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Source: *The American Journal of Psychology*, Vol. 129, No. 2 (Summer 2016), pp. 169-183
Published by: University of Illinois Press
Stable URL: http://www.jstor.org/stable/10.5406/amerjpsyc.129.2.0169
Accessed: 31-05-2016 12:47 UTC



# Threatening Men's Mate Value Influences Aggression Toward an Intrasexual Rival: The Moderating Role of Narcissism

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Correlational research has linked low mate value (MV)—one's worth as a mating partner to members of the opposite sex—with aggression in men. In 2 experiments, we examined the effects of self-perceived MV on men's reported willingness to aggress directly toward a hypothetical mate poacher (Experiment 1, $N = 60$) and observable aggression toward a same-sex rival in a laboratory paradigm (Experiment 2, $N = 54$). In both experiments, the roles of narcissism in moderating the effect of MV condition on subsequent aggression were examined. Results of Experiment 1 indicated that men randomly assigned to the low MV condition were significantly more willing to report aggressive intention than men in the high MV condition. This relationship was moderated by narcissism such that men in the low MV condition who were also high in narcissism were the most likely to aggress. Results of Experiment 2 similarly showed that men in the low MV condition relative to the high MV condition aggressed more toward a same-sex rival when they were high in narcissism. These findings support evolutionary hypotheses surrounding the importance of self-perceived MV in directing aggressive mating efforts, as situated in the framework of threatened egotism.

KEYWORDS: mate value, aggression, threatened egotism, intrasexual competition

Aggression may have evolved, in part, because it helped solve recurrent adaptive challenges surrounding reproductive fitness (Archer, 2009; Arnocky, Sunderani, Gomes, & Vaillancourt, 2015; Buss, 1988, 2004; Buss & Dedden, 1990; Buss & Shackelford, 1997; Campbell, 1999; Fisher & Cox, 2009). According to this hypothesis, men—similar to males in many other mammalian species—might

American Journal of Psychology
Summer 2016, Vol. 129, No. 2 pp. 169–183 • © 2016 by the Board of Trustees of the University of Illinois

increase their chances of successful reproduction via the strategic use of aggression (see Buss & Shackelford, 1997, for review). Physical aggression toward intrasexual (i.e., same-sex) rivals, which is perpetrated more frequently and more violently by men relative to women across the life span (Campbell, 1999; Card, Stucky, Sawalani, & Little, 2008; Hyde, 1984), may deter potential mate poachers (Buss & Shackelford, 1997) or increase social status and mating access to women (Buss, 2004; Buss & Dedden, 1990). Because shelter from injury and violence has been a recurring adaptive problem (Buss, Shackelford, Choe, Buunk, & Dijkstra, 2000), women sometimes exhibit a preference for men who are capable of offering physical protection (Buss & Barnes, 1986). Therefore, it is not surprising that when men's status and mating goals are experimentally primed, willingness to aggress against other men has been shown to increase (Griskevicius et al., 2009).

Yet the decision to aggress against an intrasexual rival can also be extremely costly. For instance, direct aggression confers risk of retaliation, social exclusion, injury, or death (Cross, 2010; Daly & Wilson, 1988; Wilkowski, Hartung, Crowe, & Chai, 2012). Because of the inherent risks, the decision to aggress is not indiscriminate, but rather relies on contextual cues signaling an adaptive threat (Archer, 2001; Arnocky, Ribout, Mirza, & Knack, 2014; Cashdan & Downes, 2012; Griskevicius et al., 2009). Cross-sectional research suggests that low mate value (MV) may be one such factor precipitating the use of aggression as a sexually competitive strategy, given that men of low MV are competitively disadvantaged relative to their high MV counterparts. Across two studies, we examined how manipulation of men's self-perceived MV may cue aggressive intention and action toward a same-sex rival, and how individual differences in one's perceptions of self-worth (self-esteem and narcissism) might influence this relationship.

### *Mate Value*

Men's MV has many facets, including, but not limited to physical attractiveness (Kenrick & Keefe, 1992), ability to secure resources (Buss et al., 2000), good, kind, and exciting personality (Buss & Barnes, 1986), and sociality, parenting capacity, and wealth (Fisher, Cox, Bennett, & Gavric, 2008). One's perception of their MV (i.e., self-perceived MV) can be defined as "the total sum of characteristics an individual possesses at a given moment and within a particular context that impacts on their ability to successfully find, attract, and retain a mate" (Fisher et al., 2008, p. 157).

From an evolutionary perspective, a sufficient MV is important for attracting mates and ultimately for producing offspring (Fisher et al., 2008). As one example, men who are low on certain traits, such as having a less masculine face and voice (Feinberg, 2008) or a less masculine body (e.g., higher shoulder to waist ratio; Dijkstra & Buunk, 2001) are generally less preferred as romantic partners by women (e.g., Rhodes, Simmons, & Peters, 2005). Therefore, low MV men may face adversity in attracting, and subsequently retaining, romantic partners (Figueredo et al., 2001; Figueredo & McClosky, 1993). Given the potential reproductive disadvantages associated with low MV, researchers have suggested that humans have evolved psychological mechanisms that are sensitive to environmental cues as to one's value as a mate, relative to intrasexual rivals (see Arnocky, Sunderani, Miller, & Vaillancourt, 2012, for review). Men may evaluate their own MV via social comparisons made toward other men (Castro, Hattori, Yamamoto, & de Araújo Lopes, 2014). Sociometer theory (Leary, Tambor, Terdal, & Downs, 1995) suggests that self-esteem functions as such an indicator, and from this perspective is defined as an index of where one stands in contrast to others (Brase & Guy, 2004). Both self-perceived MV and MV enhancement effort are significant predictors of self-esteem (Brase & Guy, 2004), and some researchers have suggested that self-esteem is negatively influenced by rejection in a mating context (Leary et al., 1995). For instance, men's self-esteem is negatively correlated with their wives' infidelity (Shackelford, 2001). From this view, self-perceived MV is considered to be malleable, fluctuating according to available contextual cues to one's value as a mate (e.g., Landolt, Lalumière, & Quinsey, 1995; Surbey & Brice, 2007). For men who subsequently perceive themselves to be of low MV via social evaluation, aggression may be one tactic used to increase status or prevent the loss of resources.

