an exam, when one aspires to be a good student) and one attributes this failure to specific, unstable, or controllable aspects of the self (e.g., not having studied enough), then guilt is activated (Tangney, 1990; Tracy & Robins, 2004). Alternatively, when one makes global, stable, or uncontrollable attributions (e.g., feeling unintelligent), shame is triggered instead (Tangney, 1990; Tracy & Robins, 2004). And when one achieves identity-goal-*congruent* outcomes (e.g., acing an exam, when one aspires to be a good student), achievement-oriented pride or hubris is activated, depending upon whether the attributions are specific and unstable (pride) or global and stable (hubris) (Tracy & Robins, 2004). Because attributional theories consider self-conscious emotions like shame to be intrapersonal emotions, they view the properties of these emotions—everything from how they are elicited to the behavior they induce—to depend critically upon how individuals construe and evaluate their own successes and failures.

p. 153

However, as discussed above, recent theory and data suggest that shame and other so-called self-conscious emotions have interpersonal adaptive functions (De Hooge et al., 2011; Fessler, 1999; Gilbert, 1997; Leary, 2015; Rodriguez Mosquera, 2018; Sznycer, Tooby, et al., 2016; Sznycer, Xygalatas, Agey, et al., 2018; Weisfeld & Dillon, 2012) and matching neurocognitive architectures that realize those functions (Sznycer, Tooby, et al., 2016; Sznycer, Cosmides, et al., 2017). Self-conscious emotions appear to be information-

processing adaptations tailored by natural selection because they helped our human ancestors navigate challenges and opportunities related to social valuation—the disposition to attend to others, associate with others, or trade personal welfare in favor of the welfare of others (Sznycer, 2019). But if this is so, then why are different suites of attributions, as the attributional theories point to, systematically associated with different self-conscious emotions? While this remains an open question, one possibility is that these consciously accessible *intra*personal thoughts are effects of neurocognitive mechanisms with *inter*personal adaptive functions. Consider the case of shame. The information threat theory suggests that when a student fails an exam, his shame system activates if he perceives that he will be devalued for failing and will face costs associated with that devaluation. After such an event, he may consciously experience "feeling dumb" or "feeling like a failure." But these stable, uncontrollable attributions are not the *cause* of his shame—rather, they are merely the consciously accessed outputs of a complex cognitive program that is functionally designed to mitigate reputational damage.

Alternatively, to the extent that self-consciousness is an adaptation, it must somehow have generated the fitness benefits that would have fueled its continued replication over evolutionary time, and interpersonal functions constitute possible causal pathways for these benefits. It is plausible, for instance, that shame's self-consciousness is the result of various recalibrational and decision-making procedures designed to counter devaluation. The following are a few possible candidate procedures. After a potentially devaluing event, the shame system must decide whether to mount a comprehensive response to possible devaluation or to feign normalcy—in some situations, displaying shame may signal culpability when playing dumb would be more cost-effective (Landers & Sznycer, 2022). In either case, the shame system may increase precautions to escape detection in the future, and when mounting a response, may upregulate the weight attached to the welfare of others (at least in public), downgrade estimates of the value of one's own welfare to others (see Leary et al., 1995), and correspondingly downgrade the level of entitlement one displays in future encounters with the effective audience.

These internal recalibrations may underlie the self-conscious phenomenology of shame. The self-blaming
p. 154 of shame (a focus of attributional analyses), too, may support interpersonal ↳ functions. For instance, it has been argued that self-blame can be a defensive tactic: a signal of submission that deters attacks (Gilbert, 2016). Consistent with this, women in abusive relationships often blame themselves, but tend to blame their partners after they exit the relationship (Gilbert, 2016). Self-blame may also function to probe for others' assent (or dissent) and thus for changes in others' evaluations of the self, to elicit sympathy or forgiveness, or to feign incompetence so as to exempt oneself from costly future responsibilities (Driscoll, 1989; see Tanaka et al., 2015; Zhu et al., 2017).

An interpersonal approach can also explain differences between the self-conscious experiences associated with shame and guilt—the focus of a great deal of attributional research (Tangney, 1990; Tangney & Dearing, 2002; Tangney et al., 1996; Tracy & Robins, 2004). Recall that according to attributional theories, negative outcomes are attributed to the global, stable, and uncontrollable self in shame, and to specific, unstable, and controllable aspects of the self in guilt. In contrast, an evolutionary perspective suggests that these differences may be rooted in the operation of distinct shame and guilt programs, which in turn reflect the different adaptive problems posed by devaluation (shame) and insufficient valuation of valuable others (guilt). For instance, the feeling that shame is less controllable than guilt may be explained by the fact that countering another's devaluation (shame) is less within an individual's control than upregulating one's valuation of another's welfare (guilt). Second, the fact that guilt follows unintentional expressions of low valuation (McGraw, 1987), whereas shame tracks devaluation from others (e.g., for being a thief, or for being physically unattractive, etc.) may explain why shame-inducing characteristics, more than guilt-inducing actions, are more likely to reflect stable features of an individual. Third, shame-triggering events tend to have broader interpersonal ramifications than guilt-triggering events do—and this may explain the feeling that shame-triggering events are more "global" and less "specific" than guilt-relevant events are.

For instance, consider failing to help a friend in need, an omission that may trigger both shame and guilt. The adaptive problem handled by guilt is solved, and guilt's operation interrupted, once the guilty individual upregulates her valuation and behavior toward her friend. In contrast, the failure to help may cause the friend, as well as unaffected third parties, to devalue the shamed individual (Pedersen et al., 2018). That is, the problem that the shame system must tackle *may or may not* be solved once the directly affected party undoes her devaluation. This may explain why shame feels more global and all-encompassing than guilt. Future research will profitably explore the relationship between attributional and adaptationist accounts of shame and other social emotions (see Landers et al., in press).

