Cross-cultural regularities in the cognitive architecture of pride

Daniel Sznycer[a,b,1], Laith Al-Shawaf[c,d], Yoella Bereby-Meyer[e], Oliver Scott Curry[f], Delphine De Smet[g], Elsa Ermer[h], Sangin Kim[a], Sunhwa Kim[i], Norman P. Li[j], Maria Florencia Lopez Seal[k], Jennifer McClung[l], Jiaqing O[j], Yohsuke Ohtsubo[m], Tadeg Quillien[a], Max Schaub[n], Aaron Sell[o], Florian van Leeuwen[p], Leda Cosmides[a], and John Tooby[q]

[a]Center for Evolutionary Psychology, Department of Psychological and Brain Sciences, University of California, Santa Barbara, CA 93106-9660; [b]Department of Psychology, Arizona State University, Tempe, AZ 85287-1104; [c]Department of Psychology, Bilkent University, 06800 Bilkent, Ankara, Turkey; [d]College of Life Sciences, Institute for Advanced Study Berlin, 14193 Berlin, Germany; [e]Department of Psychology, Ben-Gurion University of the Negev, Beer-Sheva 84105, Israel; [f]Institute of Cognitive and Evolutionary Anthropology, University of Oxford, Oxford OX2 6PN, United Kingdom; [g]Department of Interdisciplinary Study of Law, Private Law, and Business Law, Ghent University, B-9000 Ghent, Belgium; [h]Department of Neurology, School of Medicine, University of Maryland, Baltimore, MD 21201; [i]Gongneung Welfare Center, Nowon-gu, Seoul 01851, Republic of Korea; [j]School of Social Sciences, Singapore Management University, Singapore 178903; [k]Facultad de Psicología, Universidad Nacional de Córdoba, 5000 Cordoba, Argentina; [l]Institut de Biologie, Université de Neuchâtel, CH-2000 Neuchâtel, Switzerland; [m]Department of Psychology, Graduate School of Humanities, Kobe University, Kobe 657-8501, Japan; [n]Department of Political and Social Sciences, European University Institute, 50014 Florence, Italy; [o]School of Criminology and Criminal Justice, Griffith University, Mount Gravatt, QLD 4122, Australia; [p]Department of Political Science, Aarhus University, DK-8000 Aarhus, Denmark; and [q]Center for Evolutionary Psychology, Department of Anthropology, University of California, Santa Barbara, CA 93106-3210

Pride occurs in every known culture, appears early in development, is reliably triggered by achievements and formidability, and causes a characteristic display that is recognized everywhere. Here, we evaluate the theory that pride evolved to guide decisions relevant to pursuing actions that enhance valuation and respect for a person in the minds of others. By hypothesis, pride is a neurocomputational program tailored by selection to orchestrate cognition and behavior in the service of: (*i*) motivating the cost-effective pursuit of courses of action that would increase others' valuations and respect of the individual, (*ii*) motivating the advertisement of acts or characteristics whose recognition by others would lead them to enhance their evaluations of the individual, and (*iii*) mobilizing the individual to take advantage of the resulting enhanced social landscape. To modulate how much to invest in actions that might lead to enhanced evaluations by others, the pride system must forecast the magnitude of the evaluations the action would evoke in the audience and calibrate its activation proportionally. We tested this prediction in 16 countries across 4 continents (*n* = 2,085), for 25 acts and traits. As predicted, the pride intensity for a given act or trait closely tracks the valuations of audiences, local (mean *r* = +0.82) and foreign (mean *r* = +0.75). This relationship is specific to pride and does not generalize to other positive emotions that coactivate with pride but lack its audience-recalibrating function.

pride | valuation | decision-making | emotion | culture

Our hominin ancestors evolved in a harsh and challenging world characterized by high rates of mortality, high variance in food acquisition (1), a high incidence of disease and injury (2), and attacks by humans and nonhumans (3). Modern conditions that buffer such risks (e.g., stored food, police) were absent, and to a zoologically unusual degree, our ancestors relied on the other members of the groups they lived in for the assistance necessary for survival and reproduction. For example, provisioning the injured with food—typical among humans—is entirely lacking in nonhuman primates, who starve when incapacitated instead. In humans, natural selection strongly favored the evolution of adaptations in individuals to induce others to help them.

