Direct vs Indirect Aggression Tactics as a Function of Domin-Specific Self-Esteem

Joy Plumeri Wyckoff

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Direct vs. Indirect Aggression Tactics as a Function of Domain-Specific Self-Esteem

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A Thesis presented to the Graduate Faculty
of the College of William and Mary in Candidacy for the Degree of
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ABSTRACT

Although much theory and research has focused on the causes of aggression in response to provocation, including the role of domain-specific self-esteem, most studies either fail to distinguish between aggression tactics or focus exclusively on direct aggression. Our research is designed to address these deficiencies and examine the degree to which different domains of self-esteem lead people to preferentially employ indirect rather than direct aggression tactics. In an online correlational study, we found that the degree to which participants favored a indirect over direct aggression in response to provocation was (1) greater among women than men; (2) inversely correlated with measures of competitive self-esteem (self-perceived superiority, mate value, and dominance); but (3) uncorrelated with social-inclusion or global self-esteem. In a second online study, an experimental manipulation of mate value had the predicted effect on women, but not on men; in addition, correlational analyses replicated the main findings from Study 1. Study 3, which was identical to Study 2, except for the use of an undergraduate sample, produced mixed results that replicated some but not all of the results of Study 2. We conclude that particular domains of self-esteem may calibrate one’s aggression tactic preference, but perhaps differently in men and women.
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CHAPTER I

Introduction

Aggression and Self-Esteem

Aggression and self-esteem may very well be the two most studied topics in the history of psychology (Baumeister & Boden, 1998; Webster & Kirkpatrick, 2006). However, little is known about the relationship between aggression and self-esteem (Baumeister & Boden, 1998). For decades, many social psychologists have assumed that low self-esteem was associated with aggression (Kirkpatrick, Waugh, Valencia & Webster, 2002). However, Baumeister, Smart, and Boden (1996) conducted a comprehensive literature review examining the relationship between self-esteem and aggression and found that the empirical evidence was mixed. In fact, high self-esteem was associated with aggression in many cases. In light of this inconsistent evidence, the authors suggested that no causal relationship exists (Baumeister et al., 1996). Instead, Baumeister and Boden (1998) hypothesized that narcissism, rather than global self-esteem, predicts aggression.

However, another possible explanation for the inconsistent relationships found between aggression and self-esteem is that they may instead reflect a theoretical problem in the way self-esteem and aggression have been defined and measured. Specifically, self-esteem and aggression have each been conceptualized and measured too broadly. Kirkpatrick and Ellis (2001) proposed that studying self-esteem as a single, global construct is inherently flawed. Similarly, aggression can take a variety of forms, from the hushed whisper of gossip to the violence of a physical assault. Therefore, measuring
aggression globally can be misleading as well. One measure of self-esteem or aggression cannot capture useful distinctions in different domains. For example, different domains of self-esteem may predict aggression differentially, or self-esteem may predict different types of aggression tactics, or both. The present studies were therefore designed to examine domain-specific self-esteem and aggression tactics in an attempt to clarify the relationship between self-esteem and aggression.

**Domain-Specific Self-Esteem**

The sociometer hypothesis of self-esteem states that self-esteem is an indicator of one’s social acceptance or rejection, analogous to the fuel gauge indicator in a car (Leary & Downs, 1995). The function of self-esteem, Leary and Downs (1995) propose, is to help people avoid social exclusion by feeling good when their self-esteem is high (full fuel tank) and bad when it is low (empty fuel tank) — the latter in order to motivate corrective action. Domain-specific self-esteem theory extends upon this theory by including different mechanisms for different domains of qualities important for functionally distinct kinds of social relationships (Kirkpatrick & Ellis, 2001). Rather than an overall gauge of social acceptance, humans evolved different sociometers to calibrate their self-esteem in functionally specific domains (Kirkpatrick & Ellis, 2001; Leary & Downs, 1995). Kirkpatrick and Ellis (2001) proposed that different kinds of social relationships involve different criteria for judging the quality of potential relationship partners. Therefore, a global measure of self-esteem would not be functionally useful because there is no such thing as an “all-purpose social relationship” (Kirkpatrick & Ellis, 2001, p. 414). For example, choosing a mate will require a different set of decision rules
than will assessing whether one is a formidable opponent in a competition. Domain-specific self-esteem theory states that humans evolved multiple self-assessment mechanisms (self-esteem), or sociometers, in functionally relevant domains (Kirkpatrick, Waugh, Valencia & Webster, 2002). Kirkpatrick et al. proposed that mate value, social inclusion, and dominance represent some of the functionally important areas in which humans have evolved mechanisms to monitor their success in each area.

To test their theory, Kirkpatrick and colleagues (2002) conducted two studies in which they measured participants' global self-esteem and a variety of domain-specific self-esteem measures. They also measured aggression by the amount of hot sauce participants gave to a target that ostensibly disliked spicy food. In their first study, they found that whereas global self-esteem was uncorrelated with aggression, various domain-specific self-esteem measures differentially predicted aggression. Specifically, they found that whereas self-perceived superiority value predicted increased levels of aggression, self-perceived social inclusion predicted decreased levels of aggression (Kirkpatrick et al., 2002). In their second study, they created a mate competition mood induction by telling participants to write a letter to compete with the target for a date with an opposite-sex participant. They found that higher levels of self-perceived mate value predicted increased levels of aggression. In a later study, Webster and Kirkpatrick (2006) found, again, that self-perceived mate value was positively predictive of aggression. These studies provide support for the domain-specific self-esteem theory, as well as contributing to our understanding of the relationship between self-esteem and aggression.
Although these studies distinguished among distinct domains of self-esteem, they conceptualized and measured aggression as a singular, global construct. To the best of our knowledge, no one has investigated the relationship between domain-specific self-esteem and more specific dimensions or types of aggression. Therefore, the present studies focus on different domains of aggression -- indirect and direct -- in addition to different domains of self-esteem.

**Indirect and Direct Aggression**

An important issue in the extant aggression literature is a lack of a lucid and consistent definition of aggression. In fact, researchers have used over 200 different definitions of aggressive behavior (Underwood, Galen, & Paquette, 2002). Just as with global self-esteem, studying aggression as an overall measure overlooks functionally important differences. One potentially important distinction to be made is that between *indirect* and *direct* aggression. Some researchers distinguish between indirect, social, and relational aggression. However, Archer and Coyne (2005) concluded that they are the same form of aggression, which can be labeled indirect aggression. While there is currently no single agreed-upon definition of this construct, for the purposes of this paper direct and indirect aggression are distinguished by whether or not the aggressive acts are witnessed by the target. Direct aggression includes behaviors such as verbal or physical aggression and threats of harm. Indirect aggression, on the other hand, involves circuitous approaches and includes behaviors such as gossiping and social exclusion (Campbell, 1999).
Researchers have consistently found that men use direct aggression more than women, but sex differences in the use of indirect aggression are equivocal (Hess & Hagen, 2006). Most investigators report that females use more indirect aggression than men (Bjorkqvist, Lagerspetz, & Kaukianen, 1992; Griskevicius et al., 2009; Hess & Hagen, 2006), whereas others have found that men and women use similar amounts of indirect aggression (e.g., Archer & Coyne, 2005; Bjorkqvist, Osterman & Lagerspetz, 1994). Evolutionary theory predicts that women should use less direct aggression because the risk of bodily harm is more costly for females than males, as they are the primary caretakers of offspring. Furthermore, although males may benefit from displays of direct aggression by enhancing their status, this benefit is generally of lesser value for women (Campbell, 1999). Thus, direct aggression represents a high-cost and low-reward strategy for women.

Not only can aggression tactics be sex-specific (i.e., sex differences in direct and indirect aggression), they can depend on situational factors. In an attempt to understand how situational factors effect intrasexual aggression tactics, Griskevicius and collaborators (2009) manipulated context by presenting participants with one of three mood induction stories: competition, courtship, and a control. Participants read a story in which they imagined either competing for a job, being on a romantic date, or looking for their keys. Afterwards, the participants were asked to imagine someone “carelessly” spilling a drink on them, and then responded to a series of questions regarding their desire to respond using various behaviors reflecting direct and indirect aggression. They found that men were more likely to use direct aggression if they had read the competitive scenario rather than the control scenario, but they did not find this effect for women.
Women who were in the competitive or courtship condition reported more indirect aggression than women in the control condition, while neither condition resulted in men using more indirect aggression.