Attributional theories raise two additional puzzles concerning (1) shame's adaptiveness and (2) its effects. Because shame is sometimes associated with undesirable outcomes such as aggression (Elison et al., 2014; Tangney et al., 1992), attributional researchers view shame as a maladaptive emotion (Tangney, 1991; Tangney et al., 2007b). But this is perplexing, because maladaptive traits are filtered out by natural selection, and yet the shame system persists in the human mind/brain. Furthermore, shame can motivate both aggressive (Elison et al., 2014; Tangney et al., 1992) and cooperative behaviors (De Hooge, 2008; Gausel et al., 2016; Tangney et al., 2014). For example, shame can motivate confessions or denials, approach or avoidance (De Hooge et al., 2018; Gausel et al., 2016), as well as appeasement or externalization of blame (Gilbert, 2000a; Griffin et al., 2016; Tangney, 1990). Why does shame deliver such functionally antithetical behaviors? These puzzles dissolve when considering that social devaluation can be countered through cooperative means or through cunning and force, depending upon the circumstances. When cooperation is a cost-effective means to rehabilitate one's social value in the eyes of others, shame will motivate those behaviors. Otherwise, if such paths are unavailable, the shame system can switch to ignoble methods
p. 155 (Elison et al., 2014; ↳ Tangney et al., 1992)—an expected outcome when social benefits can be secured more cost-effectively through deceit and aggression (Fessler, 1999; Hales et al., 2016; Sell et al., 2016; Weisfeld & Dillon, 2012). Recent findings support this hypothesis. For instance, experimentally inducing shame causes dispositionally selfish people to cooperate more as second players in a sequential Prisoner's Dilemma game (when their decision to defect would be seen by others as unambiguously selfish). By contrast, in a simultaneous Prisoner's Dilemma game, where defection can instead be attributed to a benign fear of being defected on, inducing shame among dispositionally selfish people has no effect on cooperation (Declerk et al., 2014). That is, shame can inhibit defection, but shame can also allow for or promote defection when the situation affords cover. In each case, the behavioral output of shame is tailored to solving the problem of devaluation in that situation.

Or consider another example: When allocators in a money-allocation game offer little money to recipients who are ashamed, those recipients express less anger compared to recipients in a no-shame control condition. However, this is only the case when the recipients know that the low allocators know *why* the recipients are ashamed; when recipients know that the low allocators *do not know* about the shame-causing event, the ashamed recipients express *more* anger (Zhu et al., 2018). In other words, the shame system at once tolerates poor treatment when others are aware of one's low social value, but angrily protests the same poor treatment when it can be plausibly portrayed as undeserved, unjust, or unfair (Sell, Sznycer, Al-Shawaf, et al., 2017). In line with this conditional logic, a recent meta-analysis concluded that "shame had a positive link to constructive approach when failure […] or social image […] was more reparable. In contrast, shame had a negative link to constructive approach when failure was less reparable" (Leach & Cidam, 2015, p. 983). While a comprehensive decision tree detailing shame's behavioral outputs has yet to be fully elucidated, an analysis of the existing evidence suggests that shame functions in an exquisitely cost-effective and context-sensitive manner to diminish social devaluation by deploying tactics that are appropriately tailored to the situation at hand. Attributional researchers have termed shame "ugly" because of its association with externalization of blame and aggression, but that self-same "ugly" experience reflects the transmission of devaluation-relevant information among a set of mental mechanisms operating in a coordinated fashion to minimize the costs of resultant devaluation. For as ugly an experience as shame

often is, having no defense against social devaluation is certainly uglier. Moreover, although shame is aversive, it serves an adaptive function, joining the ranks of other aversive-but-adaptive emotions such as disgust (see Lieberman et al., 2007), anger (see Sell, Sznycer, Al-Shawaf, et al., 2017), pain (see Walters & Williams, 2019), and jealousy (see Krems et al., 2020; Lewis et al., Chapter 21 in this volume).

Another alternative theory of shame, an evolutionary theory, views shame through the lens of social norms. For example, it has been argued that violating a norm triggers shame, while acting in accordance with a norm triggers pride (Elster, 1989; Fessler, 1999). Once activated, pride and shame function to reward conformity and punish nonconformity to social norms (Bicchieri, 2005; Fessler, 1999, 2007) to maintain access to the social benefits of cooperation and coordination. Like attributional theories, norm-based accounts of shame tend to be observationally adequate. For example, the statement "Scott feels shame because (people found that) he violated the norm against theft" appears to fit the data and seems to make intuitive sense. Furthermore, we know that punishment can cause any type of behavior to be evolutionarily stable (Boyd & Richerson, 1992), and, consistent with this, people moralize a huge number of vastly different things.

However, the linchpin concept of "norm" begs the question. Common technical definitions of "norm"
p. 156 include, e.g., "cultural understandings concerning the normal, appropriate, ↳ or reasonable way to behave" (Fessler, 2007) and "normative standards of behavior that are enforced by informal social sanctions" (Fehr & Fischbacher, 2004). Such definitions are often tautological, vague, or both. Indeed, existing social norms have little in common beyond the fact *that they are normative*. For instance, because of kin selection, it is a cooperation "norm" to help close kin; because of selection against inbreeding depression, it is a sex "norm" to avoid sex with close kin (Lieberman et al., 2007). The word "norm" is ultimately superfluous when more direct causal explanations of the phenomena of interest are available, and where such explanations do not yet exist, it merely serves as a placeholder explanation until they do. Like phlogiston and miasma, "norm" describes and labels a phenomenon, but fails to illuminate it in a causal, explanatory manner. Indeed, it is not an accident that definitions of "norm" are vague and tautological; they are vague and tautological by necessity because we have reduced a wide variety of norms, prescribing and proscribing a wide variety of behaviors, to their lone common denominator: normativeness —the explanandum in the first place.

