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Low Self-Esteem *Is* Related to Aggression, But Especially When Controlling For Gender: A Replication and Extension of Donnellan et al. (2005)

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The present research replicated and extended that of Donnellan et al.'s (2005) Study 3. Nearly eighteen hundred undergraduates completed measures of self-esteem, narcissism, and aggression. Replicating Donnellan et al., self-esteem and narcissism were negatively and positively associated, respectively, with aggression, and these effects were mutually suppressive. Extending this research, both the self-esteem and narcissism effects on aggression, and the extent of their mutual suppression, became stronger when controlling for gender. The effects of gender and self-esteem on aggression were also mutually suppressive. The positive effect of narcissism on physical aggression and the negative effect of self-esteem on verbal aggression were stronger for men than women. The importance of considering gender in the relationships among self-esteem, narcissism, and aggression is discussed.

The efficacy of self-esteem in predicting aggression has been contested in public policy (California Task Force to Promote Self-Esteem and Personal and Social Responsibility, 1990), the media (Begley, 1998; Goode, 2002; Slater, 2002), and the psychological literature (Baumeister, Bushman, & Campbell, 2000; Baumeister, Campbell, Krueger, & Vohs, 2003; Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005; Webster, Kirkpatrick, Nezlek, Smith, & Paddock, 2006). Recent research by Donnellan et al. (2005) and others (Rosenberg, Schooler, & Schoenbach, 1989; Webster et al., 2006) has provided robust support for an inverse relationship between measures of self-esteem and aggression. These findings contrast with those of Baumeister and colleagues (Baumeister et al., 2000, 2003; Baumeister, Smart, & Boden, 1996), who have suggested that self-esteem should be unrelated to aggression after controlling for narcissism. According to Baumeister and colleagues, narcissism, which represents a form of artificially inflated high self-esteem, should be positively related to aggression, but typically only following a threat to the self. Laboratory aggression experiments have produced mixed results, with global self-esteem being either unrelated (Bushman & Baumeister, 1998; Kirkpatrick, Waugh, Valencia, & Webster, 2002; Twenge & Campbell, 2003) or inversely related (Webster & Kirkpatrick, 2006) to behavioral aggression, and narcissism being either positively related (Bushman & Baumeister, 1998; Twenge & Campbell, 2003) or inconsistently related (Kirkpatrick et al., 2002) to behavioral aggression.

Gender may be particularly important to understanding and clarifying the relationship between self-esteem and aggression. Meta-analyses have revealed that men tend to report higher self-esteem (d = .2; Kling, Hyde, Showers, & Buswell, 1999) and display more behavioral aggression (d = .3; Eagly & Steffan, 1986) than women. Given these gender differences, it is possible that gender may suppress (cf. MacKinnon, Krull, & Lockwood, 2000), and in some cases moderate, the relationship between self-esteem and aggression. For example, Webster et al. (2006) recently showed that gender consistently

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moderated the interactive effect of self-esteem level and temporal self-esteem instability on self-reports of attitudinal aggression across three studies.

The purpose of the present research was to demonstrate the importance of gender to the effects of self-esteem and narcissism on aggression. First, the present research replicates Donnellan et al.'s (2005) Study 3 by having undergraduate students complete self-report measures of self-esteem, narcissism, and aggression. Second, it extends Donnellan et al.'s (2005) Study 3 by accounting for gender differences in several crucial analyses. Given the literature reviewed above, specific predictions were developed for the present research:

1. *Replication predictions.* Self-esteem and narcissism will (a) be negatively and positively associated, respectively, with aggression, and (b) serve as mutual suppressors in their respective relationships with aggression (Donnellan et al., 2005).
2. *Extension predictions.* Given gender differences in self-esteem (Kling et al., 1999) and aggression (Eagly & Steffan, 1986), (a) controlling for gender will strengthen the effects of self-esteem and narcissism on aggression as well as the mutual suppression of self-esteem and narcissism on aggression, and (b) gender and self-esteem will serve as mutual suppressors in their respective relationships with aggression.
3. *Exploratory predictions.* Gender may (a) moderate the effects of self-esteem (Webster et al., 2006) and narcissism on aggression, and, consequently, (b) moderate the extent of the self-esteem/narcissism mutual suppression effects on aggression.