As is common in aggression research, Griskevicius and colleagues (2009) measured indirect aggression and direct aggression separately. A problem with this approach is that it confounds the amount of aggression someone uses with the aggression tactics they choose. For example, a low score on indirect aggression could mean that the person was not motivated to aggress at all, or it could mean that he or she was motivated to aggress, but did not do so using that particular kind of aggression tactic. Although it is useful to study amount of aggression, as in the previous studies by Kirkpatrick et al. (2002) and Webster and Kirkpatrick (2006), an equally interesting topic is aggression tactic preference, which is not synonymous with overall amount of each aggression tactic one employs. By looking at aggression tactics separately from amount of aggression, we can address tactic preference independently from the question of who uses more or less aggression. In our research, as discussed below, we attempt to solve this problem by employing a difference-score approach, in order to measure relative preference for direct versus indirect tactics independently of amount or degree of aggression.

Retaliation and Aggression Tactics

Defining direct and indirect aggression in terms of whether or not the target is aware of the aggressive act underlies a functionally important aspect of aggression: status regulation. Sell, Tooby, and Cosmides (2009) proposed a recalibration theory of anger in which anger is seen as a regulatory system adapted to resolve interpersonal conflicts in
favor of the angry person's evolutionary fitness. Because humans are a social species, interactions in which individuals will impact one another's fitness (or "welfare") are common (Sell et al., 2009). The authors propose that humans have evolved mechanisms that weigh the ratio of how much welfare should be placed on oneself and the conspecific one is interacting with (welfare-tradeoff-ratio, or WTR). WTR is dependent upon one's bargaining position (ability to inflict costs or withhold benefits), and the anger system is designed to track one's own and others formability and conferral ability to calculate a WTR between the two parties (Sell et al., 2009). The recalibration theory of anger states that people become angry when a conspecific does not value one's status or WTR as highly as they should. Anger then motivates the individual to aggress or withhold benefits in order to shift the other individual's calibration of their WTR to a proper level of regard (Sell, 2011).

Empirical evidence supports the recalibration theory of anger. Those individuals who have the ability to inflict costs (i.e., strong individuals) or withhold benefits (i.e. physically attractive individuals) are more likely to both become angry when in a conflict and more likely to win a conflict than those with lower cost-inflicting or resource-withholding abilities (Sell et al., 2009). They also found that individuals with better bargaining abilities (strength or physical attractiveness) report feeling more entitled to better treatment from others. These findings lead us to hypothesize that those high in certain types of self-esteem (i.e., mate value or dominance) may use direct aggression to signal to others that their WTR should be valued higher.
Like most of the aggression literature, the recalibration theory of anger (Sell, 2011) does not consider indirect aggression. Indirect aggression may not be an effective way to confer status because the target, by definition, does not witness it. We propose that whether or not one's own status is higher or lower than the target, people wish to retaliate when they feel disrespected or maltreated. Archer (2004) conducted a meta-analytic review of aggression and trait anger and concluded that males used costlier methods of aggression than females, but that males and females did not differ in measures of trait anger. Therefore, Archer (2004) concluded that the sex difference in physical aggression was not due to an anger-threshold difference between the sexes. This suggests that anger does not calibrate aggression tactics, nor that it is only triggered when one's WTR has been miscalculated. Furthermore, studies have consistently found that aggression causes retaliatory aggression (Berkowitz, 1993; Buss, 1961; as cited in Buss & Duntley, 2006), suggesting that (1) people may be motivated to aggress regardless of their WTR and (2) anger is not the variable responsible for determining aggression tactic preference.

The costs and benefits of retaliatory aggression, however, are not the same for every individual. Those who do not have high status risk further retaliation and injury. Conversely, those with greater cost-inflicting or resource-withholding abilities are likely to obtain greater benefits of their aggression (i.e., increased status or dominance and deterrence from future aggression). Therefore, people may use indirect aggression as a retaliatory method when their status is low. Those with high status can use direct
aggression not only as retaliation, but as a signal of status that may deter from future maltreatment as well.

An important unanswered question is, once motivated to aggress, what determines one's aggression tactic utilization? Just as people with greater status may be easily angered, people may choose different aggression tactics based on certain individual characteristics. We hypothesize that certain specific domains of self-esteem calibrate aggression tactics. Competitive domains of self-esteem such as dominance, mate value, and superiority relate to one's ability to inflict costs (i.e. dominance) and withhold benefits (i.e. mate value). Therefore, just as sex differences in direct aggression are proposed to be due to higher risk of direct aggression for women (i.e., Campbell, 1999), those low in competitive types of self-esteem likely face greater risk than those high in competitive types of self-esteem. On the other hand, those high in competitive types of self-esteem are more likely to benefit from direct aggression than those low in competitive types of self-esteem. Therefore, people should have evolved mechanisms to calibrate their cost/benefit ratio of aggression tactics and regulate their aggression tactic preference accordingly. Specific domains of self-esteem may be one way to do so.

Sex Differences in Predicting Aggression from Self-Esteem

Different domains of self-esteem may predict aggression tactics differently for men and women. Due to the evolutionary process of sexual selection, men and women have evolved different traits that make them attractive to the opposite sex (e.g., Buss, Shackelford, Kirkpatrick, & Larsen, 2001; Grammer, Fink, Moller, & Thornhill, 2003). Specifically, dominance is especially predictive of male reproductive success, whereas
physical attractiveness is highly predictive of female reproductive success (e.g., Buss et al., 2001; Gutierres, Fink, & Partch, 1999).

However, attractiveness is, to some extent, still predictive of male reproductive success (Buss et al., 2001) and therefore may be useful in predicting aggression as well. As discussed previously, there is evidence that self-perceived mate value predicts aggression in both laboratory settings and via self-reported measures for both men and women (Kirkpatrick et al., 2002; Webster & Kirkpatrick, 2006). Another study, which sampled only men, found that mate value was the strongest predictor of direct aggression (Archer & Thanzami, 2009). Indeed, Sell and colleagues (2009) found that men's physical attractiveness predicted their proneness to anger, success in conflict, and feelings of entitlement, although the effect of attractiveness was a much stronger predictor for women. However, Sell et al. (2009) demonstrated that strength was a more robust predictor of proneness to anger, history of fighting, feelings of entitlement, and success in conflict than was attractiveness. Whether or not domain-specific self-esteem differentially predicts aggression tactics for each sex, however, has not been tested.

The Present Research

The goal of the present research is to understand how domain-specific self-esteem and aggression tactic preference relate to one another. What can aggression tactic preference tell us about self-esteem? In spite of aggression being a collection of specific strategies rather than a unitary paradigm (see Buss & Duntley, 2006), previous research has focused mostly on direct aggression, or failed to distinguish between aggression
tactics. We intend to understand who chooses to use indirect aggression tactics over
direct aggression tactics.

Study 1 replicates the methods of Griskevicius et al. (2009) with two key
differences. First, we examine aggression tactic preference. Rather than treating direct
and indirect aggression as separate dependent variables, we use a difference-score
variable to de-confound aggression tactic from amount of overall aggression. We
subtract direct aggression from indirect aggression to create a difference variable to test
whether someone uses one tactic relatively more than the other, independent of how
much aggression with which they choose to respond. This approach will allow us to
focus specifically on aggression tactics independent of amount or degree of aggression,
an approach that is lacking in the existing literature. Second, we examine domain-
specific self-esteem as predictors of this aggression difference score.

Because Study 1 is a correlational design, the goals of Studies 2 and 3 are to
replicate these findings experimentally. Studies 2 (online sample) and 3 (undergraduate
sample) introduce new experimental manipulations to further examine the effects of
domain-specific self-esteem on aggression tactic preference to test whether relative mate
value predicts aggression tactic. In these studies we manipulate the target's mate value to
be either high or low, thus manipulating the level of perceived competition. When
confronted by a target with high mate value, participant self-perceived mate value should
be relatively lower than the target's; therefore, we expect a corresponding shift in
aggression tactic preference. We also examine the relationship between the other
domain-specific self-esteem variables and global self-esteem.
In summary, the costs and benefits of aggression are not equal for every individual. We propose that domain specific self-esteem, rather than anger, may be an important predictor in individual’s calibration of aggression tactics. Specifically, those with high cost-inflicting and resource-withholding potential (dominance and mate value) may benefit from utilizing direct aggression. However, for those low in these domains, direct aggression represents a high-risk strategy. Therefore, those who cannot “afford” to use direct aggression may utilize indirect aggression as an alternative strategy.

CHAPTER 2

Study 1

Previous research on domain-specific self-esteem and aggression (e.g., Kirkpatrick et al., 2002; Webster & Kirkpatrick, 2006) has demonstrated the importance of conceptualizing self-esteem as a functionally differentiated rather than global construct, and has provided insights regarding the domains of self-esteem that are predictive of overall aggression. However, there has not been research examining how the domains of self-esteem predict the different types of aggression tactics. Therefore, we expand upon Kirkpatrick and colleagues (2002) and Webster and Kirkpatrick (2006) self-esteem and aggression research by differentiating two important facets of aggression—direct and indirect aggression tactics -- in addition to distinguishing among specific domains of self-esteem.