### *Mate Value and Aggression*

Aggression has been found to occur more frequently among men who are low in MV (or in specific variables linked to MV), perhaps as a strategy for gain-

ing resources or status (e.g., Buss & Shackelford, 1997), for retaining mates (Figueredo & McClosky, 1993; Miner, Starratt, & Shackelford, 2009), or for imposing costs on intrasexual rivals (Daly & Wilson, 1988). For example, Daly and Wilson found that the overwhelming majority of offenders in 1972 Detroit homicides were low on valued characteristics such as financial status and education. Moreover, these particular murders typically occurred over same-sex rivalries. Similarly, Archer, Holloway, and McLoughlin (1995) found that young men with fewer resources were more likely to report using physical aggression during conflicts surrounding money, face saving, or property, and less masculinized men were more likely to fight over access to women. Other research has linked proximate indicators of men's MV (e.g., low-status jobs) with increased use of partner-directed aggression as well (Fox, Benson, DeMaris, & Wyk, 2002; Wilt & Olson, 1996). With this evidence, it is suggested that low MV men may use more risky competitive strategies because, from a fitness standpoint, they have more to gain and less to lose from its implementation (Daly & Wilson, 1988).

Some evidence for a link between low self-perceived MV and aggression is also found in the self-esteem literature. Some authors suggest that low self-esteem is a significant contributor to aggressive human tendencies (e.g., Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005; O'Moore & Kirkham, 2001; Sprott & Doob, 2000). However, others argue that individuals with "inflated, unstable, or tentative beliefs in the self's superiority" that are characteristic of narcissism (Baumeister, Smart, & Boden, 1996, p. 5) are also prone to aggressive behavior in the face of threatened egotism (e.g., Baumeister et al., 1996; Hymel, Bowker, & Woody, 1993; Vaillancourt, 2013). It is therefore possible that although a threat to one's MV may be generally linked to aggressive behavior, this relationship may be especially strong among those who hold an initially inflated and grandiose view of their own value.

### *Narcissism and Aggression*

The relationship between MV threat and men's interpersonal aggression may be modulated by personality traits that are particularly sensitive to threatening negative self-evaluations. Narcissism is intimately linked to dominance and short-term mating strategies and has been proposed to have evolved because, under specific environmental conditions, it may benefit survival and reproductive fitness (see Holtzman & Donnellan, 2015). The theory of "threatened egotism," established by Baumeister et al. (1996), posits that aggression may be a reaction in response to ego threat. In their seminal study, Bushman and Baumeister (1998) found that individuals who scored high on a narcissism scale were significantly more likely to be aggressive after receiving negative feedback on a writing task if they interpreted the feedback as a threat. Narcissism is more closely associated with an untenable positive self-view in agentic domains such as status or intelligence, both of which are important to men's mate value (Konrath, Bushman, & Campbell, 2006). For this reason, Bushman and Baumeister argued that although elevated self-esteem translates to a higher general view of self, it is narcissism that is the strongest predictor of aggressive response to threat.

Although proactive aggression (i.e., unprovoked) may be a tactic used to further one's goals or external gains (Dodge & Coie, 1987; Poulin & Boivin, 2000), narcissists' reactive aggression seems to be confined to the source of threat to the individual (Bushman & Baumeister, 1998; Vaillancourt, 2013). For instance, Bushman and Baumeister (1998) found that aggression toward a source of threat was generally increased among people receiving ego-threatening information and that narcissism (but not self-esteem) moderated this link. Importantly, when they were given an opportunity to aggress against nonthreatening individuals, there were no differences, suggesting that "narcissists are fairly selective and specific in their aggression. The seeming implication . . . that narcissism increases aggression toward everyone should probably be discarded" (p. 227). Much of the existing ego threat literature has focused on negative feedback delivered on mating-irrelevant tasks. It has not been established whether ego threat applies to a reproductive threat or competitive paradigm in which aggressing against an intrasexual rival may be perceived as a more viable behavioral option in the face of information about one's own relative low MV.

### *The Present Research*

Previous research has provided a number of correlational designs that suggest individuals with low MV are more aggressive; however, the directionality

of this link is unknown. It seems possible that low ratings of one's MV could be a consequence rather than a cause of aggressive behavior. For instance, aggression may incite feelings of shame, which are in turn linked to reduced perceptions of one's social attractiveness (Gilbert, 2011). Accordingly, experimental studies of the effects of self-perceived MV are necessary. Across two experiments, we examined the relationship between receiving positive or negative MV information and its effects on willingness to aggress against a hypothetical attractive intrasexual rival (Experiment 1), as well as directly observable aggression toward an intrasexual rival in a well-validated behavioral paradigm (Experiment 2). In both experiments, it was expected that narcissism, an index of high perceived self-worth in agentic domains, would moderate these links such that negative (low) MV information would induce aggressive responses, but only among men scoring high on narcissism.