In general, there are two families of social tools organisms have available for influencing others' choices: first, they can conditionally inflict costs—aggression; and second, they can bestow (or withhold) benefits—altruism. The first causes individuals to be respected (or feared). The second causes individuals to be valued. It might be advantageous to put weight on another's welfare (*i*) because the individual is formidable and could inflict costs if

not propitiated, or (*ii*) because the individual's actions or existence make positive fitness contributions to the valuer, which would be degraded or lost if assistance was not given. For convenience, here we call these two components "respect" (for formidability) and "valuation" (for positive fitness contributions). Being respected or favorably valued by others were resources, and selection on our ancestors would have shaped human social emotions to promote access to these resources. More precisely, our ancestors' survival and reproduction sensitively depended on the extent to which other group members placed weight on their welfare in making decisions—that is, the degree to which others traded off or sacrificed their own welfare for the welfare of the recipient (e.g., to keep food for oneself or share it with one or more specific persons).

Because nonhumans are far more limited in the kinds of assistance they can render each other, almost all nonhuman negotiation is based on aggression. Differences in the ability to inflict costs (formidability or resource holding power) led to adaptations for the advertisement of formidability and adaptations for assessing own and others' formidability (4). In group-living species, dominance hierarchies emerge from patterns of prudent deference to

Significance

Cross-cultural tests from 16 nations were performed to evaluate the hypothesis that the emotion of pride evolved to guide behavior to elicit valuation and respect from others. Ancestrally, enhanced evaluations would have led to increased assistance and deference from others. To incline choice, the pride system must compute for a potential action an anticipated pride intensity that tracks the magnitude of the approval or respect that the action would generate in the local audience. All tests demonstrated that pride intensities measured in each location closely track the magnitudes of others' positive evaluations. Moreover, different cultures echo each other both in what causes pride and in what elicits positive evaluations, suggesting that the underlying valuation systems are universal.

those with more formidability—individuals cede resources or rank to avoid being harmed (5).

Although humans retain and exploit phylogenetically ancient adaptations for aggression and dominance (including systems for threat, fighting, display, and assessment) (4–7), human evolution was distinctive in the greatly expanded role that mutual assistance played in daily group living and, hence, in the reproductive fortunes of individuals (7, 8). The hominin entry into the cognitive niche (involving the emergence and integration of intelligence, language, tool use, coordination, and culture) greatly amplified the opportunities for mutually advantageous prosocial interactions (9, 10). As our ancestors entered the cognitive niche and became hunter-gatherers, there would have been novel and intense selection for adaptations designed to make the self valuable to others and, hence, recruit assistance from others. We hypothesize that the emotion of pride functions as an evolved guidance system that modulates behavior to cost-effectively manage and capitalize on the propensities of others to value or respect the actor.

For behavior to succeed in making the self more valuable to or respected by others, others must have neural programs to value and trade off welfare in favor of conspecifics. The properties of these programs in the minds of others constitute the task environment that the pride system evolved to exploit. Indeed, over the last half-century, evolutionary biologists have developed theories of how a number of different selection pressures favor the evolution of mechanisms designed to value the welfare of others and to (within limits) sacrifice self for others. These theories include kin selection (11), reciprocation (12, 13), reputation (14–16), risk-pooling (1, 17, 18), externality management (19), and (substituting deference for valuation) the asymmetric war of attrition (20). These theories in aggregate require the existence of an evolved, human-universal neurocognitive architecture for computing the social value of others to oneself, and an architecture that governs the extent to which the self will trade his or her welfare in favor of others' welfare (21–23). Moreover, these theories led to the empirical discovery of an array of specialized choice architectures that implement welfare–tradeoff decisions given the information available to the actor about an interaction partner [e.g., how to respond to cues of the recipient's relatedness, skills, generosity, attractiveness, ability to defend her interests, etc. (6, 24–28)]. Each specific theory provides contentful predictions about the dimensions of the psychology of valuation in our species that the pride system targets (e.g., productivity, generosity, bravery, strength, health, and attractiveness).