Griskevicius et al. (2009) studied direct and indirect aggression as a function of context-specific factors and sex differences -- but not the role of self-esteem. We draw upon their studies by using their experimental manipulation, aggression scenario, and
aggression scales but with two variations: (1) measuring domain-specific self-esteem and (2) disentangling aggression levels and aggression tactics by measuring them separately and then creating a difference score. Ultimately, we hope to gain a better understanding not only of domain-specific self-esteem and direct and indirect aggression, but how they relate to one another.

**Method**

**Participants**

Two hundred and thirty-nine (160 male, 133 female) participants were recruited from Mechanical Turk and were each compensated with a payment of $0.30. The 41 participants who did not answer the majority of questions and the 54 participants who failed the attention task were excluded from analysis. The remaining 198 (100 male, 98 female) participants were included in analysis.

**Materials**

**Self-esteem measures.** Global Self-Esteem was assessed using the Rosenberg’s Self-Esteem Scale (RSE; Rosenberg, 1965). Participants were asked to rate how much they agree with each statement from 1 (strongly disagree) to 4 (strongly agree). The RSE consists of 10 items ($\alpha = 0.92$; e.g., “On the whole, I am satisfied with myself” and “At times I think I am no good at all,” reverse-coded).

Self-perceived superiority was measured with a 10-item scale revised from the *Self-Attributes Questionnaire* ($\alpha = 0.81$; Pelham & Swann, 1989). Participants were instructed to estimate their percentile on number of desirable characteristics such as:
sense of humor, athletic ability, academic ability, emotional stability, discipline, and common sense from A (bottom 5%) to J (top 5%).

The *Interpersonal Support Evaluation List* (Cohen et al., 1985) was used to measure self-perceived social inclusion. The 10-item scale contains statements about their social inclusion with friends and family ($\alpha = 0.88$; e.g., “If I decide on a Friday afternoon that I would like to go to a movie that evening, I could find someone to go with me,” “I regularly meet or talk with members of my family or friends,” and “I don’t often get invited to do things with others,” reverse-coded). Participants were asked to rate their agreement with each item from 1 (strongly disagree) to 5 (strongly agree).

Self-perceived dominance was measured using a social dominance scale adapted by Leary, Cottrell, and Phillips (2001) from the *California Psychological Inventory* (Megargee, 1972). Participants were asked to rate on a scale of 1 (not at all) to 5 (extremely) the degree to which each statement was true or characteristic of them. This scale has 11 items ($\alpha = 0.80$; e.g., “I have a natural talent for influencing people,” “People seem naturally to turn to me when decisions have to be made,” and “There are times when I act like a coward,” reverse coded).

Self-perceived mate value was assessed using a 12-item measure ($\alpha = 0.91$) developed by Williams (1999; e.g., “I feel as if no one of the opposite sex is ‘out of my league,’” and “It surprises me when someone of the opposite sex shows interest in me,” reverse coded). Participants were asked to rate the degree to which they agreed on these statements from 1 (strongly disagree) to 4 (strongly agree).
Motive induction. Participants were randomly assigned to read one of three stories, which were the same as those used by Griskevicius et al. (2009). Each story was approximately 700 words long. One story was designed to promote a competition motive and described a competitive situation at work in which they imagined competing for a promotion. Another story described a romantic date that was designed to induce a courtship motive. The last story served as the control and described losing one’s keys. Participants were instructed to read the story carefully and imagine themselves as the main character (“As you’re reading the scenario, try to put yourself in the shoes of the main character and experience the emotions that they are feeling;” Griskevicius et al., 2009). In order to encourage participants to pay attention to the story, they were informed they would be taking a memory test about the story at the end of the experiment.

Aggression measures. After reading the motive induction story, participants read an aggression vignette. Ostensibly the purpose of this task was to let time pass before the memory test, but it was actually the dependent variable of interest. The vignette was the same as the aggression vignette used by Griskevicius et al. (2009). Participants were instructed to imagine being in the scenario: “Imagine you’re at a party and a man (woman) you know from one of your classes carelessly spills a drink on you in front of several men (women) from your class, and does not apologize.” The scenario was matched so that the target was the same sex as the participant.

After reading the aggression-provoking vignette, participants indicated aggressive responses on an 8-item direct and indirect aggression scale, also from Griskevicius et al.
The direct aggression subscale included four items ($\alpha = 0.89$) and the indirect aggression subscale was also comprised of four items ($\alpha = 0.80$). Participants were asked on a scale 1 (not at all) to 9 (very much) how likely they would be to engage in behaviors such as “hit this person” (direct aggression) and “spread negative information you’ve heard about this person” (indirect aggression).

**Memory test.** At the end of the experiment participants were instructed to answer memory questions about the scenario they read at the beginning of the experiment. The memory test included two multiple-choice questions that were easily answered if the participant had read the story. We used the memory test as criteria to whether or not they paid attention to the task. Data from participants who answered both questions incorrectly were excluded from data analysis.

**Procedure**

Participants signed up to complete the study on Mechanical Turk where a brief description of the study was provided. First, participants read an informed consent form. After agreeing to both the informed consent and confirming they were 18 years of age or older, participants proceeded to the survey. Participants reported their sex and age by choosing among seven categories (e.g., “25-34”). Next, the self-esteem questionnaires were administered.

Participants were then randomly assigned to one of three conditions: competitive, courtship, or control condition. They were instructed to read the scenario carefully because there would be a memory test. Next they were told they would be doing a task to
fill time before they began the memory task. The instruction read: “Before you are asked recall questions we need to let some time pass. You will be given a scenario and answer some questions about it. Imagine yourself in this position and how you would respond to it.”. They read the aggression vignette and then answered the eight aggression items that were presented in randomized order.

After completing the aggression items, participants then proceeded to the memory test. They were asked to answer two multiple-choice questions that corresponded to the story from the condition to which they were assigned. After completing these questions, participants read the debriefing form. The debriefing form included an explanation for our use of deception: “We must confess that we didn’t tell the whole truth about our purpose at the beginning of the experiment. The study is not really about memory at all, although we gave you a ‘memory test’ in order to ensure that you had read the scenario carefully. The real purpose of the study involves looking at participants’ responses to the spilled-drink situation, and how they differ as a function of both the situational context (the scenario read previously) and responses to the self-esteem questionnaires.” After reading the debriefing form, participants were given a code, which they entered in Mechanical Turk to receive payment.

Results and Discussion

We followed the same data-analytic plan for all three studies. First, we tested for condition and sex effects using a factorial analysis of variance. Next, we ran a series of multiple regressions examining the relationship between our various measures of self-
Dependent variable. In order to disentangle aggression tactic with overall amount of aggression, we created a difference-score variable by subtracting the mean direct aggression scores from the mean indirect aggression scores for each participant. Therefore, negative values on this difference score represent higher scores on direct than indirect aggression, whereas positive values represent greater indirect than direct aggression. The aggression difference variable was the dependent variable for all analyses.

Preliminary ANOVA. To examine whether there was an effect of sex and condition, we entered condition and sex into a 2 (sex) by 3 (condition) ANOVA. As expected, sex emerged as a significant predictor of the aggression difference score; $F(1, 192) = 18.92, p < .001)$. Consistent with the findings of Griskevicius et al. (2009), men used significantly more direct aggression relative to indirect aggression ($M = -0.20, SD = 0.19$) than women ($M = 1.01, SD = 0.20$). In contrast with findings from Griskevicius et al. (2009), we did not find a significant effect of condition, or a significant sex by condition interaction. Although the effect of condition and the sex by condition interaction were not significant, we controlled for these variables in subsequent analysis.

Predicting aggression from self-esteem. In order to test whether SE predicts aggression tactics, we conducted a series of multiple regressions analyzing each of the SE variables one at a time, while controlling for sex, condition, and the sex by condition interaction. Results are shown in Table 1. As hypothesized, global SE was not a
significant predictor of the aggression difference score, nor was social inclusion. Several SE variables were significant predictors of the aggression difference score. Superiority ($\beta = -0.16, p < .05$), mate value ($\beta = -0.30, p < .001$), and dominance ($\beta = -0.24, p < .01$), all significantly predicted aggression difference, such that those low in these types of SE used more indirect aggression relative to direct aggression. Conversely, those high in these types of self-esteem use relatively more direct aggression. Therefore, it appears that people high in these competitive types of SE are utilizing direct aggression more than those low in these competitive types of SE.

Next we entered all five SE variables into a simultaneous regression to assess the unique prediction of each SE variable, controlling for sex, condition, and sex by condition interaction. Results of this analysis are shown in Table 2. Self-perceived mate value emerged as the only significant predictor when controlling for all other SE variables ($\beta = -0.37, p < .001$). Those who scored low in mate value endorsed relatively more indirect aggression than direct aggression. Thus, mate value predicts the aggression difference score above and beyond all other SE variables.