Norm-based theories of self-conscious emotions face other problems as well. First, lumping all sources of shame (or pride) under the "norm" rubric obscures important differences between them. Consider the shame that arises from, e.g., stinginess vs. low productivity vs. low physical attractiveness vs. eating with the wrong fork. In theory, a well-designed shame system should discriminate functionally among such antecedent conditions—and in practice, it does (De Hooge et al., 2011; Leach & Cidam, 2015). Second, absent any a priori, independently derived, or specific benchmark for determining what is and is not a norm, there is little to prevent one from postulating norms post hoc to explain observed occurrences of shame (or pride). This invites circular reasoning and compromises the falsifiability of norm-based theories. Third, hiding, lying, and worse are part of shame's modus operandi (Declerck et al., 2014; Elison et al., 2014; Fessler, 2001; Sznycer et al., 2015; Tangney, 1990; Tangney et al., 1992; Zhu et al., 2018); in other words, shame often appears to flout norms, not promote conformity with them. Fourth, norms are often thought to be culture-specific. However, there are important cross-cultural commonalities in what people value and disvalue in others and in what elicits pride and shame (Sznycer et al., 2016; Sznycer, Al-Shawaf, et al., 2017; Sznycer & Cohen, 2021; Sznycer & Patrick, 2020; Sznycer, Xygalatas, Alami, et al., 2018; Sznycer, Xygalatas, Agey, et al., 2018). Thus, these emotions seem to be governed less by culture-specific "norms" than by a species-wide architecture of social valuation comprising both invariant principles and open parameters that are filled in with specific, local information during development. Fifth, even if "norm" were provisionally accepted as an adequate explanation, the further question would still remain: Why does that norm exist?

Shame and Criminal Law

Much of human sociality can be understood in terms of the operations of mental procedures that compute, store, recalibrate, and employ internal estimates of social value in decision-making and behavior (Cosmides & Tooby, 2006; Lieberman & Patrick, 2018; Tooby & Cosmides, 1992; see also Boyer, 2018). By hypothesis, the flow of goods (e.g., rewards) and bads (e.g., punishments) in human societies is regulated to an important extent by the interlinked psychologies of social evaluation and shame (as well as other social emotions). If this is so, then signatures of the shame system and the psychology for socially valuing and disvaluing other people should be discernible in, for example, societal institutions (see, e.g., Scrivner et al., Chapter 4 in this volume). This approach has been applied to analyze various phenomena, including war (Hall et al., 2021; Sell et al., 2009; Sell, Sznycer, Cosmides, et al., 2017), resource redistribution (Petersen et al., 2012; Sznycer, Lopez Seal, et al., 2017), and ↳ the criminal justice system (Jones & Goldsmith, 2005; Lieberman & Linke, 2007; Robinson & Kurzban, 2007; Sznycer & Patrick, 2020; Williams et al., 2019).

p. 157

To illustrate how large-scale sociality may arise from "simple" two-person games of social valuation, consider a hypothetical case of a Bayaka forager who steals cassava root from his neighbor. His neighbor, if he were to find out who stole his cassava root, might devalue the thief and want to punish him; and the thief, were he to find out the victim had identified him, might feel shame. Might this two-person model make up the cognitive core not just of interpersonal devaluation and shame, but also of lawmaking in different cultures and historical eras? The answer seems to be "yes." In recent research, participants from the United States and India rated each of various offenses drawn from actual criminal codes: a contemporary criminal code from the United States, an ancient criminal code from China (Tang Code, 1,400 years old), and an ancient criminal code from Mesopotamia (Laws of Eshnunna, 3,800 years ago, one of the most ancient known legal codes) (Sznycer & Patrick, 2020). Participants saw the offenses but not their corresponding legal punishments. The data indicated that participants' ratings of the severity of these offenses (e.g., devaluation of a neighbor who commits the offense, moral wrongness of the offense) correlated positively with the actual punishments dictated for the offenses by the legal codes, both contemporary and ancient. Ratings of perpetrator shame (if participants committed those offenses) also correlated positively with the actual legal punishments (Sznycer & Patrick, 2020). Importantly, participants were excluded from analyses if they reported college training in law or if they could guess the code from which the offenses were drawn. Thus, laypeople with no training in law and no explicit technical knowledge about criminal law—both in general and specifically related to the legal codes evaluated in the study—can nevertheless recreate criminal law using their evaluative intuitions and their feelings of shame. The fact that people can intuitively recreate laws from cultures remote in space and time suggests remarkable universality in the structure and content of social evaluations and shame.

Concluding Remarks

Shame is often portrayed as an ugly and maladaptive emotion. However, if one refocuses the analysis on its adaptive function, shame is a well-designed solution to the much uglier problem of information-triggered social devaluation. Shame, far from being a pathology or a poor substitute for guilt, is an elegantly engineered adaptation packed with features that counter a serious problem endemic to our species' history of sociality. Shame is not the province of East Asian cultures or of people with maladaptive attributional styles. Shame is part and parcel of universal human nature—and we're all the better for it.

Note

1. Japanese and other East Asian populations have been characterized as “shame cultures” (Benedict, 2005).

References

Al-Shawaf, L., Conroy-Beam, D., Asao, K., & Buss, D. M. (2016). Human emotions: An evolutionary psychological perspective. *Emotion Review*, *8*(2), 173–186.
Google Scholar WorldCat

Al-Shawaf, L., & Lewis, D. M. (2017). Evolutionary psychology and the emotions. In V. Zeigler-Hill & T. Shackelford (Eds.), *Encyclopedia of personality and individual differences* (pp. 1–10). Springer.
Google Scholar Google Preview WorldCat COPAC

Al-Shawaf, L., Lewis, D. M., Barbaro, N., & Wehbe, Y. S. (2020). The products of evolution: Conceptual distinctions, evidentiary criteria, and empirical examples. In Todd K. Shackelford (Eds.), *The Sage handbook of evolutionary psychology: Foundations of evolutionary psychology* (pp. 70–95). SAGE Publications.
Google Scholar Google Preview WorldCat COPAC

Al-Shawaf, L., Lewis, D. M., Wehbe, Y. S., & Buss, D. M. (2021). Context, environment, and learning in evolutionary psychology. In *Encyclopedia of evolutionary psychological science* (pp. 1330–1341). Springer International Publishing.
Google Scholar Google Preview WorldCat COPAC

p. 158 Baumard, N., André, J.-B., & Sperber, D. (2013). A mutualistic approach to morality: The evolution of fairness by partner choice. *Behavioral and Brain Sciences*, *36*, 59–78.
Google Scholar WorldCat