The Advertisement-Recalibration Theory of Pride

According to what we will call the "advertisement–recalibration theory of pride," pride is an evolved human-universal neuro-computational program that was designed by natural selection to orchestrate cognition, physiology, and behavior in the service of (*i*) motivating the individual to choose courses of action or the acquisition of traits where the prospective benefits of increased valuation and respect exceed the costs, (*ii*) advertising positive information about the self so that it reaches others more reliably, and (*iii*) capitalizing on the benefits of increased valuation and respect in others (see also refs. 5, 7, 29, and 30). Dynamically, others' assessments of the acts and characteristics of an individual lead them to value (or devalue) him or her. When others (an audience) detect new information about an individual that is at odds with the audience's current level of valuation, they recalibrate the value assigned to that person either upward or downward, with correspondingly positive or negative effects on their disposition to aid or defer to that individual. This adaptive problem, in turn, would have selected for the motivational subcomponents of the pride system. First, pride should be designed to anticipate how an audience would modify its evaluation in response to an action, and should make more value- or deference-

promoting actions feel more rewarding and more attractive in prospect. This design feature helps the choice system determine which achievements are worth the effort. This planning stage is one component in which pride as a feeling is experienced, so higher paying courses of action are chosen over lower paying ones. Second, pride should be designed to facilitate the transfer of favorable information to the relevant audience, so members of the audience can recalibrate valuation and respect upward. Third, when others register one's achievements or dominance and recalibrate upwards, the individual needs to recalibrate her own model of how much others now value her (31) and her entitlement to favorable treatment (6). This representation of the degree of welfare tradeoffs the individual is entitled to modulates how the individual will capitalize on others' revised valuations. This is another stage where feeling pride happens: One cannot, for example, choose to be the child of someone important, but it is adaptive for the person to recognize the way this attribute increases how others value them. Assimilating this heightened valuation or deference allows individuals to pursue social opportunities previously beyond reach (7, 29, 30) or to press for better treatment from others (32).

Computationally, the underlying social valuation system needs a database of values matched to actions (e.g., gives food) and traits (e.g., daughter of headman) that can be accessed by the pride system and the system that values individuals. Entries in this database could be culturally acquired, but given the endless number of potential acts, it is likely that various species-typical adaptations involving social valuation (the mating system, the formidability-assessment system, the social exchange system, etc.) can inferentially generate probable values even in the absence of prior exposure to local valuation. This hypothesis would predict commonalities from culture to culture in what makes humans proud and what makes them value others.

Existing findings on pride are consistent with the advertisement–recalibration theory. Pride-driven choices and pride displays occur in every known culture (33) and appear reliably and early in development (34–36). Pride is triggered by achievements (35, 37), aggressive formidability (38, 39), and other factors of social value such as attractiveness and membership in a powerful coalition (40). The feeling of pride is highly pleasurable (41). This internal reward can motivate people to undertake and persevere at costly but socially valued courses of action (42–44). Pride has a full-body display featuring an erect and expanded posture, with gaze directed at the audience, and bodily relaxation (5, 34, 45). This display conveys achievement and dominance (5, 7, 46) and reflects both short-term and long-term successes (37, 47); thus, the pride display is attractive to potential mates (48), a cue to choose partners, and intimidating to rivals (5, 49), which may have the effect of reducing aggression (20) and stabilizing a dominance hierarchy. The behavioral display of pride, which derives from dominance and deference systems, is zoologically widespread, not only among nonhuman primates (50) but in a wide range of taxa, including invertebrates (51); thus, it is phylogenetically ancient (for similarities and differences between human and nonhuman status, see refs. 5, 7, and 39).

The pride display appears to generate common knowledge of enhanced value (52), is produced even by congenitally blind individuals (38), and is recognizable by young children (53) and by adults within and across cultures (45, 54). Cultural differences in pride exist (41, 55–57). However, theoretical considerations (58) and empirical data (59–61) suggest that these differences result from (for example) differences in what audiences value in others (i.e., the weights attached to the inputs of the pride mechanism) rather than differences in the cognitive architecture of pride. Indeed, cross-cultural evidence has recently provided support for the hypothesis that the complementary emotion of shame is an adaptation that evolved to deter actions where the costs of devaluation by others exceed the benefits, to prevent audiences from receiving negative information about the individual that would lead to devaluation, and

to buffer against devaluation if the negative information does spread (22). Pride serves analogous functions with respect to positive information that leads to enhanced valuation or respect. We note that human pride and its obverse, shame, are evolutionarily derived from regulatory systems for dominance and submission (5, 7, 8), and various aspects of those emotions (e.g., the displays) are homologous to those of simians (5). For example, receiving a pride display may elicit submission, whereas receiving a shame display terminates aggression; thus, these conjugated systems reduce overt conflict and further attacks (5, 62) (for a nonhuman example, see ref. 63).