**Men.** Because men and women may differ in the domains of SE that predict aggression, we conducted analyses separately for men and women, controlling for condition. Results for men can be found in Table 3. Global SE ($\beta = -0.19, p = .05$) and social inclusion ($\beta = -0.20, p = .05$) were significant predictors when entered independently to a regression. As expected, mate value ($\beta = -0.35, p < .001$) and dominance ($\beta = -0.24, p < .05$) were also significant predictors when entered
independently in the same direction as the previous analysis. However, superiority was a non-significant predictor.

When all SE variables were entered simultaneously, again, only mate value was a significant predictor ($\beta = -0.38, p < .05$). Men who reported low levels of mate value used relatively less direct aggression (see Table 4).

**Women.** The same analyses were repeated for the data by women and also controlled for condition. First, SE variables were entered into a regression one at a time (see Table 5 for results). As expected, global SE and social inclusion did not significantly predict the aggression difference score. Superiority was marginally significant ($\beta = -0.20, p = .05$) in the expected direction. Again, we found that those low in mate value ($\beta = -0.27, p < .001$) and dominance ($\beta = -0.26, p < .05$) used more indirect aggression relative to direct aggression.

When all SE variables were entered simultaneously, only mate value significantly predicted the aggression difference variable ($\beta = -0.36, p < .05$). Women high in mate value utilized more direct aggression than those low in mate value. These results are shown in Table 6. Thus, it seems that mate value is a consistent predictor of aggression tactics for both men and women.

**Summary**

The results from Study 1 provide useful insights into the study of aggression tactics. These findings support theories and previous studies that predict that men use more direct aggression than women. Additionally, we found that competitive types of SE
(dominance, mate value, and superiority) predict aggression tactics in a theoretically meaningful way. People who report lower levels of these types of SE use more indirect aggression and less direct aggression than those who report higher levels of competitive self-esteem. Furthermore, mate value consistently emerged as a significant predictor of aggression tactics, even when statistically controlling for all other types of SE. This suggests that mate value may be a particularly important domain of SE in the calibration of aggression tactic preference.

The finding that mate value is a strong predictor of aggression tactics in Study 1 is consistent with previous research (i.e. Kirkpatrick & Ellis, 2001; Webster & Kirkpatrick, 2006; Archer & Thanzami, 2009), which found that mate value predicted aggression. Study 1, however, expands upon the previous literature as it shows that mate value can be used to predict both direct and indirect aggression. Study 2 is designed to replicate the main finding of Study 1, that self-perceived mate value is a strong predictor of aggression tactics. The key difference is that Study 2 utilizes an experimental manipulation rather than relying solely on correlational methods.

CHAPTER 3

Study 1 demonstrated that mate value is a strong predictor of one’s aggression tactics. However, a variety of evidence from humans and animals suggests that mate value is not fixed, but fluctuates based on the presence or lack of potential mates and rivals (Little & Mannion, 2006). Mate market theory suggests that people have different mate values that fluctuate according to market forces (Kurzban & Weeden, 2005). Thus, mechanisms for assessing self-perceived mate value must have evolved to monitor one’s
current mate value based on specific cues from the present mating pool. A large-sample study showed that men and women are aware of their mate value in the mate market and respond accordingly, seeking partners who are in their own mate value range (Kurzban & Weeden, 2005). Kenrick and Gutierres (1980) studied whether the contrast effect would alter people’s subsequent ratings of women’s attractiveness. They found that men who were exposed to images or videos of highly attractive women ranked pictures of average looking females’ attractiveness significantly lower. This suggests that viewing highly attractive women influences one’s perception of the current mate market to overestimate the prevalence of attractive women, causing them to rate others significantly lower than warranted (Kenrick & Gutierres, 1980).

If self-perceived mate value is relative, one should expect the contrast effect on selective cues to mate value to alter one’s self-perceived mate value. Recent work has supported this effect. Massar and Bunnk (2006) exposed women to a picture of an attractive or unattractive woman. Women who viewed the attractive woman reported significantly more jealousy, anger, and sadness than women exposed to the unattractive woman. Another study showed women 20 images of either attractive or unattractive women and measured their self-perceived physical attractiveness. Exposure to attractive rivals resulted in lower self-rated attractiveness, whereas exposure to unattractive rivals resulted in higher self-rated attractiveness (Little & Mannion, 2006). These studies provide support that women’s self-perceived attractiveness, a significant predictor of mate value, fluctuates based on perceived market demands (relative mate value).
Given that self-perceived mate value predicts aggression tactic preference (Study 1), and that self-perceived mate value is dependent on the mate market (i.e., Kurzban & Weeden, 2005), manipulating one’s self-perceived mate value should lead people to adjust their aggression responses. In Study 2, we manipulate mate value indirectly by describing the target (a competitor in the mate market) as either high or low in mate value. Consistent with Study 1, participants are predicted to prefer indirect aggression more against targets that are high in manipulated mate value. In other words, if one’s mate value relative to the target’s mate value predicts aggression tactic, participants will prefer indirect aggression more against targets who are high in (manipulated) mate value than those who are low in (manipulated) mate value.

Methods

Participants

Three hundred and fifty-three participants (120 male, 228 female, 5 unreported sex) were recruited from Mechanical Turk. Participants were compensated for their time with a $0.15 payment, an amount typical for this type of survey. Fifty-seven participants were excluded from analysis for failure to answer the majority of questions, leaving 296 (106 male, 190 female) for final analysis.

Materials

SE. Participants responded to five self-esteem scales, which were identical to those used in Study 1. All of the scales had high internal reliability: global self-esteem (α
superiority ($\alpha = 0.81$), social inclusion ($\alpha = 0.88$), dominance ($\alpha = 0.80$), and mate value ($\alpha = 0.91$).

**Aggression vignette and mate value manipulation.** Once participants completed the self-esteem items, they read an aggression vignette. The aggression vignette was very similar to Study 1. We added a sentence in an attempt to reduce perceived risk of future retaliation by describing the target as being from out of town. We also added a sentence to clarify the rudeness of the target spilling the drink by clarifying the target’s unapologetic attitude.

For our experimental condition, we manipulated the mate value of the target. Participants were randomly assigned to read an aggression vignette that described the target as high in mate value or low in mate value. We referenced the target’s physical attractiveness (“handsome/beautiful” vs. “unattractive”) and appeal to the opposite sex (“charismatic” vs. “awkward”).

**Aggression response.** After participants read the aggression vignette, they responded to the aggression items. The direct aggression subscale was identical to Study 1 ($\alpha = 0.90$). The indirect aggression subscale was identical to Study 1, with the exception of two items, which were modified to be more clear and specific. For example, we changed “talk behind this persons back” to “Spread negative information you’ve heard about this person,” ($\alpha = 0.80$). Although these changes make our indirect aggression subscale different from Study 1, Griskevicius et al. (2009) made the same changes between their first and second studies and replicated their findings after making these changes.
Procedure

As in Study 1, participants were recruited from Mechanical Turk and read an informed consent form and indicated their agreement to participate and to being at least 18 years old. Next, participants were asked to report their sex and age. They then proceeded to the self-esteem questionnaires, which were identical in both materials and procedure as Study 1.

After answering the self-esteem items participants were presented with an aggression vignette. The participant was randomly assigned to one of two conditions, which differed with respect to whether the target was described as high or low in mate value. They then proceeded to answer the aggression items, which were presented in random order. Afterwards, they read a debriefing form. Lastly, they were given a code to enter in Mechanical Turk to receive compensation.

Results and Discussion

Dependent variable. As in Study 1, we created an aggression difference-score variable to serve as our dependent variable of interest.

Preliminary ANOVA. As in Study 1, we conducted a 2 (sex) by 2 (condition) ANOVA to test whether our experimental condition (manipulation of target mate value), and sex were significant predictors of aggression tactics. We found no main effect of condition on the aggression difference score. As expected there was a main effect of sex ($F(1, 292) = 17.02, p < .001$), such that men reported using significantly more direct aggression ($M = -0.49, SD = 0.19$) than women ($M = 0.51, SD = 0.15$). A sex by
condition interaction approached significance \( F(1, 292) = 3.39, p = .07 \), such that the target manipulation was more likely to affect women’s aggression tactics than men’s aggression tactics. Therefore, we tested the simple effects for men and women. Simple effects showed that whether the target was described as high or low in attractiveness did not predict men’s preference of aggression tactics. However, the condition manipulation significantly predicted women’s use of aggression tactics \( F(1, 292) = 139, p < .01 \). As we predicted, women used relatively more indirect aggression when the target was described as attractive \( (M = 0.90, SD = 0.20) \) than when the target was described as unattractive \( (M = 0.12, SD = 0.21) \).

