The Functional Domain Specificity of Self-Esteem and the Differential Prediction of Aggression

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On the basis of an evolutionary theory of self-esteem (SE), it was hypothesized that the SE-aggression relationship differs across functionally distinct domains of SE and across contexts. In 2 experiments, participants had the opportunity to aggress against the evaluator of an essay they had written. In Study 1, self-perceived superiority was positively related to aggression, whereas social inclusion was inversely related to aggression. In Study 2, in which the context was altered to simulate a mating competition, only a measure of self-perceived mate value emerged as a (positive) predictor of aggression. Global SE failed to contribute to the prediction of aggression in either experiment. Statistically controlling for narcissism did not eliminate either set of findings. Implications for the conceptualization and measurement of SE and narcissism are discussed.

In light of numerous recent, highly publicized tragedies in U.S. high schools, it is tempting to suggest that research on aggressive and violent behavior is timely. As far as we know, however, aggression and violence have forever been part of human social behavior. Likewise, the topic has long been a major focus of psychologists and other social scientists, who have explored a vast array of personological, social, and cognitive factors in attempts to predict violent behavior (see Geen, 1998, for a thematic overview).

One potentially important variable for understanding aggression is self-esteem (SE). Baumeister and Boden (1998) suggested that aggression and SE may be the two most widely researched topics in all of psychology, yet surprisingly little is known about the empirical relationship between them. A proper understanding of the relationship between SE and aggression is particularly timely today given the surge of public interest in SE in recent years. From cocktail parties to state legislatures (California Task Force to Promote Self-Esteem and Personal and Social Responsibility, 1990), low SE has emerged as the explanation du jour for all manner of behavioral and social problems.

Baumeister and Boden (1998; Baumeister, Smart, & Boden, 1996) observed that psychologists have long assumed that aggression, like many other social and psychological problems, is associated with low SE. On the basis of their comprehensive literature review, however, they concluded that little evidence actually supports this claim. In fact, much circumstantial evidence suggests that, if anything, it is high SE (or certain forms of it) that may be associated with aggression. For example, people with higher SE evince a variety of dysfunctional and irrational responses to failure and criticism that are not shown by lower SE people; depressed people are less aggressive than nondepressed people; self-deprecating, shy people are underrepresented among populations of violent criminals; and higher (collective) SE is associated with violent hate groups such as Nazis, street gangs, and the Ku Klux Klan.

Of course, many people with high SE are not aggressive, and those who do not aggress in all circumstances. Instead, the relationship is likely to be moderated by at least two classes of factors: (a) situational variables that elicit (or do not elicit) aggressive responses, and (b) differences in the particular type or domain of SE being assessed. These two factors form the core of the interactive model proposed by Baumeister and colleagues (Baumeister et al., 1996), according to which aggressive responses are activated by threatened egotism (i.e., “favorable views of the self that are disputed or that in some other way encounter an external appraisal that is far less favorable”; Baumeister & Boden, 1998, p. 114). The crucial situational factor identified in their model is the perception of ego threat: “When favorable views about oneself are questioned, contradicted, impugned, mocked, challenged, or otherwise put in jeopardy, people may aggress. In particular, they will aggress against the source of the threat” (Baumeister et al., 1996, p. 8).

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According to Baumeister and colleagues (Baumeister et al., 1996), certain forms of high SE—including those that are inaccurately inflated, are chronically unstable or uncertain, or depend strongly on others’ opinions—should cause people to be particularly sensitive in perceiving ego threats. As summarized by Baumeister and Boden (1998), “violent, aggressive people tend to be arrogant, conceited, egotistical, narcissistic, or otherwise enamored of themselves” (p. 114). They equated this constellation of self-views with the construct of narcissism, which, moreover, is empirically related to a general disregard for others and their welfare (Wink, 1991).

In two empirical tests of their model, Bushman and Baumeister (1998) administered measures of global SE and narcissism to college students and then exposed them to positive or negative feedback (ostensibly from another participant) about the quality of an essay they had just written. Students were subsequently given an opportunity to aggress against their evaluators by punishing them with loud noise bursts as part of a competitive reaction-time game. In both studies, higher levels of narcissism predicted increased aggression, particularly in the negative-feedback condition. In Study 2, this effect disappeared when the competitive game was played against an innocent third party instead of against the individual who ostensibly provided the negative evaluation. None of these results emerged when measures of global SE were substituted for the narcissism scale in the analysis.

Although this research makes an important contribution to our understanding of SE and aggression, it remains unclear precisely what it is about narcissism, as distinct from global SE, that is associated with aggressive responding to threats. Bushman and Baumeister (1998) discussed several possible distinctions between narcissism and SE that might shed light on the answer: For example, narcissism might represent (a) an exaggerated form of SE, (b) some kind of subcategory of SE, (c) a reflection of unstable SE (cf. Kernis, Grannemann, & Barclay, 1989), or (d) a motivation to be (rather than a belief that one is) superior to others. The problem is further complicated by the fact that the scale used by Bushman and Baumeister to measure narcissism contains at least four (Emmons, 1984, 1987) or possibly seven (Raskin & Terry, 1988) distinct subcomponents or factors.

For these and other reasons, we have adopted a different conceptual approach to the problem, focusing on the construct of SE rather than narcissism. We suggest, on the basis of a theoretical model proposed recently by Kirkpatrick and Ellis (2001), that SE itself comprises a number of functionally distinct mechanisms that may relate to aggression in different ways. To clarify the nature of the SE-aggression relationship, then, it is essential to measure these distinct components separately rather than aggregating them into a measure of global SE and to examine the SE-aggression relationships at this domain-specific level.

An Evolutionary Approach to SE

According to Leary’s (Leary & Baumeister, 2001; Leary, Tambor, Terald, & Downs, 1995) sociometer theory, maintaining high SE per se is not an adaptive function of the design of a self-system. Instead, SE is an adaptation designed to monitor social inclusion or acceptance in interpersonal relations—an adaptive problem, Leary and colleagues argued, that is central to reproductive success—and to motivate corrective action when inclusion is perceived to be dangerously low. Leary and colleagues have shown how many topics in the SE literature can be usefully reconceptualized in this way (see Leary & Baumeister, 2001; Leary & Downs, 1995) and have provided empirical support for the model (e.g., Leary, Haupt, Strausser, & Chokel, 1998; Leary et al., 1995).

Kirkpatrick and Ellis (2001) have recently expanded the sociometer model in several directions. First, they argued that, from an evolutionary perspective, social inclusion is not a single adaptive problem but rather a loose category of numerous specific problems. Different types of relationships pose qualitatively different adaptive problems, and the attributes valued in different kinds of relationship partners often are not the same. For example, physical attractiveness is a valued characteristic in mates but not generally in family members or teammates. Because the adaptive problems associated with various kinds of relationships tend to differ, there is no such thing as a general, all-purpose relationship partner. Consequently, Kirkpatrick and Ellis argued that self-evaluations should be functionally domain specific as well: Multiple sociometers should monitor inclusion in such functionally distinct domains as mateships, coalitions, and familial networks.