The decision-making architecture of a social organism should evaluate and integrate two kinds of payoffs to regulate behavior adaptively: (*i*) the direct payoff of the potential action (e.g., the value of foraging for a food item), and (*ii*) the social valuation payoff [e.g., showing bandmates that one is a skilled forager (64)]. According to the advertisement–recalibration theory, the anticipated feeling of pride is the readout of the estimated social valuation payoff, which must be added to the direct payoff to get the full value of a candidate course of action. (Given its role in planning, this feeling may occur even in the absence of an audience.) For the organism to adaptively modulate how much effort and risk to invest in actions whose benefits lie in the changed evaluations of others, the pride system must forecast the magnitude of the evaluations the action would evoke in the audience and calibrate its activation proportionally. The underactivation of pride leads to maladaptive choices where (*i*) the acts with high social payoffs are insufficiently pursued, (*ii*) achievements or desirable traits are insufficiently advertised and, hence, trigger less upward valuation recalibration in the audience, and (*iii*) the individual does not take advantage of the extent to which others value her. Conversely, an overactivation of pride yields diminishing or even negative returns, because beneficial courses of action are overpursued, and, moreover, audiences' evaluations become less favorable to the individual, because others are designed to resist and devalue excessive advertisement and entitled actions that exceed the individual's actual social value (65–67). [Given the self-interest bias, some opportunistic status overclaiming may be expected (68), although repeated interactions in naturalistic contexts will constrain such excessive claims.] To balance these competing demands, pride should deploy in lockstep with the valuation that is prevalent in audiences drawn from the individual's (local) social ecology. Indeed, because decisions about actions must be made in advance of observing feedback about one's actions, pride feelings should forecast, and track in intensity, the magnitude of others' evaluative recalibrations for a given act or trait (22). We test this basic design feature in 16 countries across 4 continents.

Study 1

To test the prediction that the intensity of felt pride tracks the valuations of local audiences, we recruited 1,458 participants from the United States, Canada, the United Kingdom, France, Belgium, The Netherlands, Switzerland, Italy, Turkey, Israel, India, Singapore, the Philippines, South Korea, Japan, and Australia. Inattentive participants were excluded from analyses, leaving a total effective sample of 1,348 (Studies 1a–1p). We created 25 scenarios in which someone's acts, traits, or circumstances might lead them to be viewed positively. The scenarios were designed to elicit reactions in a wide range of evolutionarily relevant domains, such as social exchange, skills, aggressive contests, mating, parenting, and leadership.

Participants completed one of two between-subjects conditions: an "audience" condition and a "pride" condition. Participants in the audience condition were asked to provide their reactions to 25 scenarios involving a third party: an individual other than themselves who is of the same sex and age as the participant (e.g., "She is trustworthy," "She has many unique skills," "She is physically attractive"). 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," using scales ranging from 1 (I wouldn't view them positively at all) to 7 (I'd view them very positively). These ratings provide a measure of the degree to which members of a given population would value the individual described in the scenarios.