## EXPERIMENT 1

In Experiment 1, we predicted that men whose self-perceived MV was threatened via priming manipulation would be more willing to aggress against a hypothetical intrasexual rival attempting to poach their mate, compared with those whose MV was bolstered (H1). Furthermore, based on evidence supporting threatened egotism (e.g., Bushman & Baumeister, 1998; Baumeister, Bushman, & Campbell, 2000) and the role of narcissism in the decision to aggress after receiving ego-threatening information (Vaillancourt, 2013), we predicted that trait narcissism would moderate this effect (H2). Specifically, we predicted that priming low MV would increase aggressive behavior, but only among men scoring high on narcissism.

### METHOD

#### *Participants*

This experiment and consent procedure were approved by the Nipissing University Research Ethics Board. Participants were provided with a participant information letter and subsequently provided written (signed) informed consent. Sixty heterosexual male undergraduate students from Nipissing University were recruited for this study ($M$ = 22.7 years, $SD$ = 2.93). Participants were mainly of Caucasian descent (95%), followed by African American (3.3%) and South Asian (1.7%). The majority were recruited in the hallways of the university and given $5 remuneration for their time, whereas the remainder received partial credit toward a psychology course.

#### *Materials and Procedure*

Participants were told that the researchers had been hired by a dating Web site to assess a newly formed online matchmaking technology. It was explained that in order to conduct this assessment, there would be three separate questionnaires that the participant would complete: an initial personality test, dating history, and demographics questionnaire, followed by the new online questionnaire (this questionnaire was, in actuality, the MV priming manipulation) and a final paper questionnaire (the aggression outcome variable).

##### *Questionnaire 1: Self-Esteem and Narcissism*

###### *SELF-ESTEEM.*

After providing informed consent and answering a series of demographic questions, participants completed the Rosenberg Self-Esteem Scale (Rosenberg, 1965). This measure consists of 10 items, each with four response options ranging from 1 = *strongly disagree* to 4 = *strongly agree*. Sample items from this measure include "I feel that I have a number of good qualities" and "At times, I think I am no good at all" (reverse coded). Psychometric testing for the present study revealed good internal consistency ($\alpha$ = .92).

###### *NARCISSISM.*

The Narcissistic Personality Inventory–16 (NPI-16; Ames, Rose, & Anderson, 2006) is a widely used short version of the original NPI-40 (Raskin & Terry, 1988). This measure consists of 16 forced-choice binary items. Sample items include "I am more capable than other people" versus "There is a lot I can learn from other people"; "People sometimes believe what I tell them" versus "I can make anybody believe anything I want them to." The number of narcissistic items endorsed by the participant is then summed to create a score that can range between 0 (i.e., very low narcissism) to 16 (i.e., very high in narcissism). Internal consistency for this measure was good for the present study ($\alpha$ = 0.85).

###### *MATE VALUE PRIMING MANIPULATION.*

After completing the initial questionnaires, participants were asked to complete an online MV calculation procedure via Presentation (version 17.0, www.neurobs.com), a software used to deliver a variety

of stimuli. All tasks were completed on a 21″ Apple iMac in a well-lit room. Participants were first given a standard definition of MV: "how attractive and how valuable as a mate you are to the opposite sex." It was then explained that MV is an important characteristic for matchmaking. Next, participants were told that the program would use the monitor's Web-cam to first take three facial photographs in order to assess their facial symmetry and that the pictures were necessary because facial symmetry is an important indicator of one's MV and "datability" (this statement was followed by camera flashes and shutter noises). No photos were actually taken. Participants next completed a MV manipulation adapted from Surbey and Brice (2007). Questions about general demographics, personality characteristics (e.g., expected annual income in 5 years, sense of humor, body tattoos or piercings), self-esteem, and sociosexuality were presented to the participants on the computer screen. Characteristics such as expected annual income in 5 years are relevant specifically to men because men with a higher socioeconomic status and a successful career are seen as valuable mates to women (Griskevicius et al., 2009; Li & Kenrick, 2006) and also as threatening to other men (Pollet & Nettle, 2008).

After completing the computerized questions, participants were prompted to submit their facial symmetry analysis and answers to their questions in order for the technology to calculate their MV score. After 60 s of a "calculating" graphic with an increasing percentage indicator, participants' fictitious MV score appeared. Scores were randomly assigned for one of two conditions on the fictitious "Hartford and Goldsmith Mate Value Scale" (Surbey & Brice, 2007): The high MV condition provided a score of 92/100, whereas the low MV condition provided a score of 17/100. Note that in Surbey and Brice's work, only a high MV condition was used. This manipulation was adapted to include a low condition in order to better represent the range of MV possibilities and its influence on aggressive behavior. Text on the screen revealed that the condition was either significantly above average (92) or significantly below average (17). Participants were told that these scores were only for their own information and that it was not necessary to share them with the researcher.

*COMPETITIVE SCENARIO.*

Immediately after receiving their MV score, participants were given the final paper questionnaire. A paradigm from Arnocky et al. (2014)—originally adapted from Dijkstra and Buunk (1998)—was used to present the participants with a hypothetical mating competition. The following description was presented to the participants:

> You are at a party with your girlfriend and you are talking with some of your friends. You notice your girlfriend across the room talking to a man you do not know. You can see from his face that he is very interested in your girlfriend. He is listening closely to what she is saying and you notice that he casually touches her hand. You notice that he is flirting with her. After a minute, your girlfriend also begins to act flirtatiously. You can tell from the way she is looking at him that she likes him a great deal. They seem completely absorbed in each other.

After this description, participants were presented with a color photo of the rival who was depicted in the scenario. The photo of the male competitor was previously rated as the most attractive of a set of model photos by an independent sample of 20 women (Arnocky et al., 2014). Immediately after the photo was a description of the intrasexual rival's personality. Following a method that was originally adapted from Dijkstra and Buunk (1998), the interloper was described as being popular, sociable, intelligent, and a good judge of character—characteristics that are associated with high MV (Graham-Kevan & Archer, 2009; Pollet & Nettle, 2008).