Baumeister, R. F., & Tice, D. M. (1990). Point-counterpoints: Anxiety and social exclusion. *Journal of Social and Clinical Psychology*, *9*, 165–195.
Google Scholar WorldCat

Benedict, R. (2005). *The chrysanthemum and the sword: Patterns of Japanese culture*. Houghton Mifflin Harcourt.
Google Scholar Google Preview WorldCat COPAC

Bicchieri, C. (2005). *The grammar of society: The nature and dynamics of social norms*. Cambridge University Press.
Google Scholar Google Preview WorldCat COPAC

Boyd, R., & Richerson, P. J. (1992). Punishment allows the evolution of cooperation (or anything else) in sizable groups. *Ethology and Sociobiology,* 13, 171–195.
Google Scholar WorldCat

Boyer, P. (2018). *Minds make societies: How cognition explains the world humans create*. Yale University Press.
Google Scholar Google Preview WorldCat COPAC

Burger, O., Baudisch, A., & Vaupel, J. W. (2012). Human mortality improvement in evolutionary context. *Proceedings of the National Academy of Sciences,* 109(44), 18210–18214.
Google Scholar WorldCat

Burkart, J. M., Hrdy, S. B., & Van Schaik, C. P. (2009). Cooperative breeding and human cognitive evolution. *Evolutionary Anthropology: Issues, News, and Reviews,* 18(5), 175–186.
Google Scholar WorldCat

Clutton-Brock, T. (2009). Cooperation between non-kin in animal societies. *Nature,* 462(7269), 51–57.
Google Scholar WorldCat

Cohen, A. S., Chun, R., & Sznycer, D. (2020). Do pride and shame track the evaluative psychology of audiences? Preregistered replications of Sznycer et al. (2016, 2017). *Royal Society Open Science*, *7*(5), 191922.
Google Scholar WorldCat

Cosmides, L., & Tooby, J. (2000). Evolutionary psychology and the emotions. In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of emotions* (2nd ed., pp. 91–115). New York: Guilford.
Google Scholar Google Preview WorldCat COPAC

Cosmides, L., & Tooby, J. (2006). Evolutionary psychology, moral heuristics, and the law. In G. Gigerenzer & C. Engel (Eds.), *Heuristics and the law* (pp. 175–205). MIT Press; Dahlem University Press.
Google Scholar Google Preview WorldCat COPAC

Crockett, M. J., Siegel, J. Z., Kurth-Nelson, Z., Dayan, P., & Dolan, R. J. (2017). Moral transgressions corrupt neural representations of value. *Nature Neuroscience*, *20*(6), 879–885.
Google Scholar WorldCat

Darwin, C. (1872). Self-attention–shame–shyness–modesty: Blushing. In C. Darwin, *The expression of the emotions in man and animals* (pp. 310–347). John Murray. https://doi.org/10.1037/10001-013
Google Scholar Google Preview WorldCat COPAC

De Hooge, I. E., Breugelmans, S. M., & Zeelenberg, M. (2008). Not so ugly after all: When shame acts as a commitment device. *Journal of Personality and Social Psychology,* 95, 933–943.
Google Scholar WorldCat

De Hooge, I. E., Zeelenberg, M., & Breugelmans, S. M. (2011). A functionalist account of shame-induced behaviour. *Cognition & Emotion*, *25*(5), 939–946.
Google Scholar WorldCat

De Hooge, I. E., Breugelmans, S. M., Wagemans, F. M., & Zeelenberg, M. (2018). The social side of shame: Approach versus withdrawal. *Cognition and Emotion*, *32*(8), 1671–1677.
Google Scholar WorldCat

Declerck, C. H., Boone, C., & Kiyonari, T. (2014). No place to hide: When shame causes proselfs to cooperate. *The Journal of Social Psychology*, *154*(1), 74–88.
Google Scholar WorldCat

Delton, A. W., & Robertson, T. E. (2012). The social cognition of social foraging: partner selection by underlying valuation. *Evolution and Human Behavior,* 33(6), 715–725.
Google Scholar WorldCat

Delton, A. W., & Robertson, T. E. (2016). How the mind makes welfare tradeoffs: Evolution, computation, and emotion. *Current Opinion in Psychology,* 7, 12–16.
Google Scholar WorldCat

Dickerson, S. S., Gable, S. L., Irwin, M. R., Aziz, N., & Kemeny, M. E. (2009). Social-evaluative threat and proinflammatory cytokine regulation: An experimental laboratory investigation. *Psychological Science*, *20*(10), 1237–1244.
Google Scholar WorldCat

Dickerson, S. S., Mycek, P. J., & Zaldivar, F. (2008). Negative social evaluation, but not mere social presence, elicits cortisol responses to a laboratory stressor task. *Health Psychology*, *27*(1), 116.
Google Scholar WorldCat

Driscoll, R. (1989). Self-condemnation: A comprehensive framework for assessment and treatment. *Psychotherapy: Theory, Research, Practice, Training,* 26, 104.
Google Scholar WorldCat

Durkee, P. K., Lukaszewski, A. W., & Buss, D. M. (2019). Pride and shame: Key components of a culturally universal status management system. *Evolution and Human Behavior*, *40*(5), 470–478.
Google Scholar WorldCat

Eisenberger, N. I. (2012). The pain of social disconnection: examining the shared neural underpinnings of physical and social pain. *Nature Reviews Neuroscience,* 13(6), 421–434.
Google Scholar WorldCat

Elison, J., Garofalo, C., & Velotti, P. (2014). Shame and aggression: Theoretical considerations. *Aggression and Violent Behavior*, *19*(4), 447–453.
Google Scholar WorldCat

Elster, J. (1989). *The cement of society: A survey of social order*. Cambridge University Press.
Google Scholar Google Preview WorldCat COPAC

Fehr, E., & Gächter, S. (2000). Cooperation and punishment in public goods experiments. *American Economic Review,* 90(4), 980–994.
Google Scholar WorldCat