Second, Kirkpatrick and Ellis (2001) contended that social inclusion or acceptance is only one aspect of interpersonal relationships monitored by sociometers. The adaptive value of inclusion in a cooperative relationship should depend also on the strength or value of that relationship or group to the individual. Because cooperation within groups almost invariably means (and typically occurs because of) competition between groups, the value of an individual’s cooperative relationships tends to be tied to his or her partner’s or group’s status relative to competing groups. Instrumental coalitions are perhaps the clearest example of this, but the same can be true of mateships, friendships, and kin networks. SE should therefore be regulated by sociometers that reflect the perceived strength and value of one’s social groups and interpersonal relationships as well as one’s perceived inclusion within them. This view is consistent with that of SE in social identity theory (Tajfel, 1982; Tajfel & Turner, 1986), which some authors refer to as social SE (Rubin & Hewstone, 1998) or collective SE (Luhtanen & Crocker, 1992) in contrast to personal SE.

Moreover, not all interpersonal relationships are cooperative. Within mateships, coalitions, and larger social networks, individuals compete with others for mates, status, and other resources. Another major source of SE therefore should reflect individuals’ self-perceptions of dominance, status, and attractiveness relative to local competition. Contrary to Leary (Leary & Baumeister, 2001; Leary & Downs, 1995), Kirkpatrick and Ellis (2001) did not believe that one’s relative standing on competitive dimensions can be reduced theoretically to social inclusion. Being better than others (e.g., wealthier, prettier) is not the same as being accepted or liked by them. For example, it can be lonely at the top if one’s efforts to gain status or resources results in alienation or resentment from mates, friends, or coalitions.

Third, Kirkpatrick and Ellis (2001) contended that multiple sociometers have evolved to perform a variety of distinct functions. They argued that, in addition to simply motivating individuals to take action to restore social inclusion to satisfactory levels, sociometers are designed to automatically activate a variety of psychological and behavioral processes designed to solve specific adaptive problems. Such processes can involve long-term developmental changes, as when early life experiences such as rejection
by parents lead individuals to mature earlier and display short-term mating strategies in adulthood (Belsky, Steinberg, & Draper, 1991), or they can involve short-term responses to immediate environments (Gangestad & Simpson, 2000). For example, self-perceptions of low dominance should lead individuals to pursue low-risk interpersonal strategies and to avoid potentially dangerous confrontations with more dominant individuals, and perceptions of weakness in their current coalition should motivate individuals to either strengthen their group or defect to a stronger one. From this perspective, aggression can be viewed as a class of behavioral strategies that are regulated in part by specific domains of SE in combination with specific situational factors.

It is important to note that the term domain specific in Kirkpatrick and Ellis’s (2001) theory reflects common usage in contemporary evolutionary psychology (e.g., Tooby & Cosmides, 1992) rather than its traditional usage in social psychology. Self-theorists have proposed a variety of ways of carving global SE into specific domains such as competence or achievement, virtue or morality, power or control, and love or acceptance by others (e.g., Coopersmith, 1967; Epstein, 1973), in most cases inferring multidimensionality from factor-analytic results (Harter, Waters, & Whitesell, 1988). In contrast to this descriptive approach, the evolutionary–psychological meaning is based on the assumption that the brain/mind has evolved numerous, functionally specialized, domain-specific psychological mechanisms to solve diverse, qualitatively distinct adaptive problems, because one or a few domain-general mechanisms cannot easily account for the sheer complexity and variability of human behavior (see Symons, 1992; Tooby & Cosmides, 1992). Kirkpatrick and Ellis’s theory thus represents an attempt to identify the various kinds of self-assessment mechanisms an evolved human mind is expected to contain, on the basis of a functional analysis of the many qualitatively distinct kinds of adaptive problems faced by our ancestors in the context of group living.

The two approaches to domain specificity can lead to quite different hypotheses about the psychological organization of SE. At a descriptive level, for example, one might distinguish academic from athletic domains in a school population, but at a functional level of analysis these two domains might overlap considerably: Both represent contexts for competing within groups for status, resources, and mates and might function more or less interchangeably as a basis for guiding relationship choices or calibrating investment within ongoing relationships. Conversely, a unitary construct of athletic SE might confound two qualitatively distinct classes of mechanisms, one related to individual performance (e.g., competition among teammates for prestige, resources, or mates) and one to collective team performance. As explained below, we believe that a functional rather than a descriptive approach to the domain specificity of SE offers greater promise for understanding and generating testable hypotheses about the ways SE relates empirically to strategic behaviors such as aggression.

Aggression and the Domain Specificity of SE

This view of the structure and functions of SE offers a rich source of hypotheses about the ways certain forms of SE should be related to aggression. Specifically, it provides a theoretically based strategy for approaching the questions raised by Bushman and Baumeister’s (1998) findings: (a) Why does narcissism but not global SE per se predict aggression? and (b) might other aspects of SE predict aggression differently?

It should be evident from the preceding discussion why we believe measures of global SE fail to predict aggression: Different domains of SE may be differentially related to the display of aggression. If some SE domains are positively related to aggression and others are negatively related to it, these countervailing effects may cancel each other out to produce null findings with respect to global SE measures. We suspect that the positive findings for narcissism might then be a byproduct of narcissism scales tapping one or more specific SE domains that are positively related to aggression in situations like the one constructed by Bushman and Baumeister (1998).

In terms of the Kirkpatrick and Ellis (2001) model, the general category of SE domains most likely to predict aggression is that of within-group competition: perceptions of one’s relative standing on functionally important dimensions such as desirability as a mate and social status. Across a wide range of species, stronger individuals tend to aggress against weaker rivals when provoked to maintain their dominant status; weaker individuals tend to avoid agonistic encounters that they are unlikely to win (cf. the construct of resource-holding potential, or RHP, in ethology and evolutionary biology; Parker, 1974). In chimpanzees, for example, ritualized submissive behaviors are routinely displayed to dominant individuals, who otherwise attack subordinates who fail to appease them (de Waal, 1982). This perspective is also consistent with research on homicide and other forms of violence in which aggression is elicited by threats to an individual’s honor or reputation (Daly & Wilson, 1988; Nisbett & Cohen, 1996). Several theorists have suggested that human SE may be linked to similar dominance or RHP mechanisms (Barkow, 1989; Wenegrat, 1984). To the extent that the Narcissistic Personality Inventory (NPI; the narcissism scale used by Bushman & Baumeister, 1998) taps aspects of SE that are related to such within-group competition, this would explain the narcissism–aggression link documented by Bushman and Baumeister (1998).

In contrast, it is less clear why an individual’s perceived level of social inclusion—by the local community, friends, mates, or other coalitional partners—should be positively related to aggression in most circumstances. Social inclusion, unlike mating or status competition, is typically not a zero-sum game; one does not necessarily have to be superior to the competition to be a trusted friend, a valued mate, or a good coalition member. In fact, we hypothesize that greater perceived social inclusion is likely to be associated with decreased aggression in many situations. If an individual is accepted and liked by others, aggression can carry heavy costs: It is anathema to cooperative social relationships, and incurring a reputation for aggressiveness might destabilize and undermine valuable relationships over time. Individuals who are socially excluded from the outset, however, have less to lose by adopting aggressive tactics.