*AGGRESSION.*

Immediately after being presented with this scenario, participants were asked how they would react to the man in this situation. Responses were captured through a 4-item aggression measure from Arnocky et al. (2014) that assesses a willingness to aggress directly toward this man. Sample items for direct aggression include "I would hit him for flirting with my partner" and "I would challenge him to a fight." Each item is scored as the likeliness that the participant would react this way in the described scenario on a Likert-type scale ranging from 1 = *not at all* to 5 = *very strong*. Internal consistency for this measure was strong ($\alpha$ = .92). Once the final questionnaire was completed, participants were asked whether they had any questions, and then they were debriefed about the true nature of the study.

## RESULTS AND DISCUSSION

Descriptive statistics for each measure are shown in Table 1. The potential moderating effects of narcissism on reported aggression toward an intrasexual

rival were tested in a moderated regression analysis using Process (Hayes, 2013). All predictor variables were mean-centered before we computed the interaction terms. Main effects for narcissism and MV condition and the interaction between the two were tested. Results revealed a main effect of MV condition, $b = -.52$, $t(56) = -5.68$, $p < .001$, 95% confidence interval [CI] (−.70, −.34), whereby men assigned to the low MV group reported being more likely to aggress against an intrasexual rival ($M = 2.43$) than men assigned to the high MV condition ($M = 1.33$). In addition, narcissism was positively correlated with aggression, $b = .08$, $t(56) = 3.65$, $p < .001$, 95% CI (.04, .13). Finally, these main effects were qualified by a significant MV condition × narcissism interaction, $b = -.10$, $t(56) = -4.64$, $p < .001$, 95% CI (−.15, −.06). The simple slopes of the interaction are presented in Figure 1. Decomposing the interaction post hoc revealed that the low MV condition increased endorsement of aggression in men scoring high in narcissism, $b = -.95$, $t(56) = -7.28$, $p < .001$, 95% CI (−1.21, −.69), but not in men scoring low in narcissism, $b = -.09$, $t(56) = -.70$, $p = .48$, 95% CI (−.35, .17). Our hypothesis related to the interaction effect of MV and narcissism, and thus self-esteem was examined only in supplemental analyses (see the Appendix). When self-esteem was included in the model as a potential moderator, results showed that it did not have a direct or interactive effect (two- or three-way) on our outcome variable. The effects of narcissism and MV did not meaningfully change with self-esteem included in the model.

Results from Experiment 1 indicated that acutely priming low MV increased the extent to which men endorsed aggression toward an intrasexual rival. Critically, the effect of the MV prime on endorsement of aggression was moderated by individual differences in trait narcissism, a finding that is highly consistent with previous research (see Bushman & Baumeister, 1998), One limitation of Experiment 1 is that we did not assess the extent to which the MV manipulation influenced one's self-perception of MV. Thus, Experiment 2 included a postmanipulation questionnaire directly assessing the extent to which our MV prime influenced one's self-perception of MV. A second limitation of Experiment 1 was the reliance on a self-report measure of the extent to which men would endorse engaging in aggressive behavior toward an intrasexual rival. Thus, in Experiment 2, we assessed aggression using a well-validated behavioral measure of aggressive behavior.

**TABLE 1.** Descriptive Statistics and Correlations for Experiment 1 Variables

| | 1 | 2 | 3 | M | *SD* | Range |
|---|---|---|---|---|---|---|
| (1) Narcissism | — | | | 6.17 | 4.12 | 0–14 |
| (2) Self-esteem | .258* | — | | 3.26 | 0.59 | 1.9–4 |
| (3) Aggression | .381** | .202 | — | 1.88 | 1.04 | 1–4.5 |

Note. *Aggression = reported aggressive intention toward hypothetical rival.*
*p < .05. **p < .01.

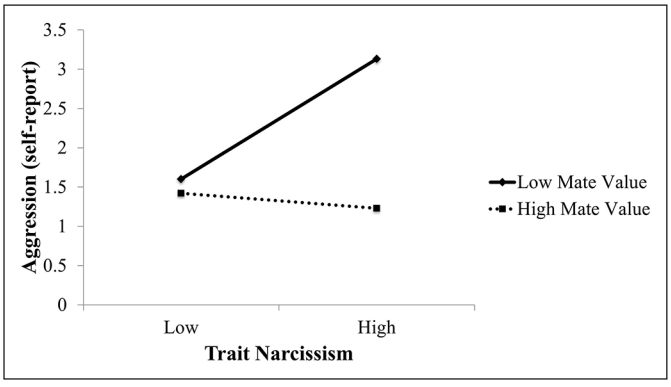


**FIGURE 1.** The effects of mate value manipulation on men's reported aggressive intent toward a mate poacher, at high and low levels of narcissism (±1 *SD* of the mean)

## EXPERIMENT 2

Experiment 2 involved a replication and extension of the hypotheses outlined in Experiment 1 by examining the effects of the MV priming task on aggressive behavior measured in a controlled laboratory setting. Experiment 2 also included a self-report measure of MV after the experimental manipulation as a means to examine the extent to which to our experimental manipulation modulated self-perception of MV. It was anticipated that men randomly assigned to the low MV condition would express lower subsequent self-perceived MV relative to men assigned to the higher MV condition (H1). It was also expected that men randomly assigned to the low MV condition would aggress more often against an intrasexual competitor relative to men in the high MV condition (H2). Moreover, consistent with the results of Experiment 1, we

predicted that narcissism would moderate the effect of MV condition on subsequent aggressive behavior (H3). Specifically, priming low MV would increase subsequent aggression, but only among men scoring high on narcissism.