**Predicting aggression from self-esteem.** Consistent with Study 1, we conducted a series of multiple regressions to examine whether SE predicts the aggression tactics. First, we entered each SE variable one at a time and controlled for sex, condition, and the sex by condition interaction. Results are shown in Table 7. As expected, people who scored low on superiority \( (\beta = -0.12, p < .05) \), mate value \( (\beta = -0.20, p < .001) \), and dominance \( (\beta = -0.19, p < .01) \) used relatively more indirect aggression than direct aggression. Unexpectedly, global SE predicted aggression tactics in the same direction \( (\beta = -0.13, p < .05) \). As expected, social inclusion was not a predictor of aggression tactic.

Next, we entered all SE variables simultaneously into a multiple regression, controlling for sex, condition, and the sex by condition interaction. We replicated the effect found in Study 1 that only mate value predicted aggression tactic above and beyond all other SE variables \( (\beta = -0.20, p < .05) \). People who reported low mate value
reported a greater preference for indirect aggression than direct aggression. Results are shown in Table 8.

**Men.** As in Study 1, we conducted the same regression analyses separately for each sex. First we entered SE one at a time, controlling for condition, into a multiple regression (see Table 9). As expected, men who reported low mate value ($\beta = -0.20, p < .05$) and dominance ($\beta = -0.29, p < .01$) used relatively more indirect aggression, when entered independently. However, no other SE variable were predictive of aggression tactic.

Next, we conducted a multiple regression including all SE variables at once, while controlling for condition (see Table 10). In men, dominance was the lone significant predictor of the aggression difference score ($\beta = -0.27, p < .05$). Men who scored low on dominance were more likely to engage in greater levels of indirect aggression relative to direct aggression. In Study 1, and in the total sample of Study 2, mate value emerged as the only significant predictor when controlling for all other SE variables. The finding that dominance, rather than mate value, predicted the aggression difference score could be explained by evolved sex differences in what domains were predictive of reproductive success, and will be discussed further in the General Discussion.

**Women.** Next, we entered SE one at a time into a multiple regression and controlled for condition. Results for women can be found in Table 11. Analyses reveal similar results for women as for the total sample in Study 2: Mate value ($\beta = -0.20, p < .01$), dominance ($\beta = -0.15, p < .05$), and global SE ($\beta = -0.16, p < .05$) predicted
aggression tactics in the same direction. Superiority and inclusion, however, were not significant predictors of the aggression difference score.

In order to examine each SE variables unique prediction of aggression, we entered all SE into a simultaneous regression, controlling for condition (see Table 12). As expected, mate value was the only significant predictor when controlling for all other SE variables ($\beta = -0.27, p < .01$): Women who reported low mate value were less likely to use direct aggression than women with high mate value.

**Summary**

Again, we found support for sex differences in aggression tactics: men use direct aggression more than women. Study 1 showed that competitive SE predicts aggression tactics correlationally. Study 2 replicated these findings using an experimental manipulation. We experimentally manipulated relative mate value indirectly by randomly assigning the participant to a high or low mate value target. We had hypothesized that people would prefer indirect aggression when the target was high in mate value than when low. Our hypothesis was partially supported: Relative mate value predicts aggression tactics, but only for women. Findings for women were in the predicted direction: When a participant’s mate value was low relative to the target (i.e. target was high in mate value) women were more likely to respond with indirect aggression than when the participant’s mate value was high relative to the target (i.e. target was low in mate value). However, relative mate value did not predict men’s aggression tactics. Possible explanations will be addressed in the General Discussion.
CHAPTER 4

Study 3

Studies 1 and 2 employed a Mechanical Turk sample. Although using Mechanical Turk has become increasingly popular, the majority of research by psychologists use undergraduate subject samples. Study 3 uses identical methods and measures as Study 2 but uses an undergraduate sample, in an attempt to replicate the findings from Study 2.

Methods

Participants

Two hundred and fifty-one participants (105 male, 124 female, 22 not reported) were recruited from the College of William and Mary undergraduate research subject pool. Participants were compensated with partial fulfillment of course credit. We excluded 31 participants who left the majority of questions blank from analysis, leaving a sample of 220 (103 male, 117 female) for inclusion in the analyses.

Materials

All materials were identical to Study 2 and all scales had internal reliability: global self-esteem ($\alpha = 0.91$), superiority ($\alpha = 0.75$), social inclusion ($\alpha = 0.87$), dominance ($\alpha = 0.80$), and mate value ($\alpha = 0.85$), direct aggression ($\alpha = 0.89$), indirect aggression ($\alpha = 0.85$).

Procedure
The procedure was identical to Study 2 with the exception of the informed consent form and compensation code. Participants were recruited from the William & Mary Psychology Department's undergraduate research pool and read an informed consent appropriate for that sample. Instead of receiving a code for payment, they received a code enabling them to be compensated with partial course credit.

Results

Preliminary ANOVA. Following the same analytic strategies used in Studies 1 and 2, we conducted a 2 (sex) by 2 (condition) ANOVA order to test sex differences and a condition effect. Consistent with both Studies 1 and 2, there was a significant main effect of sex ($F(1, 216) = 24.10, p < .001$): Men used relatively more direct aggression than indirect aggression ($M = -0.48, SD = 0.19$) than women ($M = 0.78, SD = 0.18$). There was neither a target manipulation effect nor a sex by target interaction.

Despite the nonsignificant interaction, we analyzed the simple effects within sex separately to replicate the analyses conducted in Study 2. Unlike Study, the effect of target was not significant within each sex.

Predicting aggression from self-esteem. In accordance with Studies 1 and 2, we conducted a series of multiple regressions to examine the extent to which each SE variable was predictive of the difference-score variable, above and beyond sex and condition. First we tested each SE predictor in separate regressions, controlling for sex and condition (see Table 13). As expected, lower levels of superiority ($\beta = -0.15, p < .05$), mate value ($\beta = -0.19, p < .01$), and dominance ($\beta = -0.16, p < .05$) predicted an
increased preference for indirect aggression relative to direct aggression. Surprisingly, social inclusion was a significant predictor in the same direction ($\beta = -0.13, p < .05$). Global SE was not a statistically significant predictor of the aggression difference score.

In order to test whether each SE variable could predict aggression tactic above and beyond all other SE variables, we entered them simultaneously into a multiple regression, while controlling for sex and condition. Results can be found in Table 14. Contrary to Studies 1 and 2, no SE variable emerged as a significant predictor of aggression tactic.

Men. To examine SE and aggression we conducted a series of multiple regressions entering each SE one at a time, controlling for condition. Results are shown in Table 15. As expected, mate value positively and significantly predicted a preference for direct aggression relative to indirect aggression ($\beta = -0.32, p < .01$). Again, surprisingly, social inclusion predicted aggression tactics in this same direction ($\beta = -0.27, p < .01$). No other SE variables were significant predictors.

Next, we tested the unique prediction of each SE by entering all five SE variables and condition into a simultaneous regression (see Table 16). As expected, mate value predicted the aggression difference score above and beyond all other variables ($\beta = -0.33, p < .05$). To our surprise, social inclusion emerged as a significant predictor in the regression as well ($\beta = -0.22, p < .05$). Men who reported low levels of these types of self-esteem utilized more indirect relative to direct aggression than those with high reported mate value and social inclusion.
Women. We conducted five separate multiple regressions, each containing one SE variable, and controlled for condition. The results can be seen in Table 17. As expected, dominance predicted the dependent variable, such that those lower in self-rated dominance used relatively more indirect aggression ($\beta = -0.20, p < .05$). Superiority approached significance ($\beta = -0.18, p = .06$) in the same direction. However, no other SE variable, including mate value, predicted the difference score.

We then ran a multiple regression with all SE variables entered simultaneously along with the condition variable. However, no SE variable emerged as a significant predictor of the dependent variable. Therefore, in the female sample of Study 3, no SE variable predicted aggression tactic when all other SE variables were controlled for. See Table 18 for results.

Summary

As in Studies 1 and 2, we found support for a sex difference in aggression tactics, with men using relatively more direct aggression than women. Analysis of SE however, provided mixed results. We did not replicate the experimental manipulation effect in women. For men, mate value predicted aggression tactic; however, for women, we found that dominance predicted aggression tactic. Although we did not replicate the results from Study 2, competitive types of SE (mate value, dominance, and superiority) did predict aggression tactics in separate regression when men and women were analyzed together in Study 3.
CHAPTER 5

General Discussion

Previous research and many theories of aggression suggest that men use more direct aggression than women (i.e., Archer, 2004; Campbell, 1999; Daly & Wilson, 2001). The present studies replicated the consistent finding that men use more direct aggression than women. One possible explanation for this finding is that women use indirect rather than direct aggression because direct aggression is a higher-risk strategy for women than it is for men (Campbell, 1999). This is consistent with the general sex difference in risk taking that females are more risk averse than males (Byrnes, Miller, & Schafer, 1999). Accordingly, females are hypothesized to use indirect aggression in competition more than direct aggression because the risk of bodily harm is lower for indirect aggression (Campbell, 1999).

