Do Pride and Shame Track the Evaluative Psychology of Audiences?: Preregistered Replications of Sznycer et al. (2016, 2017)

Adam S. Cohen1\*, Rie Chun1, and Daniel Sznycer2

1Department of Psychology, University of Hawai'i at Mānoa, Honolulu, HI

2Department of Psychology, University of Montreal, Montreal, QC, Canada

\*Corresponding Author: Adam S. Cohen, Department of Psychology, University of Hawai'i at Mānoa, Honolulu, HI 96822. Email: [cohen9@hawaii.edu](mailto:cohen9@hawaii.edu)

# Abstract

Are pride and shame adaptations for promoting others’ valuations of the self and limiting the costs of being devalued, respectively? Recent findings indicate that the intensities of anticipatory pride and shame regarding various potential acts and traits track the degree to which fellow community members value or disvalue those acts and traits. Thus, it is possible that pride and shame are engineered to activate in proportion to others’ valuations, thus balancing the competing demands of effectiveness and efficiency in their operation. Here we report the results of two preregistered replications of the original pride and shame reports (Sznycer et al., 2016, 2017). We required the data to meet three criteria, including frequentist and Bayesian replication measures.

Keywords: emotion, cooperation, reputation, replication

# Do Pride and Shame Track the Evaluative Psychology of Audiences?: Preregistered Replications of Sznycer et al. (2016, 2017)

Humans have a powerful need to belong (Baumeister & Leary, 1995; Kenrick, Griskevicius, Neuberg, & Schaller, 2010; Maslow, 1943) and, reciprocally, a powerful aversion to being devalued, excluded, or ostracized (Smart Richman & Leary, 2009; Van Beest & Williams, 2006; Williams, 1997). Here we consider a functional framework to test emotional components of this motivational disposition. More specifically, we test the emotions of pride and shame as systems engineered to promote others’ positive valuations of the self and to avoid being devalued by others (de Hooge, Zeelenberg, & Breugelmans, 2011; Fessler, 1999; Gilbert, 1997; Sznycer, 2019; Tracy, 2016; Weisfeld & Dillon, 2012).

Humans are a social species. The ancestral social ecology of humans featured a host of ecological challenges: food scarcity and variability (Kaplan & Hill, 1985), non-human predators, aggressive conspecifics (Keeley, 1997), and serious bouts of incapacitation due to injury and disease (Sugiyama, 2004). Modern technologies and institutions that minimize those dangers were absent. Nevertheless, those challenges could be buffered, to some extent, to the extent that other individuals in one’s group were willing and able to render aid. One possibility then is that natural selection operating on these features of the social ecology of ancestral humans could have selected for regulatory adaptations targeting the social-evaluative psychology in the brains of other individuals for the purpose of: (1) inducing others to augment and maintain their positive social evaluations of the self, and (2) avoiding the likelihood and costs of being socially devalued by others. This is believed to be the context in which the human emotions of pride and shame evolved (Fessler, 1999; Gilbert, 1997; Sznycer, 2019; Tracy, 2016; Weisfeld & Dillon, 2012).

Pride, for instance, serves multiple interrelated functions. It impels the individual (1) to perform actions or develop personal characteristics that other people value, (2) to transmit information about achievements so that others can register the new state of affairs, and (3) to take advantage of the increased valuation from others by, e.g., demanding better treatment (Tracy, 2016; Fessler, 1999; Weisfeld & Dillon, 2012; Sznycer et al., 2017; Williams & DeSteno, 2008).

Many features of pride documented in the emotion literature can be understood by reference to these hypothethesized functions. For example, pride is among the most positively-valenced emotions (Mauro, Sato, & Tucker, 1992). This hedonic feature may serve as incentive to continue performing the actions and developing the characteristics that would bring about positive evaluations from others (Williams & DeSteno, 2008). Pride has a prototypical display of achievement that includes expansion of body size, a zoologically ubiquitous index of dominance and physical formidability (Weisfeld & Dillon, 2012; Fessler, 1999; Lewis et al., 1992; Tracy & Robins, 2007). Research has shown that observers interpret the human pride display as indicating dominance and achievement (Shariff & Tracy, 2009). Moreover, children (Tracy, Robins, & Lagattuta, 2005) and adults around the world recognize the human pride display (Tracy & Robins, 2008).