Method

Participants

Participants were 1,781 undergraduate students (59.6% women) who completed a mass testing session as part of a course requirement for an introductory psychology class.

Measures

Self-esteem was measured using four items from Rosenberg's (1965) Self-Esteem Scale ($\alpha = .82$). *Narcissism* was measured using four items from the Narcissistic Personality Inventory (Raskin & Terry, 1988; $\alpha = .61$), with each item taken from one of four factors described by Emmons (1987). *Aggression* was measured using 12 items from the Aggression Questionnaire ($\alpha = .80$), which consisted of the three items with the highest factor loadings (as described by Buss & Perry, 1992) from each of its four subscales: Physical Aggression ($\alpha = .80$), Verbal Aggression ($\alpha = .63$), Anger ($\alpha = .78$), and Hostility ($\alpha = .57$). All inventories used a 10-point response scale from 1 (*extremely uncharacteristic of me*) to 10 (*extremely characteristic of me*).

Results

Men (coded "1") reported significantly higher self-esteem [$t(1779) = 5.29$, $p < .001$, $R^2 = .017$] and marginally higher narcissism [$t(1779) = 1.88$, $p = .060$, $R^2 = .002$] than women (coded "–1"). Self-esteem and narcissism were positively correlated [$r(1779) = .30$, $p < .001$, $R^2 = .088$].

Table 1 shows the regression results for the aggression measures as functions of (a) gender, self-esteem, and narcissism separately (upper third), (b) self-esteem and narcissism simultaneously (middle third), and (c) self-esteem, narcissism, and gender simultaneously (lower third). Replicating the findings of Donnellan et al. (2005), self-esteem and narcissism were negatively and positively associated, respectively, with most aggression measures. The effects of self-esteem and narcissism on aggression became relatively more negative and positive, respectively, when controlling for the other (Prediction 1a), except for Verbal Aggression, in which the narcissism effect remained virtually unchanged when controlling for self-esteem. When gender was added to the models, the effects of self-esteem and narcissism on aggression became even more negative and positive, respectively (Prediction 2a), except for Anger, in which the narcissism effect was slightly attenuated.

Also replicating Donnellan et al. (2005), self-esteem and narcissism served as mutual suppressors in their relationships with aggression, such that each became more strongly associated with aggression when controlling for the other (Table 2, rows 1 & 3; Prediction 1b). For example, a significant Sobel (1982) test ($z = 8.86$) revealed that the simple effect of self-esteem on total Aggression Questionnaire scores [$t(1779) = -9.0$] was significantly strengthened [$t(1778) = -12.5$] after controlling for narcissism. Similarly, a separate significant Sobel test ($z = 9.04$) revealed that the simple effect of narcissism on total Aggression Questionnaire scores [$t(1779) = 8.3$] was significantly strengthened [$t(1778) = 12.0$] after controlling for self-esteem. (See MacKinnon

Table 1. Separate and Multiple Regressions Predicting Self-Reported Aggression as a Function of Gender, Self-Esteem, and Narcissism