Fehr, E., & Fischbacher, U. (2004). Third-party punishment and social norms. *Evolution and Human Behavior*, *25*, 63–87.
Google Scholar WorldCat

Feinberg, M., Willer, R., & Schultz, M. (2014). Gossip and ostracism promote cooperation in groups. *Psychological Science,* 25(3), 656–664.
Google Scholar WorldCat

Fessler, D. M. T. (1999). Toward an understanding of the universality of second-order emotions. In A. L. Hinton (Ed.), *Biocultural approaches to the emotions: Publications of the Society for Psychological Anthropology* (pp. 75–116). Cambridge University Press.
Google Scholar Google Preview WorldCat COPAC

Fessler, D. M. T. (2001). Emotions and cost/benefit assessment: The role of shame and self-esteem in risk taking. In R. Selten & G. Gigerenzer (Eds.), *Bounded rationality: The adaptive toolbox* (pp. 191–214). MIT Press.
Google Scholar Google Preview WorldCat COPAC

Fessler, D. M. T. (2007). From appeasement to conformity: Evolutionary and cultural perspectives on shame, competition, and cooperation. In J. L. Tracy, R. W. Robins, & J. P. Tangney (Eds.), *The Self-Conscious Emotions: Theory and Research* (pp. 174–193). Guilford Press.
Google Scholar Google Preview WorldCat COPAC

Gausel, N., Vignoles, V. L., & Leach, C. W. (2016). Resolving the paradox of shame: Differentiating among specific appraisal-feeling combinations explains pro-social and self-defensive motivation. *Motivation and Emotion,* 40(1), 118–139.
Google Scholar WorldCat

Gilbert, P. (1997.) The evolution of social attractiveness and its role in shame, humiliation, guilt and therapy. *British Journal of Medical Psycholo*gy, 70, 113–147
Google Scholar WorldCat

Gilbert, P. (2000a). The relationship of shame, social anxiety and depression: The role of the evaluation of social rank. *Clinical Psychology and Psychotherapy,* 7, 174–189.
Google Scholar WorldCat

Gilbert, P. (2000b). Varieties of submissive behavior as forms of social defense: Their evolution and role in depression. In L. Sloman & P. Gilbert (Eds.), *Subordination and Defeat* (pp. 3–45). Routledge.
Google Scholar Google Preview WorldCat COPAC

Gilbert, P. (2016). *Depression: The evolution of powerlessness*. Routledge.
Google Scholar Google Preview WorldCat COPAC

Griffin, B. J., Moloney, J. M., Green, J. D., Worthington, Jr, E. L., Cork, B., Tangney, J. P., Van Tongeren, D. R., Davis, D. E., &

Hook, J. N. (2016). Perpetrators' reactions to perceived interpersonal wrongdoing: The associations of guilt and shame with forgiving, punishing, and excusing oneself. *Self and Identity*, *15*(6), 650–661.
Google Scholar WorldCat

Hales, A. H., Kassner, M. P., Williams, K. D., & Graziano, W. G. (2016). Disagreeableness as a cause and consequence of ostracism. *Personality and Social Psychology Bulletin,* 42, 782–797.
Google Scholar WorldCat

Hall, J., Kahn, D. T., Skoog, E., & Öberg, M. (2021). War exposure, altruism and the recalibration of welfare tradeoffs towards threatening social categories. *Journal of Experimental Social Psychology*, *94*, 104101.
Google Scholar WorldCat

Hill, K., & Hurtado, A. M. (1996). *Ache life history: The ecology and demography of a foraging people*. de Gruyter.
Google Scholar Google Preview WorldCat COPAC

Jones, O. D., & Goldsmith, T. H. (2005). Law and behavioral biology. *Columbia Law Rev*iew, 105, 405–502.
Google Scholar WorldCat

Kaplan, H., & Hill, K. (1985). Food sharing among ache foragers: Tests of explanatory hypotheses. *Current Anthropology,* 26, 223–239.
Google Scholar WorldCat

Kaplan, H., Hill, K., Lancaster, J., & Hurtado, A. M. (2000). A theory of human life history evolution: Diet, intelligence, and longevity. *Evolutionary Anthropology,* 9, 156–185.
Google Scholar WorldCat

Keeley, L. H. (1997). *War before civilization*. Oxford University Press.
Google Scholar Google Preview WorldCat COPAC

Keltner, D. (1996). Evidence for the distinctness of embarrassment, shame, and guilt: A study of recalled antecedents and facial expressions of emotion. *Cognition and Emotion,* 10(2), 155–172.
Google Scholar WorldCat

Keltner, D., Young, R. C., & Buswell, B. N. (1997). Appeasement in human emotion, social practice, and personality. *Aggressive Behavior,* 23, 359–374.
Google Scholar WorldCat

Krems, J. A., Williams, K. E., Aktipis, A., & Kenrick, D. T. (2021). Friendship jealousy: One tool for maintaining friendships in the face of third-party threats?. *Journal of Personality and Social Psychology*, *120*(4), 977.
Google Scholar WorldCat

Kurzban, R., & Leary, M. R. (2001). Evolutionary origins of stigmatization: The functions of social exclusion. *Psychological Bulletin*, *127*(2), 187.
Google Scholar WorldCat

Landers, M., & Sznycer, D. (2022). The evolution of shame and its display. *Evolutionary Human Sciences*, *4*, e45.
Google Scholar WorldCat

Landers, M., Sznycer, D., & Durkee, P. K. (in press). Are self-conscious emotions about the self? Testing competing theories of shame and guilt across two disparate cultures. *Emotion*.
Google Scholar WorldCat

Leach, C. W., & Cidam, A. (2015). When is shame linked to constructive approach orientation? A meta-analysis. *Journal of Personality and Social Psychology,* 109(6), 983–1002.
Google Scholar WorldCat

Leary, M. R. (2015). Emotional responses to interpersonal rejection. *Dialogues in Clinical Neuroscience,* 17(4), 435–441.
Google Scholar WorldCat