The Present Studies

To test these hypotheses, we designed two laboratory experiments modeled after those of Bushman and Baumeister (1998) but in which we expanded the measurement of SE to include a variety of scales selected to tap some of the specific domains of SE outlined by Kirkpatrick and Ellis (2001). The first of these was
designed to examine the degree to which domain-specific measures of SE, including self-perceived superiority and social inclusion, predict aggression in the laboratory context created by Bushman and Baumeister (1998). In the second study, we modified the situation to simulate a mate competition between same-sex individuals to determine whether a more highly domain-specific measure of SE—namely, self-assessed mate value—would emerge as the strongest predictor of aggression in this new context. In addition, we measured narcissism in both studies to examine the degree to which any predictive power of our domain-specific SE scales remained after narcissism was statistically controlled.

Study 1

Study 1 was designed to examine the predictive relationship between aggressive responding and a variety of domain-specific measures of SE. We replicated the methods of Bushman and Baumeister (1998) exactly, with two important exceptions.

First, in lieu of the Taylor (1967) noise-blast procedure used by Bushman and Baumeister (1998), our aggression measure was the amount of hot sauce allocated to a target as part of a (bogus) taste-preferences study. This procedure has been used successfully in empirical research on aggression (McGregor et al., 1998), and Lieberman, Solomon, Greenberg, and McGregor (1999) have argued persuasively for the ecological validity and other advantages of this procedure relative to alternatives such as the Taylor paradigm. Assuming that both are valid measures of aggression, we expected to replicate the Bushman and Baumeister findings that (a) narcissism positively predicts aggression, particularly in the negative-feedback condition, and (b) global SE is not predictive of aggression.

Second, we included questionnaire measures not only of global SE and narcissism but also of a variety of other SE measures culled from the literature to represent the domains of within-group competition and social inclusion outlined by Kirkpatrick and Ellis (2001). Our principal hypotheses were that (a) SE measures reflecting relative competitive standing (e.g., self-perceived superiority to others) are, like narcissism, positively related to aggression, whereas (b) a measure of social inclusion is inversely related to aggression.

Method

Participants

The participants consisted initially of 116 college students (55 men, 61 women) at a southeastern state university who received course credit in exchange for their participation. After we eliminated data from participants who expressed suspicion about the various deceptions or the purpose of the study and from those who failed to complete all of the questionnaires, the final sample included 40 men and 48 women.1

Materials

SE measures. The questionnaire packet contained the two SE measures used by Bushman and Baumeister (1998): the 10-item Rosenberg (1965) scale for assessing global SE and the 40-item NPI (Raskin & Terry, 1988) for measuring narcissism. In addition, we included three measures culled from the literature that appeared to tap differentially some of the functional SE domains described by Kirkpatrick and Ellis (2001).2

Within-group social inclusion was assessed using two measures previously used for this purpose by Leary, Cottrell, and Phillips (2001): the 9-item Inclusionary Status Scale (Spivey, 1990) and the 10-item Interpersonal Support Evaluation List (Cohen, Mermelstein, Kamarck, & Hoban, 1985). Sample items from the former include “People often seek out my company” and “I often feel like an outsider in social gatherings” (reverse scored). Sample items from the latter, which appear to be highly similar in content, include “When I feel lonely, there are several people I could call and talk to” and “No one I know would throw a birthday party for me” (reverse scored). According to our data from this and other studies not reported here, these two measures were so highly correlated (i.e., upward of r = .75) that it seemed appropriate to combine them into a single 19-item measure.

Within-group competitive SE was assessed using Pelham and Swann’s (1989) Self-Attributes Questionnaire, on which participants rate themselves on 10 socially desirable characteristics such as “intellectual/academic ability,” “social skills/social competency,” and “sense of humor.” This scale is unique in that the response scale is labeled explicitly in terms of percentile rankings: Participants are instructed to “rate yourself relative to other college students your own age (and sex)” on a 10-point scale ranging from bottom 5% through top 5%. Although Pelham and Swann (1989) did not design the scale expressly for this purpose, the percentile-ranking response scale seemed potentially useful as a measure of how people regard themselves specifically in comparison or competition with others—that is, as a measure of their self-perceived superiority to others (as we refer to it hereafter).

Finally, we included a 12-item measure of self-perceived mate value developed by Williams (1999). Sample items include “Members of the opposite sex seem to like me” and “In a social situation, I often find that persons of the opposite sex seem to act as if I’m not even there” (reverse scored). In some ways this domain reflects within-group competition—that is, one’s relative competitive standing with respect to attracting mates—but in other ways it might be regarded as a kind of social inclusion (i.e., within a particular kind of relationship). In either case, it clearly reflects self-perceptions within a particular relationship domain, one of central importance from an evolutionary perspective.

Responses to all items were provided on standard 4-, 5-, or 7-point scales per their respective, original formats (except for the superiority measure, as described above). We randomized order of presentation of the scales within packets for each participant by shuffling the pages before distributing the questionnaires.

1 In contrast, Bushman and Baumeister (1988) eliminated only 6 out of 266 participants in their Study 1 and only 1 out of 281 in their Study 2 on the basis of expressed suspicion. We were concerned that the procedures might be transparent to more participants than this, particularly in the negative-feedback condition, in which participants are insulted by someone and then provided a (convenient) opportunity to aggress against this same person. Consequently, on the basis of a thorough postexperimental debriefing, we eliminated from analysis participants who expressed even the slightest hint of suspicion about the procedures, cover story, or purpose of the research. Because most of the results were stronger when a less stringent criterion for inclusion was used, the results reported here are, if anything, conservative.

2 Two other measures were also included for purposes unrelated to the present studies: a measure of social dominance adapted by Leary et al. (2001) from the California Psychological Inventory (Megargee, 1972) and the Collective Self-Esteem Scale developed by Luhtanen and Crocker (1992). Note, however, that neither of these scales emerged as a significant predictor of aggression in either Study 1 or Study 2, and including them in regression equations did not substantially alter any of the principal findings.
Other materials. The bogus abortion essays to be read and evaluated as part of the cover story were taken directly from Bushman and Baumeister (1998).

Hot sauce was prepared exactly following the recipe designed by Lieberman et al. (1999). Other materials for the hot-sauce part of the experiment included small plastic spoons for participants to use in allocating hot sauce samples and for tasting the hot sauce themselves, styrofoam bowls (16 fluid oz.; 473 ml) into which the samples were spooned. Saltine crackers for participants to taste as part of the bogus taste-preferences task, envelopes in which the Saltine crackers were delivered to participants, a cup of water for participants to drink, and a scale to weigh the hot-sauce samples.

Procedure

Participants were tested 3 to 5 at a time, separated in isolated cubicles off a central room. Two experimenters worked together to guide participants to cubicles quickly on their arrival to prevent interaction between them. Participants were told that they would be participating in a study about personality, attitudes, and taste preferences.

After signing an informed consent form, participants completed the questionnaire packet. They were then asked (for the attitudes part of the study) to write a short essay on abortion, either pro-choice or pro-life, as they preferred. The completed essay was then taken away, and the participant was led to believe that it would be shown to a same-sex participant in another cubicle. Participants then received an essay ostensibly written by the other participant; half (randomly assigned) of the participants received an essay that agreed with their position on abortion, and half received an essay that disagreed (the position manipulation). They were asked to evaluate the essay on a series of scales provided and were told that the ratings would be given back to the author of the essay.