As predicted, indirect aggression was generally preferred by both men and women who scored lower in “competitive” domains of SE (dominance, mate value, superiority). This suggests that competitive types of self-esteem may be important in the calibration of aggression strategy. People high in competitive types of self-esteem may be higher in social hierarchies and more likely to win in conflict. On the other hand, for those low in these types of self-esteem, indirect aggression may represent a more adaptive, low risk strategy. In most analyses, mate value emerged as the strongest predictor above and beyond all self-esteem variables. Mate value was also the strongest predictor in several previous studies of “aggression” (i.e. Kirkpatrick et al, 2002; Webster & Kirkpatrick, 2006) and of direct aggression (Archer & Thanzami, 2009).
There are several possible explanations as to why self-perceived mate value emerged as the strongest predictor of aggression tactics in most analyses. First, self-perceived mate value may be an especially important competitive domain in the calibration of aggression tactic preference because of the importance of mating evolutionarily. Mating relationships are more important, from an evolutionary perspective, than any other interpersonal relationship, given that reproductive success is the ultimate criterion in natural selection (Kirkpatrick & Ellis, 2001); therefore one’s self-perceived mate value may be especially salient in determining behavioral strategies such as aggression tactic choice. Second, our aggression vignette described being at a party, which may have primed a mating-motive context. It is possible that people associate parties with mating opportunities (i.e. availability of single mates). When Kirkpatrick and colleagues (2002) did not create a mate competition condition (their Study 1), they found that self-perceived superiority predicted aggression. However, mate value replaced superiority as the primary predictor of aggression when they created a mating competition in their second study. Similarly, we may have inadvertently primed mating cues with our party scenario.

Study 2 demonstrated that the experimental manipulation of target mate value significantly influenced women’s aggression tactics as we had hypothesized: Women were more likely to use indirect aggression tactics against a highly attractive target than against a less attractive target. However, our experimental manipulation was not a significant predictor of men’s aggression tactics. Interestingly, dominance significantly predicted men’s aggression tactics in Study 2. Therefore, it is important to consider sex in manipulating self-esteem to predict aggression tactics. For example, relative mate
value predicted women's aggression tactics in Study 2, but perhaps relative dominance would predict men's aggression tactics. This finding make sense in light of evidence suggesting that a male's dominance is a better predictor of mate value than their physical attractiveness is (Gutierres, Kenrick & Partch, 1999). Perhaps the mate-value manipulation was not effective for men because dominance is a better predictor of aggression tactic calibration for men. In fact, Sell and colleagues (2009) found that strength was a stronger predictor variable of male proneness to anger, history of fighting, and success in conflict than attractiveness, whereas attractiveness was a stronger predictor variable in women.

Results from Study 3 indicated that dominance, rather than mate value, predicted female aggression-tactic responses. This finding would not be expected from an evolutionary perspective because mate value, not dominance, is a much stronger predictor of female reproductive success (e.g., Buss, 1989; Gutierres et al., 1999). A possible explanation for this finding is that the scale we used was not designed specifically to measure dominance in the evolutionarily functional domain of dominance. The scale was chosen because it was used in the Kirkpatrick et al. (2002) study and demonstrates high reliability. However, the items on the scale reflect “social dominance,” and more specifically leadership. Also, Study 3 differed from Study 2 in its use of an undergraduate sample from a prestigious university. It may be that dominance was a significant predictor for women because leadership is a valued characteristic in the university's culture for both men and women.
Limitations

One limitation of the present studies was that the aggression scenario was a hypothetical vignette. Consequently, participant self-reported responses might not accurately reflect the way they would respond in a real-life scenario because the hypothetical provocation scenario was not strong enough to elicit self-reports of aggression. Another limitation is that we used self-reports of aggression and not observational methods. People may not be good at predicting how they would behave, or may be responding in socially desirable ways rather than honestly. Additionally, the online administration of the studies may explain why people reported being unlikely to respond aggressively. In an online study, participants may feel less inclined to pay attention and may complete the study more quickly than they do when completing the study in a laboratory setting. This could also contribute to the self-esteem scales being highly intercorrelated. If participants were motivated to answer quickly, they may have not distinguished between subtle differences in the questions they were answering. Therefore, it may be important in future research to have participants complete the study in the laboratory (as in Griskevicius et al., 2009), as well as to measure actual aggression responses rather than self-reports of likelihood to aggress (as in Kirkpatrick et al., 2002).

Another limitation of our studies was that we used an online sample pool from Mechanical Turk for two of our three experiments. Indeed, Study 3 -- in which an undergraduate sample was used -- failed to replicate results from Study 2 in which a Mechanical Turk sample was used. There is some debate about the reliability of using Mechanical Turk as a sample pool. For example, some researchers have found that
Mechanical Turk participants are less extraverted (Goodman, Cryder, & Cheema, 2013; Korsara & Ziemiewicz, 2010) and more socially anxious (Shapiro, Chandler, & Mueller, 2013) than college samples and the U.S. population respectively (Paolacci & Chandler, 2014). However, other authors have found that their Mechanical Turk sample had strong test-retest reliability (Holden, Dennie, & Hicks, 2013). Furthermore, Goodman et al. (2013) concluded that Mechanical Turk produced reliable results.

One reason why our results differed between Studies 2 and 3 might be because the age difference between our Mechanical Turk sample (Study 2: $M = 36.31, SD = 11.83$) and student sample (Study 3: $M = 18.81, SD = 0.93$) was quite large. Age has been found to play an important role in aggression. For example, in young children both boys and girls use direct aggression but in preadolescents girls begin to use indirect aggression more than boys (Bjorkqvist et al., 1992). In late adulthood, however, it is hypothesized that both men and women should use indirect aggression more than younger adults (Walker & Richardson, 1998). Furthermore, (direct) aggression levels in men peak around undergraduate-aged years and then decline (Daly & Wilson, 1988). In fact, Price, Dunn, Hopkins, and Kang (2012) only found strength and aggression to be correlated when they excluded participants over the age of 27 from analysis. However, it is unclear if or how aggression tactics shift in adulthood.

Finally, our Mechanical Turk and undergraduate samples may differ with respect to a variety of sociocultural factors. For example, our undergraduate sample was taken from an elite, small state university where aggression may damage status, rather than bolster it. Consistent with this, Snyder, Kirkpatrick, and Barrett (2008) collected data
from the same university and found that women preferred high-prestige to high-dominance potential mates. Perhaps Snyder et al. would have obtained different results had they used a Mechanical Turk sample.

Future Directions

Study 2 provided useful insight into a possible sex difference in the specific domains of self-esteem that predict aggression tactics. Traits that are important predictors of mating success differ by sex (i.e., Buss, 1989). Therefore, sex differences in what cues alter self-perceived attractiveness should vary according to what traits are important predictors of mating success for that particular sex (Gutierres et al., 1999). Decades of research and cross-cultural data support that men and women have different mate preferences (Buss, 1989). Men rate physical attractiveness as the most important trait in potential mates, whereas women rate characteristics indicative of dominance and status as most important for potential mates (Buss, 1989; Kendrick, Sadalla, Groth & Trost, 1990; Gutierres et al., 1999). Therefore, exposing people to physically attractive rivals should elicit a stronger contrast effect in women than in men. Likewise, exposing people to socially dominant rivals should elicit a stronger contrast effect in men than in women. Gutierres et al. (1999) provided support for this idea as they found the expected sex differences in participants’ self-assessments after exposing both sexes to rivals that were high or low on attractiveness and social dominance. Therefore, future studies should experimentally manipulate relative dominance. Because of the importance of dominance to male reproductive success, manipulating target dominance, rather than mate value, may indeed alter men’s aggression tactics. To test this hypothesis,
manipulating the target's dominance instead of mate value would be expected to have a
greater effect on men than on women.

Conclusion

The present research provided useful insights into the relationship between
specific aspects of self-esteem and different aggression tactics. There are both costs and
benefits to using direct aggression, but these differ based on sex and other individual
differences. Therefore, people should have evolved mechanisms to calibrate their cost-
benefit ratio of aggression tactics and regulate their aggression tactic preference
accordingly. Specific domains of self-esteem may be one way to do so. The present
studies provided support for the hypothesis that domain-specific self-esteem is an
important individual-difference variable that influences such decision-making. Although
future research is necessary to clarify this relationship, we provide evidence that
competitive types of SE predict aggression tactic preference in both men and women.
Mate value may be an especially useful predictor of aggression tactic responses,
particularly for women. In conclusion, those who use indirect aggression relatively more
than direct aggression, tend to be lower in competitive domains of self-esteem suggesting
that these domains of self-esteem may calibrate aggression tactic preference.
Table 1.