Leary, M. R., & Kowalski, R. M. (1990). Impression management: A literature review and two-component model. *Psychological Bulletin,* 107, 34–47.
Google Scholar WorldCat

Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, *68*(3), 518.
Google Scholar WorldCat

Lewis, H. B. (1971). *Shame and guilt in neurosis*. International Universities Press.
Google Scholar Google Preview WorldCat COPAC

Lieberman, D., & Linke, L. (2007). The effect of social category on third party punishment. *Evolutionary Psychology*, *5*(2), 289–305.
Google Scholar WorldCat

Lieberman, D., & Patrick, C. (2018). *Objection: Disgust, morality, and the law*. Oxford University Press.
Google Scholar Google Preview WorldCat COPAC

Lieberman, D., Tooby, J., & Cosmides, L. (2007). The architecture of human kin detection. *Nature,* 445, 727–731.
Google Scholar WorldCat

p. 160

Lukaszewski, A. W., & Roney, J. R. (2010). Kind toward whom? Mate preferences for personality traits are target specific. *Evolution and Human Behavior*, 31, 29–38.
Google Scholar WorldCat

MacDonald, G., & Leary, M. R. (2005). Why does social exclusion hurt? The relationship between social and physical pain. *Psychological Bulletin,* 131, 202–223.
Google Scholar WorldCat

Mahadevan, N., Gregg, A. P., & Sedikides, C. (2019). Is self-regard a sociometer or a hierometer? Self-esteem tracks status and inclusion, narcissism tracks status. *Journal of Personality and Social Psychology*, *116*(3), 444.
Google Scholar WorldCat

McGraw, K. M. (1987). Guilt following transgression: An attribution of responsibility approach. *Journal of Personality and Social Psychology,* 53, 247–256.
Google Scholar WorldCat

Noë, R., & Hammerstein, P. (1995). Biological markets. *Trends in Ecology & Evolution,* 10(8), 336–339.
Google Scholar WorldCat

Pedersen, E. J., McAuliffe, W. H., & McCullough, M. E. (2018). The unresponsive avenger: More evidence that disinterested third parties do not punish altruistically. *Journal of Experimental Psychology: General*, *147*(4), 514.
Google Scholar WorldCat

Petersen, M. B., Sznycer, D., Cosmides, L., & Tooby, J. (2012). Who deserves help? Evolutionary psychology, social emotions, and public opinion about welfare. *Political Psychology*, *33*(3), 395–418.
Google Scholar WorldCat

Rapee, R. M., & Heimberg, R. G. (1997). A cognitive-behavioral model of anxiety in social phobia. *Behaviour Research and Therapy*, *35*(8), 741–756.
Google Scholar WorldCat

Robertson, T. E., Sznycer, D., Delton, A. W., Tooby, J., & Cosmides, L. (2018). The true trigger of shame: Social devaluation is sufficient, wrongdoing is unnecessary. *Evolution and Human Behavior*, *39*(5), 566–573.
Google Scholar WorldCat

Robinson, P. H., & Kurzban, R. (2007). Concordance and conflict in intuitions of justice. *Minnesota Law Review,* 91, 1829–1907.
Google Scholar WorldCat

Rockenbach, B., & Milinski, M. (2011). To qualify as a social partner, humans hide severe punishment, although their observed cooperativeness is decisive. *Proceedings of the National Academy of Sciences*, *108*, 18307–18312.
Google Scholar WorldCat

Rodriguez Mosquera, P. M. (2018). Cultural concerns: How valuing social-image shapes social emotion. *European Review of Social Psychology*, *29*(1), 1–37.
Google Scholar WorldCat

Schlenker, B. R., & Leary, M. R. (1982). Social anxiety and self-presentation: A conceptualization model. *Psychological Bulletin,* 92, 641–669.
Google Scholar WorldCat

Schniter, E., Sheremeta, R. M., & Sznycer, D. (2013). Building and rebuilding trust with promises and apologies. *Journal of Economic Behavior and Organization*, *94*, 242–256.
Google Scholar WorldCat

Schniter, E., Shields, T. W., & Sznycer, D. (2020). Trust in humans and robots: Economically similar but emotionally different. *Journal of Economic Psychology*, *78*, 102253.
Google Scholar WorldCat

Schrock, J. M., Snodgrass, J. J., & Sugiyama, L. S. (2020). Lassitude: The emotion of being sick. *Evolution and Human Behavior*, *41*, 44–57.
Google Scholar WorldCat

Sell, A., Eisner, M., & Ribeaud, D. (2016). Bargaining power and adolescent aggression: The role of fighting ability, coalitional strength, and mate value. *Evolution and Human Behavior*, *37*(2), 105–116.
Google Scholar WorldCat

Sell, A., Sznycer, D., Al-Shawaf, L., Lim, J., Krauss, A., Feldman, A., Rascanu, R., Sugiyama, L., Cosmides, L., & Tooby, J. (2017). The grammar of anger: Mapping the computational architecture of a recalibrational emotion. *Cognition*, *168*, 110–128.
Google Scholar WorldCat

Sell, A., Sznycer, D., Cosmides, L., Tooby, J., Krauss, A., Nisu, S., Ceapa, C., & Petersen, M. B. (2017). Physically strong men are more militant: A test across four countries. *Evolution and Human Behavior*, *38*(3), 334–340.
Google Scholar WorldCat

Sell, A., Tooby, J., & Cosmides, L. (2009). Formidability and the logic of human anger. *Proceedings of the National Academy of Sciences*, *106*(35), 15073–15078.
Google Scholar WorldCat

Shaw, A., Montinari, N., Piovesan, M., Olson, K. R., Gino, F., & Norton, M. I. (2014). Children develop a veil of fairness. *Journal of Experimental Psychology: General,* 143(1), 363–375.
Google Scholar WorldCat

Smith, R. H., Webster, J. M., Parrott, W. G., & Eyre, H. L. (2002). The role of public exposure in moral and nonmoral shame and guilt. *Journal of Personality and Social Psychology,* 83(1), 138–159.
Google Scholar WorldCat