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 each of the 25 scenarios; e.g., "You are trustworthy," "You have many unique skills," "You are physically attractive"), with scales ranging from 1 (no pride at all) to 7 (a lot of pride). The stimuli in the audience and pride conditions were identical on a scenario-by-scenario basis, the only difference being the perspective from which the events are described.
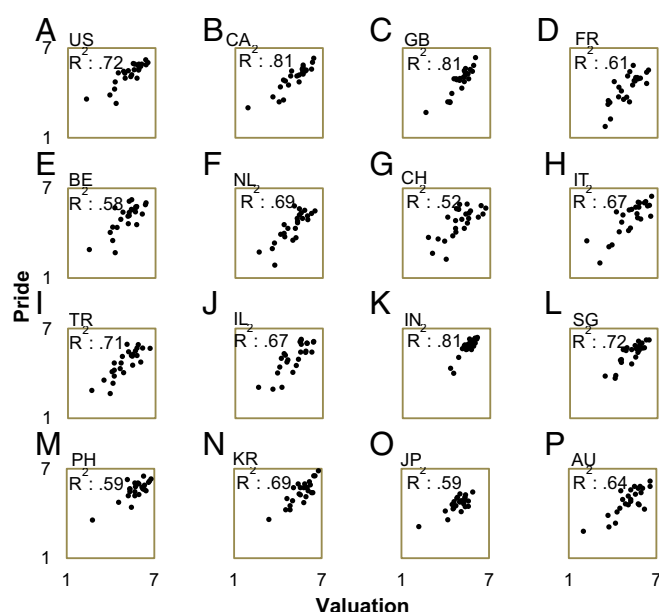
If, as argued above, a human-universal grammar of social value exists, then this hypothesis raises the expectation—in contrast to traditional anthropological expectation—that many things that are viewed as socially valuable, and hence pride-eliciting, will be shared across cultures rather than unique to each culture. If pride is an adaptation for recalibrating the valuations of local audiences, and some values are universally held (i.e., by local and foreign audiences), then the intensity of pride these scenarios elicit in a given country should track the degree of valuation they elicit in the other countries.

Within-Country Results. First, we report the valuation and pride results for each country. Full text of the scenarios and descriptive statistics are provided in *SI Appendix*, Table S2 a–p.

There is widespread agreement on how valuation-enhancing these situations are relative to one another: mean intraclass correlation across the 16 countries: ICC (2,n) = 0.95 (*SI Appendix,* Table S3). Participants agree also about the extent to which they would feel pride in these situations: mean ICC (2,n) = 0.92 (*SI Appendix,* Table S3). To test the main prediction that pride tracks audience valuation, we calculated, for each scenario, the mean pride ratings provided by participants in the pride condition, and the mean valuation ratings provided by participants in the audience condition. Pride and valuation means are highly correlated with one another within each country, with a mean $r = 0.82$ (SD = 0.05; minimum $r = 0.72$; maximum $r = 0.90$; N r values = 16); P values = 10^{-9}–10^{-4} (Fig. 1 and diagonal values in *SI Appendix,* Table S4). Scenario 11 (pride condition: "You get into a fight in front of everybody, and you completely dominate your opponent with punch after punch, until your opponent is knocked out") is a low outlier in various samples—perhaps because these samples come from pacified populations (69). Excluding this scenario from analysis does not substantially change the pride–valuation correlations, however, mean $r = 0.77$ (SD = 0.09; minimum $r = 0.55$; maximum $r = 0.88$; N r values = 16); P values = 10^{-7}–0.005. All reported correlations remain significant after applying a false-discovery rate (FDR) correction (70) of $P < 0.05$, unless otherwise noted. Recall that the pride and valuation ratings originate from different sets of participants. Consequently, these high correlations cannot be attributed to participants matching their pride and valuation ratings.

Between-Country Results. Some actions, traits, and situations elicit valuation in some cultures but not others (64, 71). However, if the machinery for computing the social value of others is species-typical, then there will be situations that provoke valuation, and elicit pride, across cultures (33, 41). To test for between-country agreement in valuation, in pride, and in the pride–valuation link, we computed the extent to which the mean valuation ratings and the mean pride ratings are correlated across countries. Supporting the hypothesis of a species-wide grammar of social value, there is a high degree of between-country agreement on the extent to which a given situation would elicit positive valuation: mean $r = 0.90$ (SD = 0.06; minimum $r = 0.73$; maximum $r = 0.98$; N r values = 120); P values = 10^{-17}–10^{-4} (*SI Appendix,* Table S5). There is also high