After some time had elapsed, the experimenter returned the participant’s own essay with ratings ostensibly made by the other participant, with the explanation that most people are curious to know how the other participant rated their essay. These essay evaluations consisted of bogus ratings and constituted the ego threat (feedback) manipulation. Half of the participants received negative ratings with respect to organization, originality, writing style, and overall quality. At the bottom of the scale was a handwritten remark stating, “This is one of the worst essays I’ve ever read.” The other half of the participants received positive ratings and a handwritten comment that stated, “No suggestions. Great essay!” (These and all other details were taken exactly from Bushman & Baumeister, 1998.)

Next, participants were informed that in the final part of the study, they would taste and evaluate a food sample—either dry foods or spicy foods, depending on random assignment. The participants were further told that because the experimenters needed to be unaware of the type and quantity of food tasted, participants would administer the food samples to each other. (These and all other details exactly follow Lieberman et al., 1999.)

Next, participants completed a taste preference inventory, on which they reported their liking for salty, spicy, dry, sweet, sour, and creamy foods on a 21-point scale. At this time they were also asked as a precaution if they had any food allergies (none reported any). The experimenter returned and told each participant that he or she was randomly assigned to the dry-foods condition. The experimenter then left with the taste preference inventory and returned with a bland Saltine cracker in an envelope. Participants were instructed to consume the entire cracker and evaluate its taste on a scale ranging from 1 (complete dislike) to 9 (extreme liking).

After several minutes, the experimenter returned with a tray containing all of the hot-sauce-allocation materials. The participants were instructed to prepare a sample of hot sauce to give to another person (who ostensibly had been randomly assigned to the spicy-foods condition) and told that, to avoid confusion, they were to prepare a sample for the person with whom they had exchanged essays earlier. The experimenter then mentioned that people are often curious about the taste preferences of others, so the participants were shown the (bogus) taste-preference responses of the other person. The completed form indicated that the other participant disliked spicy foods (i.e., gave a rating of 3 on the 21-point liking scale for spicy foods).

Participants were instructed to use a plastic spoon to place a quantity of the hot sauce into the bowl and seal it with the lid provided. They were further told that all quantities of hot sauce are useful and that they should put in as little or as much as they wanted. It was also made clear (subtly) that the person who received the hot sauce would have to consume the entire quantity allocated (with tortilla chips to be provided). To be sure that the participants were aware of the intensity of the hot sauce, they were instructed to use another spoon to taste it. They were then asked to write on the cup the number of the participant who previously evaluated their essay. Before leaving the room, the experimenter handed the participants a checklist of the steps involved in allocating the hot sauce to ensure no errors were made.

After participants had prepared their hot-sauce samples, they were brought together in the main room and thoroughly debriefed. Samples were weighed after participants departed.

Results

Preliminary Analyses

Examination of the hot-sauce weights revealed that their distribution was strongly positively skewed. We therefore transformed the values by computing the natural logarithm of the weight in grams (plus 1), which produced an approximately normal distribution.

Correlations among the SE scales in this sample are shown below the diagonal in Table 1. All were positively and significantly intercorrelated (all ps < .05).

A 2 (sex) × 2 (feedback) × 2 (position) independent-groups factorial analysis of variance (ANOVA) was performed on the transformed hot-sauce weights. As expected, participants who received negative feedback (M = 2.68, SE = 0.14) allocated a significantly greater amount of hot sauce than did the participants who received positive feedback (M = 1.88, SE = 0.15), F(1, 80) = 13.57, p < .01. In addition, men (M = 2.54, SE = 0.15) allocated significantly more hot sauce than did women (M = 2.01, SE = 0.14), F(1, 80) = 6.06, p < .05. These results are consistent with those of Bushman and Baumeister (1998) and support the validity of the hot-sauce procedure as an alternative measure of aggression.

Although no main effect was observed for the position variable (p > .40), the interaction between position and feedback approached statistical significance, F(1, 80) = 3.24, p = .08. The feedback effect was stronger in the opposite-position condition than in the same-position condition. That is, participants were most...
aggressive when insulted by a person with dissimilar attitudes \((M = 2.78, \text{SE} = 0.20)\) and least aggressive when praised by such a person \((M = 1.61, \text{SE} = 0.23)\). Means for the same-position condition were 2.58 and 2.15, respectively (both \(SEs = 0.19\)).

**SE and Aggression**

A series of multiple regression analyses was used to assess the degree to which the global and domain-specific SE scales were predictive of aggression beyond these group variables. In the first set of analyses, each scale was added separately into a regression equation already containing effects-coded variables representing sex, feedback, and essay position. Results are shown in the first three columns of Table 2. The regression coefficients were positive for all of the SE scales \((\beta s = .11 \text{ to } .23)\) except social inclusion \((\beta = -.06)\). However, only self-perceived superiority emerged as a statistically significant predictor of aggression in these analyses \((\beta = .23, p < .05)\).

To examine the interactions between each of the SE scales and feedback, we performed a second set of analyses by adding a Scale × Feedback interaction term to each of the equations above. (Scale scores were mean centered before we computed cross-products.) The interaction terms in all four analyses were positive and of approximately equal magnitude \((\beta s = .09 \text{ to } .13)\) but did not approach statistical significance in any case \((ps > .10)\). Because the various SE scales are themselves intercorrelated and, to some extent, overlap with respect to the specific domains measured, a stronger test of our hypothesis involves asking whether the unique part of a given scale is predictive of aggression, beyond whatever predictive power it may share with other SE measures. Therefore, we constructed a single multiple regression equation containing all of the domain-specific SE scales along with the global SE scale.

The results of this analysis are shown in the right-hand side of Table 2. With all other domains of SE statistically controlled, two scales emerged as significant predictors of aggression: As predicted, self-perceived superiority was a positive predictor of aggression \((\beta = .40, p < .01)\), whereas social inclusion emerged as a significant inverse predictor of aggression \((\beta = -.32, p < .05)\).4

Finally, a backward stepwise procedure was used to eliminate the weaker scales one by one until only the significant predictors remained. Only these same two predictors, superiority \((\beta = .43)\) and social inclusion \((\beta = -.31)\), remained in the equation at the last step (both \(ps < .01\)).

### Table 1

**Correlations Among Self-Esteem (SE) Scales: Studies 1 and 2**

<table>
<thead>
<tr>
<th>SE scale</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Global SE</td>
<td></td>
<td>.69</td>
<td>.62</td>
<td>.55</td>
<td>.39</td>
</tr>
<tr>
<td>2. Superiority</td>
<td>.59</td>
<td></td>
<td>.55</td>
<td>.60</td>
<td>.62</td>
</tr>
<tr>
<td>3. Social inclusion</td>
<td>.39</td>
<td>.57</td>
<td></td>
<td>.58</td>
<td>.38</td>
</tr>
<tr>
<td>4. Mate value</td>
<td>.51</td>
<td>.53</td>
<td>.41</td>
<td></td>
<td>.53</td>
</tr>
<tr>
<td>5. Narcissism</td>
<td>.39</td>
<td>.55</td>
<td>.37</td>
<td>.42</td>
<td></td>
</tr>
</tbody>
</table>

\*Note. Correlations for Study 1 are below the diagonal \((N = 88)\); correlations for Study 2 are above the diagonal \((N = 74)\). All correlations are significant at \(p < .05\).*

### Table 2

**Results of Separate Regressions and Multiple Regression: Study 1**

<table>
<thead>
<tr>
<th>SE scale</th>
<th>Separate regressions</th>
<th>Multiple regression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
</tr>
<tr>
<td>Global SE</td>
<td>0.27</td>
<td>0.24</td>
</tr>
<tr>
<td>Superiority</td>
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<td>0.11</td>
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<tr>
<td>Mate value</td>
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<td>0.20</td>
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<tr>
<td>Social inclusion</td>
<td>-0.11</td>
<td>0.17</td>
</tr>
</tbody>
</table>

\*Note. \(N = 88\). In Columns 1–3, each row represents a separate regression analysis in which each respective self-esteem (SE) scale is tested with effects of sex, feedback, and essay position controlled. Columns 4–6 present the results from a single multiple regression equation with all SE scales included as predictor variables, with effects of sex, feedback, and essay position also controlled.