Somerville, L. H., Jones, R. M., Ruberry, E. J., Dyke, J. P., Glover, G., & Casey, B. J. (2013). The medial prefrontal cortex and the emergence of self-conscious emotion in adolescence. *Psychological Science*, *24*(8), 1554–1562.
Google Scholar WorldCat

Sugiyama, L. S. (2004.) Illness, injury, and disability among Shiwiar forager-horticulturists: Implications of health-risk buffering for the evolution of human life history. *American Journal of Physical Anthropology,* 123, 371–389.
Google Scholar WorldCat

Sznycer, D. (2010). *Cognitive adaptations for calibrating welfare tradeoff motivations, with special reference to the emotion of shame*. Doctoral dissertation, University of California, Santa Barbara.
Google Scholar Google Preview WorldCat COPAC

Sznycer, D. (2019). Forms and functions of the self-conscious emotions. *Trends in Cognitive Sciences*, *23*(2), 143–157.
Google Scholar WorldCat

Sznycer, D. (2021). Foreword. In: Mayer, C.-H., Vanderheiden, E., & Wong, P. (Eds.), *Shame 4.0: Investigating an emotion in digital worlds and the fourth industrial revolution*. Springer.
Google Scholar Google Preview WorldCat COPAC

Sznycer, D., Al-Shawaf, L., Bereby-Meyer, Y., Curry, O. S., De Smet, D., Ermer, E., Kim, S., Kim, S., Li, N. P., Lopez Seal, M. F., McClung, J., O, J., Ohtsubo, Y., Quillien, T., Schaub, M., Sell, A., van Leeuwen, F., Cosmides, L., & Tooby, J. (2017). Cross-cultural regularities in the cognitive architecture of pride. *Proceedings of the National Academy of Sciences*, *114*(8), 1874–1879.
Google Scholar WorldCat

p. 161 Sznycer, D., & Cohen, A. S. (2021). How pride works. *Evolutionary Human Sciences*, *3*, e10.
Google Scholar WorldCat

Sznycer, D., Cosmides, L., & Tooby, J. (2017). Adaptationism carves emotions at their functional joints. Invited commentary in *Psychological Inquiry*, *28*(1), 56–62.
WorldCat

Sznycer, D., Delton, A. W., Robertson, T. E., Cosmides, L., & Tooby, J. (2019). The ecological rationality of helping others: Potential helpers integrate cues of recipients' need and willingness to sacrifice. *Evolution and Human Behavior*, *40*(1), 34–45.
Google Scholar WorldCat

Sznycer, D., De Smet, D., Billingsley, J., & Lieberman, D. (2016). Coresidence duration and cues of maternal investment regulate sibling altruism across cultures. *Journal of Personality and Social Psychology*, *111*(2), 159–177.
Google Scholar WorldCat

Sznycer, D., Lopez Seal, M. F., Sell, A., Lim, J., Porat, R., Shalvi, S., Halperin, E., Cosmides, L., & Tooby, J. (2017). Support for redistribution is shaped by compassion, envy, and self-interest, but not a taste for fairness. *Proceedings of the National Academy of Sciences*, *114*(31), 8420–8425.
Google Scholar WorldCat

Sznycer, D., & Lukaszewski, A. W. (2019). The emotion–valuation constellation: Multiple emotions are governed by a common grammar of social valuation. *Evolution and Human Behavior*, *40*(4), 395–404.
Google Scholar WorldCat

Sznycer, D., & Patrick, C. (2020). The origins of criminal law. *Nature Human Behavior,* 4, 506–16
Google Scholar WorldCat

Sznycer, D., Schniter, E., Tooby, J., & Cosmides, L. (2015). Regulatory adaptations for delivering information: The case of confession. *Evolution and Human Behavior*, *36*, 44–51.
Google Scholar WorldCat

Sznycer, D., Sell, A., & Lieberman, D. (2021). Forms and functions of the social emotions. *Current Directions in Psychological Science*, *30*(4), 292–299.
Google Scholar WorldCat

Sznycer, D., Takemura, K., Delton, A. W., Sato, K., Robertson, T., Cosmides, L., & Tooby, J. (2012). Cross-cultural differences and similarities in proneness to shame: An adaptationist and ecological approach. *Evolutionary Psychology,* 10, 352–370.
Google Scholar WorldCat

Sznycer, D., Tooby, J., & Cosmides, L. (in prep.). Shame is modulated by the values that audiences are known to hold.

Sznycer, D., Tooby, J., Cosmides, L., Porat, R., Shalvi, S., & Halperin, E. (2016). Shame closely tracks the threat of devaluation by others, even across cultures. *Proceedings of the National Academy of Sciences*, *113*(10), 2625–2630.
Google Scholar WorldCat

Sznycer, D., Xygalatas, D., Agey, E., Alami, S., An, X.-F., Ananyeva, K. I., Atkinson, Q. D., Broitman, B. R., Conte, T. J., Flores, C., Fukushima, S., Hitokoto, H., Kharitonov, A. N., Onyishi, C. N., Onyishi, I. E., Romero, P. P., Schrock, J. M., Snodgrass, J. J., Sugiyama, L. S., Takemura, K., Townsend, C., Zhuang, J.-Y., Aktipis, C. A., Cronk, L., Cosmides, L., & Tooby, J. (2018). Cross-cultural invariances in the architecture of shame. *Proceedings of the National Academy of Sciences*, *115*(39), 9702–9707.
Google Scholar WorldCat

Sznycer, D., Xygalatas, D., Alami, S., An, X.-F., Ananyeva, K. I., Fukushima, S., Hitokoto, H., Kharitonov, A. N., Koster, J. M., Onyishi, C. N., Onyishi, I. E., Romero, P. P., Takemura, K., Zhuang, J.-Y., Cosmides, L., & Tooby, J. (2018). Invariances in the architecture of pride across small-scale societies. *Proceedings of the National Academy of Sciences*, *115*(33), 8322–8327.
Google Scholar WorldCat