	Total AQ			Physical Aggression			Verbal Aggression			Anger			Hostility		
Variable	β	*t*	pr^2	β	*t*	pr^2	β	*t*	pr^2	β	*t*	pr^2	β	*t*	pr^2
Separate regressions															
Gender	.26	11.5*	.069	.43	19.9*	.182	.17	7.3*	.029	.01	0.3	.000	.05	2.2†	.003
RSE	–.21	–9.0*	.043	–.03	–1.1	.001	.11	4.5*	.011	–.30	–13.3*	.091	–.42	–19.6*	.178
NPI	.19	8.3*	.038	.16	6.6*	.024	.32	14.1*	.101	.09	4.0*	.009	–.04	–1.7	.002
Multiple regression: Step 1															
RSE	–.29	–12.5*	.081	–.08	–3.3*	.006	.01	0.6	.000	–.36	–15.6*	.120	–.45	–20.0*	.184
NPI	.28	12.0*	.075	.18	7.3*	.029	.31	13.3*	.091	.20	8.7*	.040	.09	4.1*	.009
Multiple regression: Step 2															
RSE	–.33	–14.6*	.107	–.13	–6.0*	.020	–.01	–0.3	.000	–.37	–15.7*	.122	–.46	–20.6*	.193
NPI	.28	12.5*	.081	.18	8.0*	.034	.31	13.5*	.092	.20	8.6*	.040	.09	4.1*	.009
Gender	.29	13.6*	.095	.44	20.6*	.192	.16	7.1*	.027	.04	1.9†	.002	.10	4.9*	.013

Note. AQ = Aggression Questionnaire. RSE = Rosenberg Self-Esteem. NPI = Narcissistic Personality Inventory. N = 1,781.
* $p \leq .001$, † $p \leq .05$.

et al., 2000, for a discussion of suppression effects, which were calculated using software by Preacher & Leonardelli, 2001). The exception to this pattern was for Verbal Aggression in which (a) controlling for self-esteem did not significantly impact the narcissism-aggression relationship and (b) narcissism served as a confounder (rather than a suppressor) of the self-esteem/aggression relationship, such that the strength of this relationship was significantly weakened (rather than strengthened).

Extending Donnellan et al.'s (2005) research, when gender was controlled, the mutual suppression of self-esteem and narcissism became notably stronger for the total Aggression Questionnaire and the Physical Aggression subscale (Table 2, rows 2 & 4; Prediction 2a). When controlling for narcissism, gender and self-esteem also served as mutual suppressors of their relationships with aggression (Table 2, rows 5 & 6; Prediction 2b), such that each became more strongly associated with aggression when controlling for the other, except for the self-esteem suppression of the relationship between gender and Verbal Aggression, which was not significant. In contrast, no such mutual suppression was detected for the effects of gender and narcissism on aggression (zs < 0.34, ps > .73).

Gender moderated the effect of narcissism on Physical Aggression [Table 3, left half; Prediction 3a; β = .05, t(1775) = 2.12, p = .034, pr^2 = .003], such that the simple effect for men [β = .23, t(1775) = 6.77, p < .001, pr^2 = .025] was stronger than it was for women [β = .14, t(1775) = 4.74, p < .001, pr^2 = .013]. Consequently, gender also moderated narcissism's suppression of the relationship between self-esteem and Physical Aggression (Prediction 3b), such that the suppression effect was stronger for men (z = 5.30) than it was for women (z = 4.27, both ps < .001). (Note that testing the moderation of suppression effects is equivalent to testing moderated mediation; see MacKinnon et al., 2000, and Muller, Judd, & Yzerbyt, 2005, for discussions.)

Gender also moderated the effect of self-esteem on Verbal Aggression [Table 3, right half; Prediction 3a; β = –.07, t(1775) = –2.68, p = .008, pr^2 = .004],

Table 2. Results of Sobel (1982) Tests (*z*-scores) for the Significance of Suppression Effects

Model	Total AQ	Physical Aggression	Verbal Aggression	Anger	Hostility
RSE → NPI → aggression	8.86*	6.38*	9.35*	7.23*	3.94*
RSE → NPI → aggression, controlling for gender	9.01*	6.79*	9.34*	7.20*	3.92*
NPI → RSE → aggression	9.04*	3.17*	0.55	10.03*	10.98*
NPI → RSE → aggression, controlling for gender	9.70*	5.45*	0.27	10.00*	10.98*
RSE → Gender → aggression, controlling for NPI	4.66*	4.82*	4.06*	1.79†	3.47*
Gender → RSE → aggression, controlling for NPI	4.69*	3.82*	0.27	4.72*	4.82*