\(* p < .05. \quad ** p < .01.

### Supplementary Analyses: Narcissism

In light of the findings of Bushman and Baumeister (1998), we conducted additional analyses to examine the potential role of narcissism, vis-a-vis our domain-specific SE scales, in predicting aggression.

First, parallel to the first set of SE analyses above (cf. left half of Table 2), narcissism was added to a regression equation controlling for the categorical variables of sex, feedback, and essay position. In this context, narcissism was not a significant predictor of aggression \((\beta = -.09, p > .10)\). The interaction between narcissism and feedback was comparable in magnitude to that of the other SE scales \((\beta = .13)\) and also was not significant.

Second, narcissism was added to the multiple regression equation (cf. right half of Table 2) as a predictor variable along with the three categorical variables and our four SE scales. The principal findings described above remained virtually unchanged; even with narcissism statistically controlled, self-perceived superiority emerged as a significant positive predictor \((\beta = .48, p < .01)\) and social inclusion emerged as a significant negative predictor \((\beta = -.29, p < .05)\) of aggression. Surprisingly, however, narcissism now emerged—that is, with our domain-specific SE scales statistically controlled—as a significant predictor in this equation, but as a negative rather than positive predictor of aggression \((\beta = -.24, p < .05)\).

In an attempt to clarify this puzzling finding, we computed four separate narcissism subscales according to Emmons’s (1984, 1987) factor-analytic results for the NPI: The four factors were Exploitativeness/Entitlement, Leadership/Authority, Superiority/Arrogance, and Self-Absorption/Self-Admiration. We then recomputed the multiple regression analysis containing the categorical predictors and SE scales but replaced the NPI total-score variable with the four subscale variables. As in the preceding analyses, superiority \((\beta = .47, p < .01)\) and social inclusion \((\beta = -.34, p < .01)\) again predicted aggression significantly and in opposite di-

4 Multicollinearity was not sufficient to warrant concerns about the stability of these regression results: Variance inflation ratios (VIFs) for the SE scales ranged only from 1.57 (for mate value; tolerance = .64) to 2.19 (for superiority; tolerance = .46).
reactions. Only one of the four NPI subscales, Superiority/Arrogance ($\beta = -0.28, p < 0.05$), was statistically significant, and it was also the only subscale to carry a negative weight.

**Discussion**

Our first question was whether the Bushman and Baumeister (1998) results could be replicated using an alternative procedure for assessing aggression. The significant effects for sex (men more aggressive than women) and feedback (more aggression in the negative- than in the positive-feedback condition) seem to support the validity of this procedure as an aggression measure.

However, we did not successfully replicate the Bushman and Baumeister (1998) findings for narcissism, which failed to predict aggression either alone or in interaction with the feedback manipulation. This result cannot be easily explained in terms of psychometric problems (the scale was highly reliable and correlated as predicted with other measures) or lack of statistical power (the beta weight for narcissism was very close to zero and in fact was in the wrong direction). Moreover, other results confirm that the feedback manipulation was effective and that other scales did significantly predict aggression. The most obvious place to look for an explanation, then, is procedural differences between this study and Bushman and Baumeister’s (1998). We discuss one such hypothesis after presenting the results of Study 2.

The results do, however, support our hypotheses about the domain-specific predictors of aggression. In the strongest test of our hypothesis, in which each scale was tested with the other scales statistically controlled, self-perceived superiority was positively related to aggression, whereas social inclusion was inversely related to aggression. This seems to us a powerful demonstration of the utility of conceptualizing and measuring SE in a domain-specific rather than a global manner. Global SE, in contrast, failed to contribute to the prediction of aggression either alone or when other SE measures were statistically controlled.

It is important to note that our measure of self-perceived superiority is not clearly representative of any specific domain of SE as discussed by Kirkpatrick and Ellis (2001). Rather, it is better considered a generalized measure of a broad category of within-group competition, as compared with the other broad categories of within-group social inclusion and between-groups competition. Our measure (Pelham & Swann, 1989) merely asks participants to evaluate themselves relative to other college students of the same age on a variety of socially desirable characteristics.

The other SE measure we included that (in part) taps within-group competition, self-perceived mate value, was not predictive of aggression in this setting. This is a much more highly domain-specific measure, corresponding specifically to the particular competitive domain of mating—a domain that was not specifically implicated by having one’s attitudinal essays evaluated by a stranger. As discussed below, Study 2 is designed to further investigate mate value as a predictor of aggression in a context specifically designed to simulate a mating competition.

Our measure of social inclusion, in contrast, emerged as an inverse predictor of aggression. From an evolutionary perspective, a strategy of aggressing against fellow in-group members is a potentially costly strategy if one’s level of social inclusion is high. In the experimental setting of this study, participants knew little about the stranger who ostensibly evaluated their essay, other than

that he or she was of the same sex as the participant, probably another student at the same college, and possibly in the same psychology class. It would be foolish for someone who enjoys widespread social acceptance to risk alienating a potential ally and developing a reputation for aggression under such conditions. For individuals with low social inclusion, however, there is little to lose by being aggressive.

It might be argued that these results are especially impressive given that certain aspects of the study were not well designed to assess highly domain-specific hypotheses about SE and aggression. From the Kirkpatrick and Ellis (2001) perspective, it is not clear exactly which specific domains of SE are implicated in the essay-evaluation procedure borrowed from Bushman and Baumeister (1998). On one hand, compliments or insults about an essay implicate one’s personal level of intelligence, writing ability, or other skills relative to others—that is, within-group competitive standing. On the other hand, given the emotionally charged nature of the abortion issue, aggression in this context is likely to be influenced by any number of other factors unrelated to SE. If the feedback manipulation in fact confounds ego threat with other irrelevant (to the present context) effects, this should have made it more difficult to demonstrate the domain specificity of the SE-aggression relationship. Study 2 was therefore designed to eliminate these complications and unambiguously target a single, specific domain of SE.

**Study 2**

Toward this end, we attempted in Study 2 to create a situation in which the particular (within-group competitive) domain of mate value would be highly salient by having (currently uncoupled) participants compete for the opportunity to meet and spend time with an opposite-sex participant. Participants wrote essays about why they should be selected by the opposite-sex target and received negative or positive feedback—which ostensibly would also be seen by the target—on their essay from a same-sex rival. They then had the opportunity to aggress against the rival by allocating hot sauce. Our principal hypothesis was that in this simulated mating-competition context, self-perceived mate value would emerge as the strongest predictor of aggression against the rival.