Fig. 1. Studies 1a–1p. Scatter plots: pride as a function of valuation. Each point represents the mean valuation rating and mean pride rating of one scenario. Valuation and pride ratings were given by different participants ($n = 25$ scenarios; effect size: R^2 linear). (A) United States (US). (B) Canada (CA). (C) United Kingdom (GB). (D) France (FR). (E) Belgium (BE). (F) The Netherlands (NL). (G) Switzerland (CH). (H) Italy (IT). (I) Turkey (TR). (J) Israel (IL). (K) India (IN). (L) Singapore (SG). (M) Philippines (PH). (N) South Korea (KR). (O) Japan (JP). (P) Australia (AU).

between-country agreement on the extent to which a given situation would elicit pride: mean $r = 0.81$ (SD = 0.11; minimum $r = 0.51$; maximum $r = 0.97$; N r values = 120); P values = 10^{-14}–0.009 (*SI Appendix*, Table S6). Furthermore, as predicted, the pride elicited in each of the 16 countries is positively correlated with the valuations from the other 15 countries: mean $r = 0.75$ (SD = 0.09; minimum $r = 0.48$; maximum $r = 0.93$; N r values = 240); P values = 10^{-10}–0.017 (off-diagonal values in *SI Appendix*, Table S4). Note that the proportion of variance in pride accounted for by the valuations of foreign audiences (mean: 56%) is close to that accounted for by the valuations of local audiences (mean: 67%). Excluding scenario 11 from analysis does not substantially alter the between-country pride–valuation correlations: mean $r = 0.69$ (SD = 0.13; minimum $r = 0.29$; maximum $r = 0.90$; N r values = 240); P values = 10^{-8}–0.17; 222 of these 240 correlations (92.5% of them) remain significant at FDR $P < 0.05$.

Study 2

If it is pride, in particular, that aims to recalibrate audiences, then audience valuation should be tracked more closely by pride than by other emotions that are positive and arousing (as pride is) but not designed for recalibrating audiences. To evaluate this prediction, we conducted a follow-up study in the United States and India (Studies 2a and 2b; $n = 361$). There were five between-subjects conditions: one audience condition assessing valuation and four emotion conditions: pride, excitement, amusement, and happiness. Excitement, amusement, and happiness were chosen because these three emotions often coactivate with pride and, like pride, are positive and arousing (41, 72–74).

The scenarios, as well as the descriptive statistics for each scenario and each country, are provided in *SI Appendix*, Table S7 a and b.

Pride tracked audience valuation, and it did so better than amusement, excitement, and happiness did. The extent to which a scenario would elicit valuation in an audience positively predicted the intensity of pride participants would feel when imagining themselves

in that scenario [$r(23) = 0.77$, $P = 10^{-5}$ (India); $r(23) = 0.81$, $P = 10^{-6}$ (United States)]. Valuation and amusement correlated in India [$r(23) = 0.58$, $P = 0.003$] but not in the United States [$r(23) = 0.02$, $P = 0.92$]. Valuation and excitement correlated marginally in India [$r(23) = 0.36$, $P = 0.07$] but did not correlate in the United States [$r(23) = 0.14$, $P = 0.51$]. Valuation and happiness correlated in India [$r(23) = 0.76$, $P = 10^{-5}$] and the United States [$r(23) = 0.72$, $P = 10^{-4}$]. We note that pride correlated with excitement [United States: $r(23) = 0.47$, $P = 0.018$; India: $r(23) = 0.66$, $P = 0.0003$], with happiness [United States: $r(23) = 0.88$, $P = 10^{-8}$; India: $r(23) = 0.77$, $P = 10^{-5}$], and with amusement in India [$r(23) = 0.66$, $P = 0.0003$], although not in the United States [$r(23) = 0.19$, $P = 0.36$]. Recall that the valuation, pride, amusement, excitement, and happiness ratings originated from different participants.

To more clearly assess the associations between the emotions and valuation, we regressed valuation simultaneously on pride, amusement, excitement, and happiness. Pride continued to predict valuation even after controlling for the other three emotions [$\beta = 0.59$, $P = 0.004$ (India); $\beta = 0.86$, $P = 0.007$ (United States)]. Amusement did not display unique associations with valuation [$\beta = 0.07$, $P = 0.72$ (India); $\beta = 0.04$, $P = 0.84$ (United States)]. Excitement negatively predicted valuation; significantly in India ($\beta = -0.47$, $P = 0.012$) and marginally in the United States ($\beta = -0.35$, $P = 0.06$). Happiness uniquely and positively predicted valuation after controlling for the other three emotions; in India ($\beta = 0.57$, $P = 0.015$) but not in the United States ($\beta = 0.12$, $P = 0.68$). Given the intercorrelations between our predictor variables, we examined the variance inflation factor (VIF) associated with each predictor to assess potential multicollinearity. All VIFs for both analyses were less than 6.6 and thus did not exceed the commonly accepted maximum of 10 (75).