Note. AQ = Aggression Questionnaire. RSE = Rosenberg Self-Esteem. NPI = Narcissistic Personality Inventory. N = 1,781.
*$p \leq .001$, †$p = .074$.

such that the simple effect for men [$\beta = -.09$, $t(1775) = -2.33$, $p = .020$, $pr^2 = .003$] was stronger than it was for women [$\beta = .04$, $t(1775) = 1.34$, $p = .181$, $pr^2 = .001$]. Consequently, gender also moderated self-esteem's suppression of the relationship between narcissism and Verbal Aggression (Prediction 3b), such that the suppression effect was stronger for men ($z = 2.23$, $p = .025$) than it was for women ($z = 1.33$, $p = .184$).

Discussion

Whereas Baumeister and colleagues (Baumeister et al., 1996, 2000, 2003) have contended that self-esteem should be unrelated to aggression, especially after controlling for narcissism, the present study, along with others (Donnellan et al., 2005; Rosenberg et al., 1989; Webster & Kirkpatrick, 2006; Webster et al., 2006), clearly demonstrated that self-esteem was inversely associated with multiple types of aggression, regardless of whether or not narcissism was controlled. Of equal importance was that self-esteem (negatively) and narcissism (positively) were each independently associated with most aggression measures when controlling for the other (cf. Donnellan et al., 2005; Webster et al., 2006). Perhaps more importantly, these findings were even clearer when gender was taken into account. Note that this possibility was not addressed by Donnellan et al. (2005, Study 3), who dropped gender from all analyses, since it moderated neither the effects of self-esteem nor narcissism on aggression (Footnote 4, p. 332).

Not only did the mutual suppression effects of self-esteem and narcissism on aggression generally replicate those described in Donnellan et al.'s (2005) Study 3, but they were also made stronger for the total Aggression Questionnaire and the Physical Aggression subscale when controlling for gender. Additionally, gender suppressed the self-esteem/aggression association for each measure of aggression, whereas self-esteem suppressed the gender-aggression association for each measure of aggression except Verbal Aggression.

Gender moderated both the effect of narcissism on Physical Aggression and the effect of self-esteem on Verbal aggression. In both cases, the simple effects were significantly stronger for men than they were for women. Consequently, both (a) narcissism's suppression of the relationship between self-esteem and Physical Aggression and (b) self-esteem's suppression of the relationship between narcissism and Verbal Aggression were stronger for men than they were for women. Although these results were largely exploratory, it is noteworthy that this is the first study to use moderated suppression analyses to distinguish differences in suppression effects between different groups (cf. MacKinnon et al., 2000; Muller et al., 2005).

In summary, the replication and extension predictions stated in the Introduction were largely supported by the data. The exploratory predictions,

Table 3. Predicted Means for the Gender by Narcissism Interaction for Physical Aggression and the Gender by Self-Esteem Interaction for Verbal Aggression

	Physical Aggression		Verbal Aggression	
	Narcissism		Self-Esteem	
Gender	–1 *SD*	+1 *SD*	–1 *SD*	+1 *SD*
Men	4.44	5.53	6.14	5.80
Women	2.56	3.20	5.31	5.44

Note. N = 1,781.

which were based on gender moderations of the effects of interest, met with only limited support: The observed gender interactions were observed in only 2 of 10 possible cases, and were relatively weak in terms of their effect sizes.