In addition, a second goal of Study 2 was to further investigate our failure to replicate the effect of narcissism that had been previously documented by Bushman and Baumeister (1998). As noted earlier, it is not clear why narcissism failed to emerge as a significant predictor of aggression, either alone or in interaction with the feedback manipulation, in Study 1. We therefore included the narcissism scale again in Study 2 to determine whether our failure to replicate these findings was due generally to our alternative measure of aggression or to some more specific aspect of the design of Study 1.

Finally, we modified the procedure in several minor ways to enhance the credibility of the cover story for the hot-sauce procedure, given that a sizeable number of participants had to be eliminated from the analyses in Study 1 because they had expressed suspicion about some aspect of the experiment. These changes are noted throughout the next section.
Method

Participants

The questionnaire measures were completed by 340 undergraduate psychology students (169 men, 168 women, and 3 participants who did not indicate their gender) who received course credit in exchange for their participation. Participants for the laboratory part of the study were solicited from those who had indicated on their questionnaires that they (a) were not currently involved in a committed heterosexual relationship, and (b) had not participated in Study 1 the preceding semester. A total of 75 students meeting these criteria completed the laboratory session. Data from 1 participant were excluded because she expressed suspicion about the deception, leaving 35 men and 39 women with complete data for analysis.

Materials

The self-report scales were identical to and scored in the same manner as those in Study 1. Order of presentation was again randomized for each questionnaire. The hot-sauce materials were also identical to those used in Study 1, with one minor modification: We altered the food-evaluation scale to include more items (i.e., aroma, heatness/dryness, aftertaste, overall texture) to enhance the realism of the taste-preferences cover story.

As explained in the next section, participants wrote essays about themselves rather than about abortion. A new essay was therefore created that was ostensibly written by the other participant. This essay contained a series of general, unremarkable statements such as “I am an economics major and psychology minor” and “I work in a restaurant” to ensure that the essay itself did not provoke the participant in any way or cause the participant to particularly like or dislike the person. There was no position manipulation comparable to the abortion-stance variable in Study 1; all participants read the same bogus essay. The essay-evaluation materials were similar to those used in Study 1, with two modifications. First, the evaluation form was expanded to include additional evaluative scales—readability, originality, degree of attention grabbing, clarity of expression, persuasiveness, and overall appeal—to make the evaluations seem more personal rather than purely academic. The bogus feedback values on these scales were filled in such that the mean valence of the feedback in each condition was comparable to that used in Study 1 and by Bushman and Baumeister (1998). Second, the handwritten comments on the bogus feedback forms were changed on the basis of the observation by several participants in Study 1 that the negative written feedback was too strong to be completely believable. In Study 2, the handwritten comment in the negative-feedback condition read, “This wasn’t all that. Looks like I’ll get to do the activity.” In the positive-feedback condition it read, “Great job! He’s [She’s] going to have a tough choice!”

Procedure

The overall design of this study was very similar to the design for Study 1, with a few important modifications. First, the SE measures were administered to the participants in a separate, preliminary session so that the participants would not infer that the hot-sauce manipulation was in any way connected with their ratings on the SE scales. This also enabled us to measure current relationship status in advance and to solicit participation for the laboratory procedure from those who indicated that they were currently not involved in a committed dating relationship.

Second, we made changes to the cover story and essay procedure to alter the nature of the ego threat. Participants were told that the study involved food preferences and personality and consisted of three parts, the last being the food-tasting task. They were then told that they would be competing with a same-sex rival for the opportunity to do this third part together with an opposite-sex partner (who ostensibly was in another cubicle) rather than alone; it was emphasized that it was “much more fun” that way.

In the first part of the study, participants wrote essays to the potential opposite-sex partner to try to convince him or her that they would be good partners for the food-tasting task. They were then led to believe that they would evaluate each other’s essays and that both the essays and the evaluations would be used by the opposite-sex target to choose his or her partner for the final phase of the experiment.

After participants had written their essays, they were given the essay ostensibly written by the rival to rate on the evaluation form provided while the rival presumably was rating theirs. The experimenter then came in to collect the essay evaluation and to show the participant the rival’s ratings. These ratings, as in Study 1, were either highly positive or highly negative and represented the feedback manipulation.

Next, participants were told that the second part of the experiment would involve a preliminary taste test, which would familiarize them with the materials and procedure while the target person decided with whom he or she wanted to participate. Participants were then (ostensibly) randomly assigned to taste a dry food (cracker) and to prepare a hot-sauce sample for their rival. All subsequent details of the hot-sauce procedure were identical to Study 1.

Results

Preliminary Analyses

As in Study 1, the distribution of hot-sauce weights was strongly positively skewed. The same logarithmic transformation—in (weight + 1)—was again used to produce a dependent variable with an approximately normal distribution. The SE scales were again all positively and significantly intercorrelated (see above the diagonal in Table 2).

A 2 × 2 (Sex × Feedback) independent-groups factorial ANOVA was performed on the transformed hot-sauce weights. As in Study 1, participants who received negative feedback (M = 2.39, SE = 0.17) allocated a significantly greater amount of hot sauce than did the participants who received positive feedback (M = 1.84, SE = 0.17), F(1, 70) = 5.16, p < .05, and men (M = 2.45, SE = 0.18) allocated significantly more hot sauce than did women (M = 1.79, SE = 0.16), F(1, 70) = 7.37, p < .01. There was no significant interaction between feedback and sex, F(1, 70) = 1.97, p > .10.

SE and Aggression

The regression analysis strategy used was identical to that in Study 1. In the first set of analyses, each SE measure was entered into a separate regression equation, with feedback and sex statistically controlled. Results are shown in the left half of Table 3. As predicted, self-perceived mate value was the only significant predictor of aggression (β = .27, p < .05).

Using the same procedure as in Study 1, we again found no significant interactions between any of the SE scales with the feedback manipulation, although again all of the interaction terms carried positive regression weights of about the same magnitude (βs = .07 to .13).

Next, we performed a multiple regression analysis containing all of the SE scales to examine the unique predictive value of each scale while holding the others constant. As shown in the right half of Table 3, mate value emerged as the only significant predictor
Slightly to prediction in this equation (standards. However, narcissism itself failed to contribute significantly to perceived mate value would emerge as the strongest predictor of final section.

Finding of a main effect for narcissism but not the interaction of sex and feedback controlled. Columns 4–6 present the results from a single multiple regression equation with all SE scales included as predictor variables, with effects of sex and feedback also controlled.

Separate regressions

<table>
<thead>
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<th>SE scale</th>
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<th>SE B</th>
<th>β</th>
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<td>0.16</td>
<td>.18</td>
</tr>
<tr>
<td>Superiority</td>
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<td>0.10</td>
<td>.14</td>
</tr>
<tr>
<td>Mate value</td>
<td>0.51</td>
<td>0.21</td>
<td>.27*</td>
</tr>
<tr>
<td>Social inclusion</td>
<td>0.15</td>
<td>0.17</td>
<td>.10</td>
</tr>
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</table>

Multiple regression

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
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<tbody>
<tr>
<td>Global SE</td>
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<td>0.23</td>
<td>.12</td>
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<td>Mate value</td>
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<td>0.28</td>
<td>0.30*</td>
</tr>
<tr>
<td>Social inclusion</td>
<td>-0.17</td>
<td>0.22</td>
<td>-0.11</td>
</tr>
</tbody>
</table>

Note. N = 74. In Columns 1–3, each row represents a separate regression analysis in which the respective self-esteem (SE) scale is tested with effects of sex and feedback controlled. Columns 4–6 present the results from a single multiple regression equation with all SE scales included as predictor variables, with effects of sex and feedback also controlled.