### *Participants*

This experiment and consent procedure were approved by the Nipissing University Research Ethics Board. Participants were provided with a participant information letter and subsequently provided written (signed) informed consent. Participants were recruited via the university research participation system and were compensated with partial course credit. Participants were also told that they would have an opportunity to earn up to $10 CAD during the study (in actuality, all participants were given $10 CAD at the end of the study). Fifty-four heterosexual male undergraduate students from Nipissing University were recruited for this study ($M$ = 21.28 years, $SD$ = 2.90). Participants were mainly of Caucasian descent (93%). A formal power analysis (G*Power 3; Faul, Erdfelder, Lang, & Buchner, 2007) using a two-tailed alpha of .05 was conducted to determine the sample size needed to detect a narcissism × MV interaction of similar magnitude to that observed in Experiment 1 (i.e., $R$2change = .17). Using this estimate of effect size, we determined that a sample size of $N$ = 51 was sufficiently powered (i.e., power = .80) to detect a moderately large MV × narcissism interaction (as observed in Experiment 1).

### *Materials and Procedure*

Participants were told that the researchers had been hired by a dating Web site to assess a new online matchmaking software. It was explained that in order to assess the validity of this new software, there would be three separate questionnaires followed by an interactive online game to be played with another participant, in which one could earn up to $10 CAD. The initial questionnaire, which assessed demographic information, self-esteem, and narcissism, and the second (computer-based) questionnaire (i.e., the MV manipulation) were identical to those outlined in Experiment 1 and are therefore not described here. After the MV manipulation, participants completed the following measures:

*Self-perceived mating success (SPMS).* The SPMS scale (Landolt, Lalumière, & Quinsey, 1995) consists of eight questions scored on a 7-point Likert-type response scale ranging from 1 = *strongly disagree* to 7 = *strongly agree*. Examples of questions include "Members of the opposite sex that I like, tend to like me back" and "I can have as many sexual partners as I choose." Scores are averaged to create a mean score. The items showed good internal consistency: $\alpha$ = .90.

*Point Subtraction Aggression Paradigm (PSAP).* To measure aggressive behavior, we used a modified version of the PSAP (Norman, Moreau, Welker, & Carré, 2015), a well-validated laboratory aggression measure (Cherek & Lane, 1999a, 1999b; Lieving, Cherek, Lane, Tcheremissine, & Nouvion, 2008). Participants viewed a picture of a member of the same sex and were instructed that they would be paired with this person (in actuality, they were playing against the computer program) on a task that required them to select among three response options to earn points that would be exchangeable for money at the end of the study. Pressing response option no. 1 (button A) 100 consecutive times would earn the participant 1 point. Participants were told that each point earned by the end of the allotted 10 minutes of testing time would be redeemed for 25 cents. It was explained that the point counter might flash several times with negative signs around it, resulting in a 1-point decrease in the point counter total. Participants were notified that this meant that their partner (actually the computer program) had stolen a point from them and that each stolen point would be added to the partner's counter. Participants could respond by continuing to select option no. 1 (point reward: button A) or could switch to option no. 2 (button B) or 3 (button C). Pressing option no. 2 10 times would steal a point from their partner; however, participants were instructed that they were randomly assigned to the experimental condition whereby they, unlike their partner, would not keep any stolen points. Pressing option no. 3 10 times would protect their point counter against theft of points for a brief period of time. Accordingly, point stealing by the participant indicates aggression and therefore detracts from his point total: The time spent aggressing could otherwise be spent earning or protecting points, and stealing points served only to punish the other player and did not add points to one's own score total.

## RESULTS AND DISCUSSION

Descriptive statistics for each measure are shown in Table 2. A regression analysis was first performed to examine the extent to which the MV manipulation, narcissism, and MV manipulation × narcissism interaction would modulate the self-reported measure of one's MV. All predictor variables were mean-centered before we computed the interaction terms. Results revealed a significant effect of MV condition, $b = .38$, $t(50) = 3.14$, $p = .003$, 95% CI (.14, .63), whereby men assigned to the low MV condition reported significantly lower MV ($M = 4.03$) compared with men assigned to the high MV condition ($M = 4.79$). In addition, results revealed a significant MV condition × narcissism interaction, $b = .08$, $t(50) = 2.10$, $p = .04$, 95% CI (.009, .15). Post hoc simple slopes analyses indicated that the MV manipulation modulated self-perceived MV in men scoring high on narcissism, $b = .64$, $t(50) = 3.70$, $p < .001$, 95% CI (.29, .99), but not those scoring low on narcissism, $b = .12$, $t(50) = .72$, $p = .48$, 95% CI (–.22, .47). See Figure 2.

**TABLE 2.** Descriptive Statistics and Correlations for Experiment 2 Variables

| | 1 | 2 | 3 | M | *SD* | Range |
|---|---|---|---|---|---|---|
| (1) Narcissism | — | | | 5.85 | 3.27 | 0–13 |
| (2) Self-esteem | .326* | — | | 3.34 | 0.37 | 2.2–3.9 |
| (3) Aggression | .339* | .177 | — | 20.85 | 18.47 | 0–60 |

Note. *Aggression = Points stolen during the Point Subtraction Aggression Paradigm.*
*p < *.05.*