*Regression for each SE independently (Study 1)*

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Table 2.

*Regressions for each SE simultaneously (Study 1)*

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<td>0.06</td>
<td>0.73</td>
<td>.47</td>
</tr>
<tr>
<td>Mate Value</td>
<td>-1.25</td>
<td>0.33</td>
<td>-0.37</td>
<td>-3.78</td>
<td>.00</td>
</tr>
<tr>
<td>Dominance</td>
<td>-0.39</td>
<td>0.25</td>
<td>-0.14</td>
<td>-1.54</td>
<td>.13</td>
</tr>
</tbody>
</table>
Table 3.

Regressions for each SE independently (Study 1 - males only)

<table>
<thead>
<tr>
<th>Self-Esteem</th>
<th>$B$</th>
<th>$SE_B$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-1.96</td>
<td>.05</td>
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<td>Superiority</td>
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<td>0.18</td>
<td>-0.13</td>
<td>-1.29</td>
<td>.20</td>
</tr>
<tr>
<td>Social Inc.</td>
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<td>-0.20</td>
<td>-2.03</td>
<td>.05</td>
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<td>Mate Value</td>
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<td>0.32</td>
<td>-0.35</td>
<td>-3.79</td>
<td>.00</td>
</tr>
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<td>0.30</td>
<td>-0.24</td>
<td>-2.47</td>
<td>.02</td>
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</tbody>
</table>
Table 4.

Regressions for each SE simultaneously (Study 1 - males only)

<table>
<thead>
<tr>
<th>Self-Esteem</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>0.36</td>
<td>0.49</td>
<td>0.10</td>
<td>0.74</td>
<td>.46</td>
</tr>
<tr>
<td>Superiority</td>
<td>0.18</td>
<td>0.23</td>
<td>0.10</td>
<td>0.78</td>
<td>.44</td>
</tr>
<tr>
<td>Social Inc.</td>
<td>-0.07</td>
<td>0.33</td>
<td>-0.03</td>
<td>-0.22</td>
<td>.83</td>
</tr>
<tr>
<td>Mate Value</td>
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<td>0.51</td>
<td>-0.38</td>
<td>-2.56</td>
<td>.01</td>
</tr>
<tr>
<td>Dominance</td>
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<td>0.41</td>
<td>-0.13</td>
<td>-1.02</td>
<td>.31</td>
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</tbody>
</table>
Table 5.

*Regressions for each SE independently (Study 1 - females only)*

<table>
<thead>
<tr>
<th>Self-Esteem</th>
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<th>SE $B$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>-0.05</td>
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<td>-0.02</td>
<td>-0.16</td>
<td>.87</td>
</tr>
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<td>Superiority</td>
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<td>-1.98</td>
<td>.05</td>
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<td>Social Inc.</td>
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<td>-0.03</td>
<td>-0.28</td>
<td>.78</td>
</tr>
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<td>-0.27</td>
<td>-2.66</td>
<td>.01</td>
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<td>-0.26</td>
<td>-2.54</td>
<td>.01</td>
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</tbody>
</table>
Table 6.

Regressions for each SE simultaneously (Study 1 - females only)

<table>
<thead>
<tr>
<th>Self-Esteem</th>
<th>$B$</th>
<th>$SE B$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>0.46</td>
<td>0.39</td>
<td>0.17</td>
<td>1.18</td>
<td>.24</td>
</tr>
<tr>
<td>Superiority</td>
<td>-0.10</td>
<td>0.25</td>
<td>-0.06</td>
<td>-0.42</td>
<td>.68</td>
</tr>
<tr>
<td>Social Inc.</td>
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<td>0.32</td>
<td>0.19</td>
<td>1.37</td>
<td>.18</td>
</tr>
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<td>Mate Value</td>
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<td>0.45</td>
<td>-0.36</td>
<td>-2.36</td>
<td>.02</td>
</tr>
<tr>
<td>Dominance</td>
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<td>0.31</td>
<td>-0.17</td>
<td>-1.29</td>
<td>.20</td>
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Table 7.

Regressions for each SE independently (Study 2)

<table>
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<th>$SE_B$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>-0.40</td>
<td>0.17</td>
<td>-0.13</td>
<td>-2.35</td>
<td>.02</td>
</tr>
<tr>
<td>Superiority</td>
<td>-0.20</td>
<td>0.09</td>
<td>-0.12</td>
<td>-2.16</td>
<td>.03</td>
</tr>
<tr>
<td>Social Inc.</td>
<td>-0.22</td>
<td>0.14</td>
<td>-0.09</td>
<td>-1.57</td>
<td>.12</td>
</tr>
<tr>
<td>Mate Value</td>
<td>-0.77</td>
<td>0.21</td>
<td>-0.20</td>
<td>-3.65</td>
<td>.00</td>
</tr>
<tr>
<td>Dominance</td>
<td>-0.55</td>
<td>0.16</td>
<td>-0.19</td>
<td>-3.42</td>
<td>.00</td>
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</tbody>
</table>
Table 8.

*Regressions for each SE simultaneously (Study 2)*

<table>
<thead>
<tr>
<th>Self-Esteem</th>
<th>$B$</th>
<th>$SE_{B}$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
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<td>-0.01</td>
<td>-0.15</td>
<td>.88</td>
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<tr>
<td>Superiority</td>
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<td>0.01</td>
<td>0.10</td>
<td>.92</td>
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<tr>
<td>Social Inc.</td>
<td>0.23</td>
<td>0.19</td>
<td>0.09</td>
<td>1.19</td>
<td>.24</td>
</tr>
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<td>-0.20</td>
<td>-2.33</td>
<td>.02</td>
</tr>
<tr>
<td>Dominance</td>
<td>-0.37</td>
<td>0.20</td>
<td>-0.13</td>
<td>-1.87</td>
<td>.06</td>
</tr>
</tbody>
</table>
Table 9.

Regressions for each SE independently (Study 2 - males only)

<table>
<thead>
<tr>
<th>Self-Esteem</th>
<th>$B$</th>
<th>$SE B$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>-0.27</td>
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<td>-0.76</td>
<td>.45</td>
</tr>
<tr>
<td>Superiority</td>
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<td>-0.18</td>
<td>-1.82</td>
<td>.07</td>
</tr>
<tr>
<td>Social Inc.</td>
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<td>0.25</td>
<td>-0.16</td>
<td>-1.57</td>
<td>.12</td>
</tr>
<tr>
<td>Mate Value</td>
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<td>-3.03</td>
<td>.00</td>
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</tbody>
</table>
Table 10.

Regressions for each SE simultaneously (Study 2 - males only)

<table>
<thead>
<tr>
<th>Self-Esteem</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>0.75</td>
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<td>1.55</td>
<td>.13</td>
</tr>
<tr>
<td>Superiority</td>
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<td>-0.06</td>
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<td>.61</td>
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<td>0.53</td>
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<td>.31</td>
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<td>Dominance</td>
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<td>-0.27</td>
<td>-2.31</td>
<td>.02</td>
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</tbody>
</table>
Table 11.

Regressions for each SE independently (Study 2 - females only)

<table>
<thead>
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<th>$SE_B$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>-0.45</td>
<td>0.19</td>
<td>-0.16</td>
<td>-2.31</td>
<td>.02</td>
</tr>
<tr>
<td>Superiority</td>
<td>-0.15</td>
<td>0.11</td>
<td>-0.10</td>
<td>-1.14</td>
<td>.17</td>
</tr>
<tr>
<td>Social Inc.</td>
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<td>0.17</td>
<td>-0.06</td>
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<td>-0.21</td>
<td>-2.99</td>
<td>.00</td>
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<tr>
<td>Dominance</td>
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<td>0.19</td>
<td>-0.15</td>
<td>-2.07</td>
<td>.04</td>
</tr>
</tbody>
</table>
Table 12.

*Regressions for each SE simultaneously (Study 2 - females only)*

<table>
<thead>
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<th>$B$</th>
<th>SE $B$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>-0.29</td>
<td>0.27</td>
<td>-0.11</td>
<td>-1.09</td>
<td>.28</td>
</tr>
<tr>
<td>Superiority</td>
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<td>0.15</td>
<td>0.05</td>
<td>0.54</td>
<td>.59</td>
</tr>
<tr>
<td>Social Inc.</td>
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<td>0.23</td>
<td>0.20</td>
<td>1.91</td>
<td>.06</td>
</tr>
<tr>
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<td>-0.27</td>
<td>-2.40</td>
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<td>-0.85</td>
<td>.40</td>
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</tbody>
</table>
Table 13.