\( \beta = .30, p < .05 \). In fact, except for global SE (\( \beta = .12 \)), no other scale even had a positive regression weight in this analysis.

In a subsequent backward stepwise procedure, only mate value survived to the last step, thereby reproducing the result for the separate regression for this variable (i.e., \( \beta = .26, p < .05 \)).

Supplementary Analyses: Narcissism

The same series of analyses including narcissism was conducted as in Study 1. First, unlike Study 1 but consistent with Bushman and Baumeister (1998), narcissism was a significant, positive predictor of aggression (\( \beta = .27, p < .05 \)) in a regression equation controlling only for sex and feedback. However, the interaction between narcissism and feedback was again nonsignificant (\( \beta = .15, p > .10 \)).

Next, narcissism scores were added to the multiple regression equation containing sex, feedback, and our four SE scales (cf. right half of Table 3). Controlling for narcissism reduced the magnitude of the mate value effect only slightly, from \( \beta = .30 \) to \( \beta = .25 \), but reduced it to marginal significance (\( p < .10 \)) by conventional standards. However, narcissism itself failed to contribute significantly to prediction in this equation (\( \beta = .23, p > .10 \)) with the other SE scales statistically controlled.

Finally, the preceding analysis was replicated with the four NPI subscales substituted for the NPI total-score variable. Mate value again was marginally significant with narcissism controlled in this manner (\( \beta = .31, p < .06 \)). None of the four NPI subscales even approached significance (\( ps > .10 \)).

Discussion

As in Study 1, the significant effects for sex and feedback suggest that the hot-sauce procedure provides a valid alternative to the Taylor (1967) paradigm as a behavioral measure of aggression. Unlike Study 1, however, Study 2 partly replicated Bushman and Baumeister’s (1998) results for narcissism. We replicated their finding of a main effect for narcissism but not the interaction between narcissism and feedback. We return to this issue in the final section.

Most important, the crucial prediction of Study 2—that self-perceived mate value would emerge as the strongest predictor of aggression in our simulated mating-competition context—was supported. This particular SE scale was the only significant predictor of aggression in a separate regression as well as in a multiple regression with the other SE scales statistically controlled. Controlling for narcissism weakened this effect only slightly, suggesting that narcissism (or any of its components) does not provide a reasonable alternative explanation for the results.

General Discussion

The results of these two experiments are consistent with the main predictions based on Kirkpatrick and Ellis’s (2001) theory of SE. Study 1 demonstrates that in a given context, qualitatively distinct domains of SE can predict aggression differentially—and even in opposite directions. In a simultaneous regression analysis, a measure of self-perceived superiority was positively related to aggression, whereas a measure of social inclusion was inversely related to aggression. Study 2 demonstrates that relations between SE and aggression are further differentiated depending on context:

To a laboratory situation designed to simulate a mating competition, participants’ self-assessed mate value emerged as the only specific SE domain to predict aggression significantly.

Moreover, the results of these studies are consistent with those of Bushman and Baumeister (1998) in demonstrating the lack of predictive value of global SE in understanding aggression. The results of Study 1 suggest why this is the case: If global SE represents some kind of averaging across multiple domain-specific sociometers, as suggested by Kirkpatrick and Ellis (2001), and if different domains relate to aggression differentially (and, in some cases, in opposite directions), then global measures of SE will be much weaker predictors of aggression than will domain-specific measures.

Narcissism

Although we, like Bushman and Baumeister (1998), found narcissism to predict aggression (positively) in Study 2, we failed to replicate this effect in Study 1. We noted earlier that, in light of various other findings in Study 1, this null finding for narcissism was not easily explained in terms of psychometrics, statistical power, or the use of hot sauce rather than noise blasts as an index of aggression. Such explanations seem even less plausible in view of the positive results from Study 2. However, there is one methodological difference among the studies that seems potentially relevant: In both Bushman and Baumeister (1998) and our Study 2, aggression was assessed in the context of an explicit competition. In the former, participants delivered noise blasts to an opponent as part of a competitive reaction time game; in the latter, participants were competing for the opportunity to spend time with an opposite-sex target. In our Study 1, however, there was no explicit competition of any kind.

It is not entirely clear why this difference should matter with respect to narcissism, in part because it is not clear exactly what the NPI, which was used in these studies, actually measures. Factor analyses of the scale by Emmons (1984, 1987) suggest the presence of three factors, one of which is labeled “narcissism.” If this factor were not considered, the results of Study 2 would be more difficult to interpret.
nce of four factors, which he labeled Leadership/Authority, Self-Absorption/Self-Admiration, Superiority/Arrogance, and Exploitativeness/Entitlement. Raskin and Terry (1988), however, found seven distinct factors (in addition to a general factor): Authority, Exhibitionism, Superiority, Vanity, Exploitativeness, Entitlement, and Self-Sufficiency. In either case, it is not obvious which of these aspects one would expect to be predictive of aggression, or why.

When we approach the question from a different angle, however, an intriguing hint comes from Bushman and Baumeister (1998), who suggest that narcissism may be less a matter of having a firm conviction about one’s overall goodness (which is self-esteem in the literal sense), than a matter of being emotionally invested in establishing one’s superiority. It may be, in other words, more a matter of motivation and emotion than of cognition per se: Narcissists care passionately about being superior to others, even if they are not yet convinced that they have achieved this superiority. (p. 220)

Examination of the content of the NPI items provides some informal support for this distinction. For example, a sizeable proportion of the items begin with a phrase such as “I like to . . .” or “I would prefer . . .” rather than “I am . . .” or “I believe I am . . . .”

If the NPI taps the desire to be (or appear) superior rather than the belief that one actually is superior, the presence or absence of explicit competition might well moderate the narcissism-aggression link. In explicitly competitive contexts, narcissists may use aggressive behavior in an effort to persuade rivals that they are superior, even if (or perhaps because) they are not so convinced themselves. From an evolutionary perspective, aggression is an adaptive tactic only for those who can back it up: The ones who pick fights are the ones who expect to win. Narcissists, then, may be mimicking the behavior of those who really are superior in an effort to be perceived as superior. However, perhaps because this is a risky strategy—the consequences could be dire if a truly superior rival calls one’s bluff—it is adopted only in explicitly competitive situations.

This is admittedly a highly speculative account, but it is one worth exploring in future research. But whatever the explanation, our Study 1 results seem contrary to the conclusion of Bushman and Baumeister (1998) that “it is not so much the people who regard themselves as superior beings who are the most dangerous, but, rather, those who have a strong desire to regard themselves as superior beings” (p. 228). It appears that people who “regard themselves as superior beings” are potentially dangerous too—though perhaps for different reasons.