Shame, like pride, can be understood as a system that aims to operate on others’ internal representations of oneself and the degree to which one is socially valued. Shame has the complementary function of minimizing the spread of adverse information about the self and the reputational damage that occurs when such information reaches the minds of others (Weisfeld & Dillon, 2012; Fessler, 1999; Gilbert, 1997; Sznycer et al., 2016).

Further, the design features of shame, like the design features of pride, can be understood in the light of the corresponding hypothesized functions. For instance, when information signals that others might learn about actions taken by the self that benefit the self but harm others, shame can terminate the execution of those actions (Fehr & Gächter, 2000; de Hooge, Breugelmans, & Zeelenberg, 2008). Further, when people feel shame, they hide and suppress incriminating evidence (Leach & Cidam, 2015; de Hooge, Zeelenberg, & Breugelmans, 2010; Sznycer, Schniter, Tooby, & Cosmides, 2015). Shame has a prototypical full-body display, the antithesis of the pride display, which conveys submission or appeasement vis-à-vis the devaluing audience (Fessler, 1999; Weisfeld & Dillon, 2012; Tracy & Matsumoto, 2008). This voluntary conveyance of acceptance of reduced valuation from others can be understood as “making the best of a bad situation”, as evidence indicates that audiences have more negative evaluative reactions when, for instance, a wrongdoer does not produce a shame display (Keltner et al., 1997).

Although pride and shame have been studied extensively, dissecting these emotions from the standpoint of their hypothesized target domain—the evolved social-evaluative psychology of audiences—is comparatively infrequent. This is unfortunate, because over evolutionary time the evaluative psychology of audiences dictated (*i*) the courses of action an individual was to adopt if others were to value her, and (*ii*) the information-processing structure of the pride and shame systems tasked with gaining valuation and avoiding devaluation. Thus, the evaluative psychology of audiences is key to mapping the cognitive architecture of pride and shame. Indeed, recent reports have demonstrated close quantitative correspondences between the activation of pride and shame on the one hand and the direction and magnitude of audience’s social evaluations on the other hand.

## Prior evidence that pride and shame may track the valuations of audiences

A well-engineered pride system must mobilize not only reactively but also prospectively, in order to motivate the pursuit of socially valued actions that might increase others’ valuations of the self (Sznycer et al., 2017; Tracy, Shariff, & Cheng, 2010). In this way, prospective pride helps the individual decide which courses of action to take.

It has been hypothesized that the anticipatory feeling of pride is an internally generated prediction that signals the magnitude of audience valuation one would accrue if one took an action that others value (Sznycer et al., 2017). A pride system that accurately forecasts and precisely tracks audience valuation allows the individual to avoid two types of costly errors: (*i*) *under-activation of anticipatory pride*, which would cause the individual to insufficiently pursue socially valued courses of action, and (*ii*) *over-activation of anticipatory pride*, which would cause the individual to over-pursue actions in excess of their actual return. This analysis suggests the existence of a feature: The pride system should (1) forecast the magnitude of valuation people in one’s social ecology would express if one took a given act that they favor, and (2) deliver an internal signal (anticipatory pride) whose intensity is proportional to it.

Experiments conducted in 16 countries supported this prediction: The intensity of anticipatory pride in every country closely tracked the magnitude of valuation expressed by local audiences—in the absence of any communication between participants reporting their pride vs. audiences reporting their valuation regarding each of various potential acts and traits, such as generosity, trustworthiness and skills (Sznycer et al., 2017).

Analogous reasoning suggests that the anticipatory feeling of shame is an internal prediction of the degree to which local audiences would devalue the individual if she took an action that they disfavor, such as theft, sexual infidelity, or stinginess (Sznycer et al., 2016; see Kurzban & Leary, 2001; Neuberg & Cottrell, 2006; Sznycer, 2010). By forecasting and tracking the precise magnitude of audience devaluation, the aversive signal of anticipated shame allows the individual to steer adaptively between a dangerous disregard of others’ views, which would yield excessive devaluation, and an excessive timidity about one’s possible disgraceful behavior, which would yield insufficient personal payoffs. As predicted, shame closely tracked audience devaluation in three countries (Sznycer et al., 2016).