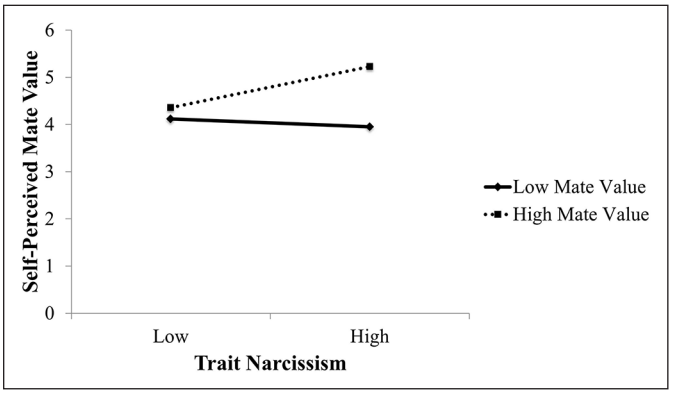


**FIGURE 2.** The effect of receiving threatening mate value information on individuals' self-perceived mate value, at high and low levels of narcissism (±1 *SD* of the mean)

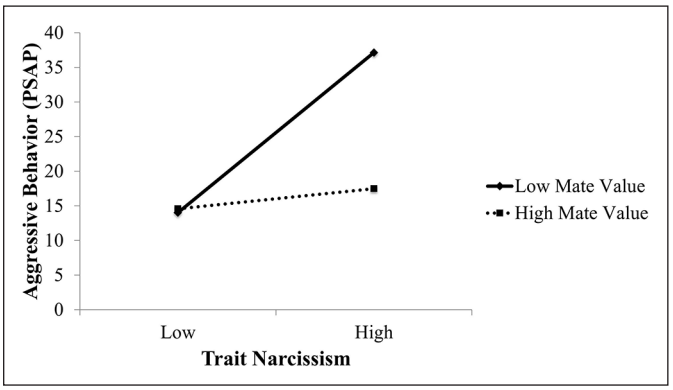


**FIGURE 3.** The effect of mate value manipulation on men's aggression toward a same-sex rival in the Point Subtraction Aggression Paradigm, at high and low levels of narcissism (±1 *SD* of the mean)

As in Experiment 1, the main regression analysis was first performed with Process (Hayes, 2013) to examine the effect of MV manipulation, narcissism, and their interaction on aggressive button presses on the PSAP. Results revealed a main effect of MV condition, $b = -4.78$, $t(50) = -2.14$, $p = .037$, 95% CI (–9.26, –.30), whereby men in the low MV condition were more aggressive ($M = 25.70$) than men in the high MV condition ($M = 16.00$). In addition, results indicated that narcissism was positively correlated with aggression, $b = 1.99$, $t(50) = 2.88$, $p = .006$, 95% CI (.60, 3.37). Finally, consistent with Experiment 1, there was a significant MV condition × narcissism interaction, $R2change = 7.44\%$, $b = -1.54$, $t(50) = -2.24$, $p = .03$, 95% CI (–2.93, –.16). Simple slopes analyses indicated that low MV was associated with heightened aggression in high-narcissistic men, $b = -9.82$, $t(50) = 3.17$, $p = .003$, 95% CI (–16.19, –3.46), but not in low-narcissistic men, $b = .27$, $t(50) = .08$, $p = .93$, 95% CI (–6.11, 6.64). See Figure 3.

Additional regression analyses were performed to examine the specificity of the MV condition × narcissism interaction. We first examined whether MV condition, narcissism, or the MV condition × narcissism interaction would predict variability in reward responses (i.e., button A). Results indicated no main effects or interaction (all $p$s > .30). Next, we examined whether these variables would predict variability in protection responses (i.e., button C). Again, results indicated no main effects or interactions (all $p$s > .16). Thus, the effect of MV condition, narcissism, and the MV condition × narcissism interaction were specific to aggressive behavior.

The findings from this experiment were highly consistent with the results from Experiment 1. Spe-

cifically, priming men with low MV produced an increase in aggressive behavior, and this effect was specific to men scoring relatively high on narcissism. Notably, our findings also confirm that the MV manipulation modulated participants' self-perception of MV and that this effect was specific to men scoring relatively high on narcissism.

## GENERAL DISCUSSION

Researchers have suggested that humans with low MV may be more prone to using aggressive tactics in the competition for mates and mating-relevant resources than people with high MV (e.g., Arnocky et al., 2012; Miner, Shackelford, & Starratt, 2009). The present studies explored the influence of men's self-perceived MV on aggression in a hypothetical mating competition (Experiment 1) and also in a resource competition (Experiment 2) by randomly assigning men to one of two MV conditions based on Surbey and Brice (2007). Furthermore, we examined the link between self-perceived MV and aggression in the context of threatened egotism—the hypothesis that people with initial grandiose views of self in agentic domains are most likely to aggress toward the source of the threat (Baumeister et al., 1996). In Experiment 1, after the self-perceived MV manipulation, participants were exposed to a hypothetical scenario in which a high MV, same-sex interloper was imagined to be flirting with the participant's partner; participants then self-reported on direct aggression intention toward the sexual rival. Baseline measures of self-esteem and narcissism were used to test the theory of threatened egotism in an evolutionary context (i.e., threat of losing a mating-relevant resource). It was expected that men in the low MV condition would indicate more willingness to engage in direct aggression toward the rival than those in the high MV condition. We also anticipated that narcissists would be especially likely to aggress, based on the established ego threat literature.

All hypotheses were supported in Experiment 1. Men who were randomly assigned to the low MV condition were significantly more likely to report a willingness to aggress directly toward the same-sex rival than those in the high condition; for example, they were more willing to attempt to physically injure the man by pushing or hitting him. The finding that men in the low MV condition were significantly more willing to aggress than were those in the high condition provides experimental evidence suggesting that a direct threat to self-perceived MV may be associated with aggressive intentions toward members of the same sex. Specifically, this study demonstrates that a man's perception of his MV may serve as a cue for aggressive mate guarding, where a reproductive disadvantage is made salient by the discrepancy in MV between a high-value interloper and a low-value "victim." To our knowledge, this study is the first experimental evidence to show that direct threats to MV can influence aggressive mate retention behaviors, bolstering the existing cross-sectional evidence on the topic (see Miner et al., 2009). Importantly, the effect of low MV on aggressive endorsement was qualified by a narcissism × MV interaction, such that participants who were threatened with low MV but who held an initial grandiose view of self (i.e., higher in narcissism), were the most aggressive. These findings support other robust evidence in the literature suggesting that when narcissists are threatened in agentic domains (e.g., status), they are likely to respond aggressively (Baumeister et al., 1996; Bushman & Baumeister, 1998).