Interactions With Feedback Manipulation

We failed in both laboratory studies to replicate Bushman and Baumeister’s (1998) finding of a significant interaction between narcissism and the feedback manipulation; indeed, we found no significant Feedback X Scale interactions for any SE scale in either study. One potential explanation for these null findings is, of course, statistical power, which was relatively low in our two experimental studies because of the relatively small sample sizes (88 and 74, respectively). In contrast, Bushman and Baumeister’s (1998) samples were unusually large for laboratory experiments of this type (260 and 280, respectively). With larger samples, some of our interaction terms might well have been statistically significant.6

The other side of the power issue, however, is the size of the true effect. The Narcissism X Feedback interactions found by Bushman and Baumeister (1998) do not appear to be particularly strong in their studies—particularly their Study 1, in which narcissism was a significant positive predictor of aggression within each of the feedback groups considered separately (see their Figure 1, p. 223). Indeed, our own Narcissism X Feedback interaction terms were quite consistent across our two studies (beta weights of .13 and .15, respectively) and probably are comparable in magnitude to the average of those reported by Bushman and Baumeister. Similarly, the magnitudes of our various other SE X Feedback interactions were also highly homogeneous across the two studies, with all interaction beta weights ranging from .07 to .13.

To the extent that such interactions (particularly with respect to narcissism) do exist, they support the interactive ego-threat model proposed by Baumeister and Boden (1998; Baumeister et al., 1996). However, to the extent that these interactions are small in magnitude and that main effects of narcissism (or other SE scales) explain the preponderance of the variance, their model leaves much unexplained. Although they found support for both narcissism main effects and Narcissism X Feedback interactions, Bushman and Baumeister (1998) focused mainly on the latter in their interpretation—appropriately, given that the evidence for interactions was in fact more consistent across their two studies. When our results are added to the picture, however, the evidence for main effects of narcissism and (particular types of) SE is now stronger. Aggression was strongly influenced by the valence of feedback, of course, but the predictive effects of our SE variables were largely independent of these.

Theoretically, these results seem more consistent with Kirkpatrick and Ellis’s (2001) position that interpersonal aggression represents a category of evolved behavioral strategies that are contingent on the perceived status of one’s interpersonal relations in functionally important domains. For example, people (like organisms of many other species) with high status and power can effectively use aggressive behavior as a means of achieving desired goals, whereas subordinates or lower status individuals are better served in the long run by deference. Dominant individuals need not be threatened to benefit from the use of aggressive behavior: Picking a fight against a subordinate is a potentially effective strategy for obtaining desired resources, much as an alpha animal in other species might aggressively drive a competitor away from food, water, or a mate to monopolize for itself. Such behavioral strategies are likely to be activated, according to Kirkpatrick and Ellis, by self-perceptions of superiority, status, and dominance.

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6 Statistical interactions are notoriously difficult to detect in regression analyses, in part because the measurement error carried by interaction variables is generally greater than the unreliability of the respective interacting variables (Busemeyer & Jones, 1983; Jaccard & Wang, 1995). However, this particular issue is not applicable here because the feedback variable, being manipulated by the experimenter, has perfect reliability by definition, so the reliability of any Feedback X Scale interaction term is not attenuated relative to the reliability of the scale itself.
Global Versus Domain-Specific SE

Bushman and Baumeister (1998) concluded that SE in its literal sense is unrelated to aggression. Our results suggest that SE may indeed be related to aggression, but not at the global level. Instead, functionally distinct, domain-specific aspects of SE may predict aggression in different ways in different circumstances. Measures of global SE, however, smear over the differentiated nature of these underlying mechanisms and consequently do not empirically predict aggression reliably. Our finding (Study 1) that two specific measures of SE predicted aggression in opposite directions seems to us a powerful demonstration that conceptualizing and measuring SE at a global level may lead researchers to overlook any number of potentially important empirical relationships. The implications are potentially widespread: How many other results in the SE literature might look different if analyzed in a more domain-specific way?

Of course, the idea that global SE might be carved into more specific domains is not new: SE research has increasingly come to focus on domain specificity (Harter et al., 1988), and numerous researchers have proposed descriptive frameworks for carving SE into multiple dimensions (e.g., Coopersmith, 1967). However, Kirkpatrick and Ellis’s (2001) perspective differs from these other approaches by offering a theoretical basis for identifying functionally distinct domains and the specific adaptive problems each is designed to solve.

If different domains of SE operate in more or less functionally distinct ways and relate empirically to other variables differentially in different contexts, this may have numerous practical and applied implications as well. For example, consider intervention efforts, now common in American schools, designed to enhance children’s SE. Leary and Baumeister (2001) noted one implication of the sociometer view in this context: Artificially raising children’s SE may be akin to manually moving the needle on a car’s fuel gauge to F instead of adding fuel to the tank. Our domain-specific view points to at least two additional potential problems. First, the success of an intervention likely depends on how well it addresses the particular domain of SE that is low: If children feel socially excluded, for example, making them feel smart academically may not help. Second, our Study 1 results suggest the troubling possibility that raising certain kinds of SE could possibly have the unintended effect of increasing aggressiveness. Although we doubt that making children feel superior to others is a goal of such programs, it might be important to monitor whether it is an unintended effect.

This domain-specific perspective may also prove helpful for making sense of otherwise bewildering acts of violence. Consider the perpetrators of the tragic Columbine High School shootings of April 1999, for example: Did they have low or high SE? Investigators concluded from an examination of the shooters’ diaries, journals, and datebooks that there were also many common themes throughout their writings. Harris and Klebold both wrote of not fitting in, not being accepted and their lack of self-esteem. They reflected on natural selection, self-awareness and their feelings of superiority. (Jefferson County Sheriffs’ Office, 1999)

This combination of not fitting in and not being accepted, on the one hand, and feelings of superiority, on the other, is precisely the pattern that predicted aggression in our Study 1.

Limitations and Future Directions

Of course, these are only two empirical studies, and they are not without their weaknesses. In addition to the usual concerns about the generalizability of findings from college samples and the limitations of self-report measures of SE, our studies are limited by relatively low statistical power. This does not speak against the significant results that emerged despite low power but raises the possibility that one or more other domains might relate to aggression in ways we were unable to detect.

Another important limitation is that most of our measures may not have been particularly well designed to reflect the specific domains of SE postulated by Kirkpatrick and Ellis (2001) but only differences between broad categories of domains. The measures of self-perceived superiority and social inclusion that predicted aggression in Study 1 both illustrate this point. In this initial series of studies, we opted to use extant measures from the literature rather than ones designed by us for this purpose. An important task for future research is to determine whether measures that are more highly specific are better or worse at predicting aggression in various circumstances. In Study 2 we took one step in this direction by focusing on mate value as a specific competitive domain, but more research is needed to determine whether similar findings emerge for other domains.

One domain of particular interest with respect to aggression—though one not examined in the present studies—is that of between-groups competition and collective (or social) SE. Crocker and Luhtanen (1999) found that people who score higher in collective SE respond to negative evaluations of their group by derogating out-groups, and Baumeister et al. (1996) noted that many acts of coalitional aggression, ranging from street gangs to war and genocide, are understandable in terms of threatened egotism at the group level. Higher levels of collective SE might therefore predict aggression when threats are directed against an individual’s valued groups or perhaps against other members of these groups. An interesting direction for future research is to create a laboratory context in which coalitional concerns are salient—much as we attempted to do with mating concerns in our Study 2—to determine whether collective SE emerges as a predictor of aggression (against, e.g., members of some sort of out-group) in such contexts.

As does much research, the studies reported here raise more questions than they answer. However, we think the questions they raise are particularly important ones. To the extent that SE and aggression are central constructs in psychology, both for theoretical and applied reasons, a proper understanding of the complex relationships between them seems an important goal to pursue.

References


FUNCTIONAL DOMAIN SPECIFICITY

767


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