Limitations and Implications

One limitation of the present research was that it addressed only self-report, not laboratory, measures of aggression. Although the present findings were clearly consistent with those of previous research that have used similar self-report measures (e.g., Donnellan et al., 2005, Study 3), it remains unclear whether the present findings would apply to laboratory aggression experiments, which have collectively shown both self-esteem and narcissism to be inconsistently associated with aggression (Bushman & Baumeister, 1998; Kirkpatrick et al., 2002; Twenge & Campbell, 2003; Webster & Kirkpartrick, 2006).

A second limitation of the present research was the relatively small effect sizes of the significant gender interactions, which explained less than 0.5% of the variance in aggression. Although the present study was based on a large sample (N = 1,781), it was notably smaller than that of Donnellan et al.'s (2005) Study 3 (N = 3,143), in which no gender interactions involving the effects of interest were detected. This discrepancy in gender interactions between the present study and Donnellan et al.'s (2005) Study 3 suggests either (a) gender moderates neither the effects self-esteem nor narcissism on aggression, (b) gender moderation of these effects is indeed quite small and therefore difficult to detect consistently across studies due to sampling error, or (c) an unknown or unmeasured variable that differs between the two samples is responsible for the observed discrepancy. The third possibility is unlikely, since both samples were sufficiently large and used items from the same established measures. The first two possibilities are more promising candidates, but further research will be needed to resolve which explanation might be more likely.

Because neither self-esteem nor narcissism were experimentally manipulated with a threat, a third limitation of the present research was that it could not causally demonstrate how or why gender should necessarily strengthen or moderate the effects of interest. However, given the observed gender differences here and in other studies (e.g., Webster et al., 2006), some cautious speculation on this matter is certainly warranted.

According to Kling et al. (1999), if women's self-esteem is based on an interdependent self-construal (i.e., that others are considered part of the self; cf. Cross & Madson, 1997; Josephs, Markus, & Tafarodi, 1992), then women's self-esteem may be particularly threatened by rejection, since it may be less available for use as a coping mechanism than men's. In contrast, if men's self-esteem is based more on an independent self-construal (i.e., that others are considered separate from the self), then men may be better able than women to draw on their self-esteem to cope with threats. Similarly, in a narrative literature review, Roberts (1991) concluded that women's self-esteem is more reactive to others' evaluative feedback than men's self-esteem.

From an evolutionary perspective, Kirkpatrick and Ellis (2001) have proposed a domain-specific view of self-esteem, such that different types of self-esteem may have evolved to address specific, functionally distinct adaptive needs. For example, Kirkpatrick et al. (2002) found a "cooperative" domain of self-esteem (social inclusion) and a "competitive" domain of self-esteem (superiority) to be negatively and positively associated, respectively, with behavioral aggression. Gender differences in the extent to which these respective domains are adaptively important to the global self-esteem of men and women are certainly possible (e.g., women's self-esteem may be based more on cooperation, whereas men's may be based more on competition).

Given the gender differences discussed above, it is not surprising that accounting for gender can help clarify the self-esteem/aggression relationship. Future research should attempt to manipulate self-esteem, narcissism, or both, to understand the causal psychological mechanisms underlying dynamic relationships among gender, self-esteem, narcissism, and aggression.

Conclusions

As Kline (2004) recently noted, "replication is a critical scientific activity, one not given its due in the behavioral sciences" (p. 247). Thus, it is noteworthy that the present study so closely replicated Donnellan et al.'s (2005) Study 3 findings. The present research adds to a growing literature (e.g., Donnellan et al., 2005; Webster & Kirkpatrick, 2006; Webster et al., 2006) that has shown that, contrary to the views of Baumeister and colleagues (Baumeister et al., 1996, 2000, 2003), self-esteem is inversely associated with aggression, even when narcissism is controlled. Additionally, the present research extends Donnellan et al.'s (2005) Study 3 by demonstrating the importance of gender as a suppressor and moderator of the various effects of self-esteem and narcissism on aggression. It is hoped that the present research will inspire future investigators of the relationships among self-esteem, narcissism, and aggression to consider including gender in their analyses.

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