In Experiment 2, the same priming manipulation was used, followed by a manipulation check to ensure that this technique was indeed threatening self-perceptions of MV; participants then engaged in a competitive interaction (PSAP) with a same-sex individual to earn money. Participants were given the chance to either earn points for themselves (later exchanged for money), steal points from their opponent (not added to their points, but used simply as a means to punish their opponent), or protect their own points for a brief period of time. It was expected that participants randomly assigned to the low MV condition, compared with those in the high condition, would report lower subsequent self-perceptions of MV, and this was indeed the case, suggesting that our manipulation was effective. Second, it was expected that, as found in Experiment 1, participants in the low MV condition would be more likely to show aggression toward their same-sex rival in the competition but that this effect would be moderated by narcissism, such that those threatened with low MV who also had initial higher levels of narcissism would be the most likely to aggress. This finding was also supported in Experiment 2.

Individuals who are high on the trait of narcissism are extremely prone to risky behaviors and are especially sensitive to the perceived payoffs of behaving aggressively (Foster, Shenesey, & Goff, 2009). Although previous research on ego threat and aggression has generally focused on negative essay feedback (e.g., Bushman & Baumeister, 1998; Vaillancourt, 2013) or on social rejection (e.g., Twenge & Campbell, 2003), the present study provides evidence to suggest that ego threat might also play an important role in the context of human mating and competition, especially when reproductive threat or status challenge becomes salient. In a competitive context with a high-value rival, narcissism may augment the potential risk of losing a reproductive or status-gaining opportunity by triggering aggression toward the threat in order to derogate or deter the rival as a form of mate guarding, or possibly as a form of status hierarchy negotiation, or advertising one's dominance.

Other recent work shows a significant positive relationship between self-reported narcissism and other-rated attractiveness (see Holtzman & Strube, 2010), and Holtzman and Strube (2011) argue that narcissism is intimately linked with short-term mating strategies, suggesting that selective pressures may have favored an association between narcissism and attractiveness. Given that narcissists are especially threatened by negative feedback (Bushman & Baumeister, 1998) and that the emerging framework supports an evolutionary view of narcissism, it is possible that ego threat in evolutionarily relevant contexts may trigger aggression toward the threat in order to mitigate loss of status or reproductive resources—aspects of self that are inherently related to narcissism and self-perceived MV. For instance, the threat of having a mate poached by a same-sex rival confers not only the risk to lose a valuable reproductive resource but also the potential loss of status associated with losing that mate. Thus, a threat to the ego by a rival (i.e., a status challenge) in this particular situation may trigger adaptive aggression to prevent losses critical to both survival (status hierarchy) and reproduction (propagation of genes). Furthermore, should aggression be successful in preventing the losses, it may protect and reinforce one's self-perceived mate value.

### *Limitations and Future Directions*

One potential limitation of the present studies is the focus on an undergraduate population of men. However, adolescence leading into early adulthood represents a period of elevated sexual interest in men and women (Arnett, 2000). Thus, self-perceptions of MV should be especially sensitive to reproductive opportunities and status threats during this time. Future research could examine the relationship between MV and intrasexual competition in later adulthood. Future research should also examine whether low MV functions in the same fashion for women as it does for men. Importantly, manipulating women into high and low MV conditions should consider gender differences in MV characteristics, perhaps considering greater emphasis on physical attractiveness indices rather than on status within the priming manipulation (see Arnocky, Bird, & Perilloux, 2014; Arnocky & Piché, 2014), as well as considering the unique ways in which women may aggress against their intrasexual rivals (e.g., via indirect or social aggression; Arnocky et al., 2012). Of additional note is the setting in which these studies took place: Although the controlled conditions of a laboratory can allow careful testing of specific hypotheses, their inherently contrived nature prevents us from knowing the extent to which these results generalize to other real-world settings. Therefore, future studies should consider examining the extent to which MV threat outside the laboratory is associated with aggression and how trait narcissism might modulate this relationship.

The present study shows that the concept of threatened egotism—aggressive responses following threats in agentic domains—applies to the evolutionarily relevant characteristic of MV, such that narcissists threatened with low MV will respond aggressively toward same sex rivals. However, the extent to which MV threat and global ego threat differ in their ability to spark narcissistic aggression is not known; to elucidate this difference, if any, will require a future study using a non-MV threat control condition (e.g., a threat to knowledge). Pathological narcissists can be especially sensitive to self-image threats (see Cain, Pincus, & Ansell, 2008; Pincus et al., 2009), and therefore future research might also consider examining the extent to which pathological narcissism, above and beyond that captured by traditional narcissism measures, interacts with the low MV–aggression relationship to predict aggressive responses to threat in evolutionarily relevant domains. Furthermore, the roles of certain emotional reactions to self-image

threats (e.g., shame; Thomaes, Bushman, Stegge, & Olthof, 2008) might also be considered as modulating variables accounting for narcissistic aggressive responses toward same-sex rivals.