## The present work

Here we present the results of two preregistered replications addressing the following questions: Does anticipatory pride track the magnitude of audience valuation (Sznycer et al., 2017)? And, does anticipatory shame track the magnitude of audience devaluation (Sznycer et al., 2016)?

The present work addresses two issues surrounding the replicability of the original pride and shame studies. First, here we perform preregistered confirmatory analyses. This allows us to validly conduct null hypothesis significance testing while controlling long-run error rates that otherwise would be inflated by undisclosed flexibility in data analysis (Nosek & Lakens, 2014; Wagenmakers et al., 2012). If the replications are successful, that would make it less likely that the original findings were false-positives or that the original effect sizes were misestimated due to undisclosed flexibility in data analysis.

Second, the original and replication studies were conducted and analyzed by different individuals. Following best practices to design and implement replication studies (Brandt et al, 2014; Simons, Holcombe, & Spellman, 2014), the first two authors collaborated with the third author (the lead author of the original studies). The first two authors conducted the studies and analyzed the data, while the third author shared original materials and data, provided feedback about the accuracy of the study implementation, and helped identify discrepancies with the original studies. This allowed us to implement replication studies that were closely aligned with the original studies and document any remaining differences. Therefore, a successful replication would reduce uncertainty in the original findings by arguing against experimenter error in the original study design, implementation, or analysis.

The procedures were the same as in Sznycer et al. (2016, 2017), with the following exceptions: 1) The original studies included a number of measures/stimuli testing other hypotheses, which were dropped from the replications; 2) the replications were administered online, as the original studies were, but were conducted exclusively in lab rather than a mix of inside and outside of lab; and 3) participants were students completing the tasks as part of a course assignment rather than paid participants, as was the case in some of the original samples. Successful replications would suggest the original effects are robust to these modified procedures. Although there were not strong theoretical reasons for expecting these procedural differences to alter the original effects, these differences were preregistered, as they would be among the first factors to consider as moderators in explaining any failures to replicate.

Following Brandt et al.’s template (2014), we preregistered hypotheses, a priori power analyses,[[1]](#footnote-1) and data analysis plans on the Open Science Framework for Study 1 ([preregistration](https://osf.io/uyfqw/?view_only=36050b395f424994b062220bf51df8fb)) and Study 2 ([preregistration](https://osf.io/gvmun/?view_only=0bb675258bee4c50840ae546996e7317)).

Since no individual measure of replication success is without limitation (Simonsohn, 2015; Valentine et al., 2011; Verhagen & Wagenmakers, 2014), we defined replication success as meeting three criteria: 1) a correlation between emotion and audience evaluations that is statistically significant (p < .05) and in the same direction as in the original study, 2) an effect size that is different from zero and not different from the original effect size, and 3) a replication Bayes Factor (Ly, Etz, Marsman, & Wagenmakers, 2018) that exceeds 3,[[2]](#footnote-2) which is considered at a minimum “substantial evidence” in favor of the alternative hypothesis relative to the null hypothesis (Jeffreys, 1961).

# Study 1 – Pride

## Method

Participants**.**

We recruited 87 participants. Six were removed from analyses for failing an attention check, leaving a final sample size of 81 participants (*M* = 20.8 years, *SD* = 4.55, 57 females). Participants were students from the University of Hawai'i at Mānoa who were enrolled in a research methods course (Saxe & Frank, 2012). Although students worked with the data as part of a course project after participating in the study, they were naïve to hypotheses at the time of testing. Bootstrapping simulations on the Study 1 data from the US sample of Sznycer et al. (2017) indicated that 95% power would be achieved with 10 participants. However, because participation was part of a course requirement, the stopping rule[[3]](#footnote-3) for the frequentist tests (Replication Criteria 1 and 2) was determined by the number of students enrolled in the course (n = 87). The actual sample, after exclusion criteria were applied (n = 81), was well in excess of the sample size that would produce 95% power.

Design**.**

Study 1 tested whether the anticipated intensity of felt pride with respect to a given prospective act or trait that others positively value correlates with the degree of positive valuation attached to that act or trait by those in the social world of the individual. Participants rated 25 brief hypothetical scenarios in which someone’s acts or traits might cause them to be viewed positively by others.