In sum, the match between audience valuation and pride is specific; it does not generalize to amusement, excitement, or happiness, even when the latter coactivate with pride.

If pride recalibrates audience valuation to augment one's welfare, and fitness, then pride should be tuned specifically to the valuations of those who, upon receiving information revelatory of gains in one's social value or formidability, would impact one's welfare—local audiences. Pride will track the valuations of foreign audiences, but only to the extent that foreign and local audiences agree in their valuations. When they disagree, the relationship between pride and foreign valuation should dissolve. To test this prediction, we conducted a follow-up study in the United States and India using scenarios constructed to elicit (i) similar levels of pride in the United States and India, (ii) more pride in the United States, or (iii) more pride in India—the latter two types of scenarios were based on an anthropological report (76) and advice from bicultural informants (*SI Appendix, 2. Study S1. Pride and Culture-Specific Valuation* and Tables S8 and S9; $n = 266$). As predicted, pride tracked the valuation of foreign audiences when the valuations of foreign and local audiences were correlated, but it failed to track foreign audiences for scenarios that led to different evaluations in the United States and India.

Discussion

These findings support the hypothesis that pride is an adaptation for cost-effectively promoting increases in others' valuations or respect for the individual. In particular, we showed that pride in the individual closely tracks the valuations of audiences in the individual's social ecology. Furthermore, pride is specific to audience valuation: Emotions that coactivate with pride, such as happiness and excitement, do not track audience valuation uniquely and reliably. These data suggest that pride, rather than other positive emotions, is distinctively involved in enhancing social valuation. Further evidence to demonstrate domain-specificity is needed, however.

The intensity of pride in prospect tracks audience evaluations, even though those ratings originate from different sets of individuals. For pride to track evaluations, the pride system must possess

accurate information about the degree to which the local audience will evaluate individuals as a function of their acts or traits. Considerations of parsimony suggest that both are informed by a common underlying architecture of social valuation.

The cross-cultural agreement on pride, valuation, and their interrelationship is noteworthy. Nonevolutionary views conceptualize cultures as being richly different from each other (77). If this hypothesis were true, then what cultures value and what makes members of different cultures proud should be substantially different. Indeed, pride has been argued to heavily rely on culture-specific schemas (55, 57, 78). One application of this argument is that in collectivist cultures such as Japan, where the self is construed as an interdependent entity, people do not strive to maintain a positive view of the self; they do not "self-enhance" (79). Instead, people strive to be modest, save face, and improve themselves (80) to harmoniously fit in the collective (81). Consistent with this view, Japan has the third-lowest pride grand mean and the lowest valuation grand mean—although we note that ratings of pride and valuation may not be directly comparable across countries (79). However, the relative pride elicited by the 25 scenarios among the Japanese, and in the other collectivist samples, substantially tracked how positively people in other countries would view individuals in those scenarios, whether those countries were individualist or collectivist [e.g., the United States vs. South Korea (82)]. These data are unlikely if people in East-Asian or collectivist cultures truly lack self-enhancement (83). However, if (*i*) pride is a human-universal adaptation designed to increase the valuation or respect conferred by members of one's local social ecology, and (*ii*) there is a species-wide architecture of social valuation, drawing on a species-typical array of evaluative adaptations for mating, social exchange, skills, and so on, then there ought to be robust similarities from culture to culture in pride, valuation, and their relationship. This view explains not only the high degree of within-culture consistency but also the between-culture consistency that we predicted and found.