Mate poaching—knowingly luring an individual in an existing relationship—has been shown to be effective for securing and increasing one's number of mating opportunities (e.g., Arnocky, Sunderani, & Vaillancourt, 2013). Moreover, there is some evidence that MV characteristics (especially physical attractiveness) predict the successful use of mate-poaching strategies (Sunderani, Arnocky, & Vaillancourt, 2013). Future research should explore whether priming differential perceptions of MV has an influence on a willingness to mate poach. Narcissism's moderating role between self-perceived MV and mate-poaching behaviors may also be relevant given that stealing another's mate brings risk of immediate retaliation. Narcissists have been shown to be more likely to use a mate-poaching strategy (Jonason, Li, & Buss, 2010). Examining how narcissism interacts with self-perceived MV in alternative mating contexts would provide a more robust understanding of this important and behaviorally relevant interaction.

### *Conclusions*

Low MV has been implicated in correlational models of aggression toward partners and peers (Daly & Wilson, 1988; Miner et al., 2009). However, such cross-sectional findings do not address important issues of directionality. Experiment 1 provides the first experimental evidence suggesting that individuals who are threatened with low self-perceived MV compared with those told that they are high in MV are indeed more likely to aggress against a mate poacher. Furthermore, Experiment 2 extended this finding in showing that those threatened with low MV were also significantly more likely to directly aggress toward a same-sex rival on a well-validated laboratory measure of aggression. Across both studies, narcissists threatened with low MV were especially likely to endorse and engage in aggressive behaviors, supporting the threatened egotism hypothesis. Collectively, these results suggest that the decision to aggress may hinge, in part, on the dynamic interplay between longstanding baseline perceptions of self-worth or entitlement and mating-relevant information that contradicts those perceptions.

### *APPENDIX. SUPPLEMENTARY ANALYSIS OF POTENTIAL 3-WAY MODERATION (MV × NARCISSISM × SELF-ESTEEM)*

Experiment 1: A regression analysis was run to test the effects of MV manipulation, narcissism, and self-esteem, as well as their possible combinations, on self-reported aggression toward a hypothetical mate poacher. Results revealed a main effect of MV condition, $b = -.49$, $t(52) = -5.14$, $p < .001$, 95% CI (−.69, −.3), whereby men assigned to the low MV group reported being more likely to aggress against an intrasexual rival ($M = 2.43$) relative to men assigned to the high MV condition ($M = 1.33$). In addition, narcissism was positively correlated with aggression, $b = .08$, $t(52) = 3.23$, $p = .002$, 95% CI (.03, .12). Finally, these main effects were qualified by a significant MV condition × narcissism interaction, $b = -.09$, $t(52) = -3.77$, $p < .001$, 95% CI (−.14, −.04). No effects were found for the self-esteem main effect, $b = .14$, $t(52) = 0.84$, $p = .41$, 95% CI (−.20, .48), or any of the possible interactions with self-esteem: MV × self-esteem, $b = -.30$, $t(52) = -1.75$, $p = .09$, 95% CI (−.64, .04); narcissism × self-esteem, $b = .05$, $t(52) = 1.0$, $p = .32$, 95% CI (−.05, .14); and MV × narcissism × self-esteem, $b = -.02$, $t(52) = -.38$, $p = .71$, 95% CI (−.11, .08).

Experiment 2: A regression analysis was run to test the effects of MV manipulation, narcissism, and self-esteem, as well as their possible combinations, on aggressive button presses on the PSAP. Results revealed that narcissism was positively correlated with aggression, $b = 1.87$, $t(46) = 2.45$, $p = .02$, 95% CI (.33, 3.41). In addition, there was a significant interaction between MV condition and narcissism, $b = -1.93$, $t(46) = -2.53$, $p = .02$, 95% CI (−3.47, −.39). Self-esteem revealed no main effect, $b = 5.29$, $t(46) = 0.75$, $p = .46$, 95% CI (−9.0, 19.57), or any significant interactions: MV × self-esteem, $b = 9.19$, $t(46) = 1.29$, $p = .20$, 95% CI (−5.10, 23.48); narcissism × self-esteem, $b = -.29$, $t(46) = -.12$, $p = .91$, 95% CI (−5.22, 4.65); MV × narcissism × self-esteem, $b = -1.73$, $t(46) = -.71$, $p = .48$, 95% CI (−6.67, 3.20).

Self-esteem did not predict aggressive reactions toward the competitor in either study. Because our primary hypothesis of interest related to the interaction between MV and narcissism, self-esteem was excluded from the primary analyses. Importantly, it should be noted that the sample sizes in Experiments 1 and 2 were severely underpowered to detect three-way interactive effects of this nature, and therefore the lack of any significant effect of self-esteem is probably an artifact of this limitation. Nevertheless, these null effects warrant brief discussion for future research. The lack of self-esteem's influence in the mating or resource competition supports the notion that self-perceived MV may be a "functionally distinct" component of self-esteem that is especially affected in a mating context (Kirkpatrick, Waugh, Valencia, & Webster, 2002; Webster & Kirkpatrick, 2006) but does not appear to be captured by widely used global measures of self-esteem. It also supports previous research suggesting a lack of influence of global self-esteem on aggression (e.g., Bushman & Baumeister, 1998; Twenge & Campbell, 2003). Konrath and colleagues (2006) suggested that it is not simply a highly positive self-view that leads to ag-

gression but that it is an overly positive self-view specifically in agentic domains, which include variables such as intelligence and status. The present study supports this in finding a moderating effect only for narcissism (and not self-esteem) on our aggression outcome measures. However, it is still possible that self-perceived MV may be one distinct facet of self-esteem that is most influential in contexts that present an increased likelihood of losing valuable resources or an established relationship with a member of the opposite sex. With the evidence from the present studies, it is quite possible that other facets of self-esteem function differentially depending on the context, as suggested by Kirkpatrick et al. (2002) and Webster and Kirkpatrick (2006). To convincingly solve this problem, however, future studies with greater power will be needed.

### NOTE

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