Tanaka, H., Yagi, A., Komiya, A., Mifune, N., & Ohtsubo, Y. (2015). Shame-prone people are more likely to punish themselves: A test of the reputation-maintenance explanation for self-punishment. *Evolutionary Behavioral Sciences*, 9, 1–7.
Google Scholar WorldCat

Tangney, J. P. (1990). Assessing individual differences in proneness to shame and guilt: Development of the Self-Conscious Affect and Attribution Inventory. *Journal of Personality and Social Psychology,* 59, 102–111.
Google Scholar WorldCat

Tangney, J. P. (1991). Moral affect: The good, the bad, and the ugly. *Journal of Personality and Social Psychology,* 61, 598–607.
Google Scholar WorldCat

Tangney, J. P., and Dearing, R. L. (2002). *Shame and guilt*. Guilford Press.
Google Scholar Google Preview WorldCat COPAC

Tangney, J. P., Miller, R. S., Flicker, L., & Barlow, D. H. (1996). Are shame, guilt, and embarrassment distinct emotions? *Journal of Personality and Social Psychology,* 70(6), 1256–1269.
Google Scholar WorldCat

Tangney, J. P., Stuewig, J., & Martinez, A. G. (2014). Two faces of shame: The roles of shame and guilt in predicting recidivism. *Psychological Science*, *25*(3), 799–805.
Google Scholar WorldCat

Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007a). Moral emotions and moral behavior. *Annual Review of Psychology*, *58*, 345–372.
Google Scholar WorldCat

Tangney, J. P., Stuewig, J., & Mashek, D. J. (2007b). What's moral about the self-conscious emotions. In J. L. Tracy, R. W. Robins, J. P. Tangney (Eds.), *The self-conscious emotions: Theory and research* (pp. 21–37). Guilford Press.
Google Scholar Google Preview WorldCat COPAC

Tangney, J. P., Wagner, P., Fletcher, C., & Gramzow, R. (1992). Shamed into anger? The relation of shame and guilt to anger and self-reported aggression. *Journal of Personality and Social Psychology,* 62, 669–675.
Google Scholar WorldCat

Thomas, K. A., DeScioli, P., & Pinker, S. (2018). Common knowledge, coordination, and the logic of self-conscious emotions. *Evolution and Human Behavior*, 39(2), 179–190.
Google Scholar WorldCat

Tomasello, M., Melis, A. P., Tennie, C., Wyman, E., & Herrmann, E. (2012). Two key steps in the evolution of human cooperation: The interdependence hypothesis. *Current Anthropology,* 53(6), 673–692.
Google Scholar WorldCat

Tooby, J., & Cosmides, L. (1992). The psychological foundations of culture. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (19–136), Oxford University Press.
Google Scholar Google Preview WorldCat COPAC

p. 162 Tooby, J., & Cosmides, L. (1996, January). Friendship and the banker's paradox: Other pathways to the evolution of adaptations for altruism. In *Proceedings-British Academy* (Vol. 88, pp. 119–144). Oxford University Press.
Google Scholar Google Preview WorldCat COPAC

Tooby, J., & Cosmides, L. (2008). The evolutionary psychology of the emotions and their relationship to internal regulatory variables. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 114–137). Guilford Press.
Google Scholar Google Preview WorldCat COPAC

Tooby, J., & Cosmides, L. (2015). The theoretical foundations of evolutionary psychology. In Buss, D. M. (Ed.), *The handbook of evolutionary psychology* (2nd ed.), Vol. 1: *Foundations* (pp. 3–87). Wiley.
Google Scholar Google Preview WorldCat COPAC

Tooby, J., Cosmides, L., Sell, A., Lieberman, D., & Sznycer, D. (2008). Internal regulatory variables and the design of human motivation: A computational and evolutionary approach. In A. J. Elliot (Eds.), *Handbook of Approach and Avoidance Motivation* (pp. 251–271). Erlbaum.
Google Scholar Google Preview WorldCat COPAC

Tracy, J. L., & Robins, R. W. (2004). Putting the self into self-conscious emotions: A theoretical model. *Psychological Inquiry,* 15, 103–125.
Google Scholar WorldCat

von Rueden, C., & Jaeggi, A. V. (2016). Men's status and reproductive success in 33 nonindustrial societies: Effects of subsistence, marriage system, and reproductive strategy. *Proceedings of the National Academy of Sciences*, *113*(39), 10824–10829.
Google Scholar WorldCat

Walters, E. T., & Williams, A. C. C. (2019). Evolution of mechanisms and behaviour important for pain. *Philosophical Transactions of the Royal Society B: Biological Sciences,* 374, 20190275.
Google Scholar WorldCat

Weisfeld, G. E., & Dillon, L. M. (2012). Applying the dominance hierarchy model to pride and shame, and related behaviors. *Journal of Evolutionary Psychology,* 10, 15–41.
Google Scholar WorldCat

Williams, G. C. (1966). Natural selection, the costs of reproduction, and a refinement of Lack's principle. *The American Naturalist*, *100*(916), 687–690.
Google Scholar WorldCat

Williams, K. E., Votruba, A. M., Neuberg, S. L., & Saks, M. J. (2019). Capital and punishment: Resource scarcity increases endorsement of the death penalty. *Evolution and Human Behavior*, *40*(1), 65–73.

Google Scholar WorldCat

Wilson, T. D., & Gilbert, D. T. (2005). Affective forecasting. *Current Directions in Psychological Science*, *14*(3), 131.
Google Scholar WorldCat

Zhu, R., Shen, X., Tang, H., Ye, P., Wang, H., Mai, X., & Liu, C. (2017). Self-punishment promotes forgiveness in the direct and indirect reciprocity contexts. *Psychological Reports*, *120*(3), 408–422.
Google Scholar WorldCat

Zhu, R., Xu, Z., Tang, H., Liu, J., Wang, H., An, Y., … & Liu, C. (2019). The effect of shame on anger at others: Awareness of the emotion-causing events matters. *Cognition and Emotion*, *33*(4), 696–708.
Google Scholar WorldCat