Participants were randomly assigned to an *audience* condition or a *pride* condition. In the audience condition participants were asked to rate 25 scenarios involving another individual (e.g., “Her children are healthier and taller than average for their age”, “She is ambitious”). Participants in the audience condition were asked to “indicate how you would view [someone of your same sex and age] if they were in those situations,” on scales ranging from 1 (I wouldn’t view her positively at all) to 7 (I’d view her very positively). These ratings provide event-specific measures of positive social valuation.

In the pride condition, a different set of participants was asked to “indicate how much pride you would feel if you were in those situations” (i.e., in the 25 scenarios; e.g., “Your children are healthier and taller than average for their age”, “You are ambitious”), on scales ranging from 1 (no pride at all) to 7 (a lot of pride). Except for the perspectival differences, the stimuli in the pride and audience conditions were identical. The scenarios were presented in randomized order in both conditions. To conduct the replications, we used original materials provided by the third author.

Procedure**.**

Participants were tested in a computer lab. They participated in Study 1, Study 2, and a third unrelated study in random order. Participants entered their gender and age, were randomly assigned to one of the two conditions, and completed the task. The scenarios were gendered according to the participant’s gender. Participants were given an attention check before completing the study.

## Results

# Study 2 – Shame

## Method

### Participants.

The sample for Study 2 consisted of 87 participants (*M* = 20.8 years, *SD* = 4.42, 60 females). The participants were selected using the same method as in Study 1. There was no attention check, so no participants were excluded from analyses.[[4]](#footnote-4) Bootstrapping simulations on the Study 1 data from the US sample of Sznycer et al. (2016) indicated that 95% power would be achieved with 14 participants. However, because participation was part of a course requirement, the stopping rule for the frequentist tests (Replication Criteria 1 and 2) was determined by the number of students enrolled in the course (n = 87). Therefore, the actual sample well exceeded the sample size that would produce 95% power.

### Design.

Study 2 tested whether the anticipated intensity of felt shame with respect to a prospective act or trait that others disvalue tracks the degree of devaluation expressed by local audiences regarding that act or trait. Participants rated 29 brief hypothetical scenarios in which someone’s acts or traits might lead them to be viewed negatively. The scenarios featured situations in various evolutionarily relevant domains, including: social exchange, parenting, mating, the violation of social norms, status, and skills.

Participants were randomly assigned to an *audience* condition or a *shame* condition. In the audience condition, participants were asked to rate 29 scenarios involving another individual (e.g., “He hosts his extended family for a holiday meal, but he burns the food”, “He dropped out of school much earlier than others”). In this condition participants were asked to “indicate how you would view this person if they were in those situations”; they indicated their reactions using scales ranging from 1 (I wouldn’t view him negatively at all) to 7 (I’d view him very negatively). These ratings provide event-specific measures of the degree to which the members of a given population would devalue the individual described in the scenarios.

A different set of participants was asked, in the shame condition, to “indicate how much shame you would feel if you were in those situations” (i.e. in each of the 29 scenarios; e.g., “You host your extended family for a holiday meal, but you burn the food”, “You dropped out of school much earlier than others”), on 1 (no shame at all) to 7 (a lot of shame) scales. In both conditions the scenarios were presented in randomized order. To conduct the replications, we used original materials provided by the third author.

### Procedure.

The procedures were the same as in Study 1, except here participants were randomly assigned to an audience condition or a shame condition and no attention check was administered.

## Results

# Discussion

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1. We report a different power analysis in the Method section of Studies 1 and 2 to address a problem with the preregistered power analyses. See the addendum on OSF for details: [https://osf.io/jymzk/] [↑](#footnote-ref-1)
2. The Bayes Factor quantifies the evidence in favor of one hypothesis relative to a second hypothesis. A Bayes Factor of 3 represents odds of 3:1 in support of a hypothesis compared to another, competing hypothesis. [↑](#footnote-ref-2)
3. Due to an oversight, the stopping rules for Studies 1 and 2 were not preregistered. However, no analyses were conducted before the stopping rule was reached and no additional data were collected after. [↑](#footnote-ref-3)
4. An attention check was used in the original study but was not provided with materials for Study 2, so the replication was run without an attention check. [↑](#footnote-ref-4)