The current results help to locate pride within a functionally interlinked architecture of social emotions that also includes shame, anger, and gratitude. Although each of these emotions has different hypothesized evolved functions, they all depend on an underlying evolved welfare–tradeoff psychology (21). Briefly, under the welfare–tradeoff framework (84, 85), the function of shame is to limit information-triggered reductions in the weight placed on one's welfare by others; the function of anger is to incentivize others to place a higher weight on one's welfare when that weight is deemed insufficiently low; the function of gratitude is to consolidate a higher level of cooperation when the system detects that an unexpectedly high weight has been put on one's welfare; the function of pride, as argued above, is to motivate the individual to both achieve and advertise traits or acts so that others place a higher weight on his or her welfare.

People dislike the social subordination that sometimes follows others' increases in status, and in rivalrous zero-sum settings the mere success of others is experienced as a grievance (86, 87). Occasionally, pride overactivates and causes an excessive sense of entitlement. Perhaps for these reasons, pride has long been deemed potentially problematic, even a sin (30). However, an evolutionary–functional analysis suggests a different view: This emotion is the expression of an evolved system that promotes the pursuit of socially valued courses of action and facilitates the gains in valuation that make those actions worth pursuing.

Methods

The study procedures were approved by the institutional review boards at the University of California, Santa Barbara; the Ben-Gurion University of the Negev; Griffith University; Singapore Management University and the Graduate School of Humanities, Kobe University; the Research Ethics Committee, Faculty of Economics and Business, University of Groningen; the Departmental Research Ethics Committee, Anthropology, University of Oxford; and the Ethics Board, Bilkent University. All of the participants completed electronic informed consent.

Study 1.

Samples for Study 1. We collected data from 1,458 participants in the United States (Study 1a), Canada (Study 1b), the United Kingdom (Study 1c), France (Study 1d), Belgium (Study 1e), The Netherlands (Study 1f), Switzerland (Study 1g), Italy (Study 1h), Turkey (Study 1i), Israel (Study 1j), India (Study 1k), Singapore (Study 1l), Philippines (Study 1m), South Korea (Study 1n), Japan (Study 1o), and Australia (Study 1p). The numbers of participants were 120 (United States), 29 (Canada), 86 (United Kingdom), 168 (France), 89 (Belgium), 60 (The Netherlands), 59 (Switzerland), 47 (Italy), 131 (Turkey), 105 (Israel), 120 (India), 135 (Singapore), 39 (Philippines), 37 (South Korea), 200 (Japan), and 33 (Australia). On average, 6% of each sample was excluded from analyses due to failure to correctly respond to an attention check. One Italian participant may have taken the study twice; removing that presumptive participant leaves the results virtually unchanged. Participants were recruited via Amazon Mechanical Turk (AMT) or other survey companies (United States, Canada, United Kingdom, India, Philippines, and Japan), subject pool announcement and other types of communications to students (France, Belgium, The Netherlands, Italy, Israel, Singapore, and Australia), and social networks (The Netherlands, Switzerland, Turkey, and South Korea). For demographic information and effective sample sizes, see *SI Appendix*, Table S1.

Measures. The 25 scenarios are shown in *SI Appendix*, Table S2 a–p. Participants were randomly assigned to either the audience condition or the pride condition. Participants indicated their sex at the outset and the scenarios were sexed appropriately. The order in which the scenarios were presented was random across participants. The stimuli were presented in English (United States, Canada, United Kingdom, India, Singapore, Philippines, and Australia), French (France and Switzerland), Dutch (Belgium and The Netherlands), Italian (Italy), Turkish (Turkey), Hebrew (Israel), Korean (South Korea), and Japanese (Japan).

Study 2.

Samples for Study 2. AMT was used to recruit 203 participants in the United States (Study 2a). One of the participants was removed from analyses due to failure to correctly respond to an attention check, leaving an effective sample size of 202 (120 females), with a mean age of 38 y (SD = 13). AMT was used to recruit 158 participants in India (Study 2b). Eleven of them were removed from analyses due to failure to correctly respond to an attention check, leaving an effective sample size of 147 (50 females), with a mean age of 33 y (SD = 9).

Measures. Studies 2a and 2b had five between-subjects conditions: one audience condition assessing valuation and four emotion conditions: pride, amusement, excitement, and happiness. The scenarios were the same as in Studies 1a–1p. The stimuli were presented in English in the United States and India.

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