Regressions for each SE independently (Study 3)

<table>
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<th>$SE\ B$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>-0.40</td>
<td>0.25</td>
<td>-0.10</td>
<td>-1.57</td>
<td>.12</td>
</tr>
<tr>
<td>Superiority</td>
<td>-0.31</td>
<td>0.13</td>
<td>-0.15</td>
<td>-2.31</td>
<td>.02</td>
</tr>
<tr>
<td>Social Inc.</td>
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<td>-0.13</td>
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<td>.04</td>
</tr>
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<td>-2.87</td>
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<td>-2.59</td>
<td>.01</td>
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</tbody>
</table>
Table 14.

Regressions for each SE simultaneously (Study 3)

<table>
<thead>
<tr>
<th>Self-Esteem</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>0.09</td>
<td>0.31</td>
<td>0.02</td>
<td>0.29</td>
<td>.77</td>
</tr>
<tr>
<td>Superiority</td>
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<td>0.18</td>
<td>-0.04</td>
<td>-0.45</td>
<td>.65</td>
</tr>
<tr>
<td>Social Inc.</td>
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<td>0.24</td>
<td>-0.60</td>
<td>-0.83</td>
<td>.41</td>
</tr>
<tr>
<td>Mate Value</td>
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<td>0.35</td>
<td>-0.12</td>
<td>-1.50</td>
<td>.14</td>
</tr>
<tr>
<td>Dominance</td>
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<td>-0.08</td>
<td>-1.01</td>
<td>.31</td>
</tr>
</tbody>
</table>
Table 15.

*Regressions for each SE independently (Study 3 - males only)*

<table>
<thead>
<tr>
<th>Self-Esteem</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>-0.44</td>
<td>0.41</td>
<td>-0.11</td>
<td>-1.07</td>
<td>.29</td>
</tr>
<tr>
<td>Superiority</td>
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<td>0.22</td>
<td>-0.14</td>
<td>-1.39</td>
<td>.17</td>
</tr>
<tr>
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<td>.00</td>
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<td>Dominance</td>
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<td>0.35</td>
<td>-0.15</td>
<td>-1.56</td>
<td>.12</td>
</tr>
</tbody>
</table>
Table 16.

Regressions for each SE simultaneously (Study 3 - males only)

<table>
<thead>
<tr>
<th>Self-Esteem</th>
<th>$B$</th>
<th>$SE$ $B$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>0.24</td>
<td>0.50</td>
<td>0.06</td>
<td>0.47</td>
<td>.64</td>
</tr>
<tr>
<td>Superiority</td>
<td>0.13</td>
<td>0.27</td>
<td>0.06</td>
<td>0.46</td>
<td>.65</td>
</tr>
<tr>
<td>Social Inc.</td>
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<td>-0.22</td>
<td>-2.05</td>
<td>.04</td>
</tr>
<tr>
<td>Mate Value</td>
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<td>0.68</td>
<td>-0.33</td>
<td>-2.61</td>
<td>.01</td>
</tr>
<tr>
<td>Dominance</td>
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<td>0.45</td>
<td>0.05</td>
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<td>.70</td>
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</tbody>
</table>
Table 17.

*Regressions for each SE independently (Study 3 - females only)*

<table>
<thead>
<tr>
<th>Self-Esteem</th>
<th>$B$</th>
<th>SE $B$</th>
<th>$\beta$</th>
<th>$t$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global</td>
<td>-0.36</td>
<td>0.31</td>
<td>-0.11</td>
<td>-1.16</td>
<td>.25</td>
</tr>
<tr>
<td>Superiority</td>
<td>-0.32</td>
<td>0.16</td>
<td>-0.18</td>
<td>-1.93</td>
<td>.06</td>
</tr>
<tr>
<td>Social Inc.</td>
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<td>-0.01</td>
<td>-0.12</td>
<td>.90</td>
</tr>
<tr>
<td>Mate Value</td>
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<td>0.33</td>
<td>-0.09</td>
<td>-0.91</td>
<td>.36</td>
</tr>
<tr>
<td>Dominance</td>
<td>-0.51</td>
<td>0.24</td>
<td>-0.20</td>
<td>-2.15</td>
<td>.03</td>
</tr>
</tbody>
</table>
Table 18.

*Regressions for each SE simultaneously (Study 3 - females only)*

<table>
<thead>
<tr>
<th>Self-Esteem</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-0.14</td>
<td>0.38</td>
<td>-0.04</td>
<td>-0.37</td>
<td>.71</td>
</tr>
<tr>
<td>Superiority</td>
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<td>0.22</td>
<td>-0.12</td>
<td>-0.94</td>
<td>.35</td>
</tr>
<tr>
<td>Social Inc.</td>
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<td>0.29</td>
<td>0.11</td>
<td>1.03</td>
<td>.30</td>
</tr>
<tr>
<td>Mate Value</td>
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<td>-0.01</td>
<td>-0.06</td>
<td>.95</td>
</tr>
<tr>
<td>Dominance</td>
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<td>0.30</td>
<td>-0.15</td>
<td>-1.34</td>
<td>.18</td>
</tr>
</tbody>
</table>
Revised 10 item Rosenberg Self Esteem Questionnaire RSE.

Please record the appropriate answer for each item, depending on whether you
Strongly agree, agree, disagree, or strongly disagree with it.


1. On the whole, I am satisfied with myself.
2. At times I think I am no good at all.
3. I feel that I have a number of good qualities.
4. I am able to do things as well as most other people.
5. I feel I do not have much to be proud of.
6. I certainly feel useless at times.
7. I feel that I’m a person of worth.
8. I wish I could have more respect for myself.
9. All in all, I am inclined to think that I am a failure.
10. I take a positive attitude toward myself.
10 item Interpersonal Support Evaluation List ISEL.

Indicate the degree to which you disagree or agree with each statement below.

1 = Strongly disagree
2 = Slightly disagree
3 = Neither agree nor disagree
4 = Slightly agree
5 = Strongly agree

1. If I decide on a Friday afternoon that I would like to go to a movie that evening, I could find someone to go with me.
2. No one I know would throw a birthday party for me.
3. There are several different people with whom I enjoy spending time.
4. If I wanted to have lunch with someone, I could easily find someone to join me.
5. I don’t often get invited to do things with others.
6. Most people I know don’t enjoy the same things that I do.
7. When I feel lonely, there are several people I could call and talk to.
8. I regularly meet or talk with members of my family or friends.
9. I feel that I’m in the fringe in my circle of friends.
10. If I wanted to go out of town for the day, I would have a hard time finding someone to go with me.
Social Dominance Scale.

Rate the degree to which each statement is true or characteristic of you

1 = Not at all true or characteristic of me.
2 = Slightly true or characteristic of me.
3 = Moderately true or characteristic of me.
4 = Very true or characteristic of me.
5 = Extremely true or characteristic of me.

1. I doubt whether I would make a good leader.
2. When I work on a committee I like to take charge of things.
3. I must admit that I try to see what others think before I take a stand.
4. I would be willing to describe myself as a pretty “strong” personality.
5. There are times when I act like a coward.
6. I would rather not have very much responsibility for other people.
7. It is pretty easy for people to win arguments with me.
8. I have a natural talent for influencing people.
9. I like to give orders and get things moving.
10. People seem naturally to turn to me when decisions have to be made.
11. Taking charge comes easily to me.
Revised 10 Item Self-Attributes Questionnaire.

This questionnaire has to do with your attitudes about some of your activities and abilities. For the first ten items below, you should rate yourself relative to other college students your own age (and sex) by using the following scale:

A  B  C  D  E  F  G  H  I  J
bottom lower lower lower lower upper upper upper upper top
5% 10% 20% 30% 50% 50% 30% 20% 10% 5%

An example of the way the scale works is as follows: if one of the traits that follows were “height”, a woman who is just below average in height would circle “E” for this question, whereas a woman who is taller than the 80% (but not taller than 90%) of her female classmates would circle “H”, indicating that she is in the top 20% on this dimension.

intellectual/academic ability
social skills/social competency
artistic and/or musical ability
athletic ability
physical attractiveness
leadership ability
common sense
emotional stability
sense of humor
discipline
Williams Mate Selection Self Esteem.

Indicate the degree to which you disagree or agree with each statement below by circling a number from 1 to 4 using the scale provided below.

1. STRONGLY DISAGREE  2. DISAGREE  3. AGREE  4. STRONGLY AGREE

1. I sometimes wish I were more physically attractive.

2. Members of the opposite sex seem to like me.

3. I feel as if no one of the opposite sex is ‘out of my league.’

4. It surprises me when someone of the opposite sex shows interest in me.

5. I feel that the chances that I would date one of the most popular persons of the opposite sex on campus are very good.

6. In a social situation, I often find that persons of the opposite sex seem to act as if I’m not even there.

7. I find that, after I go out on a date with someone of the opposite sex, that person wants to go out with me on a second date.

8. I do not find it easy to meet people of the opposite sex.

9. I often get compliments from people of the opposite sex, even when I don’t think that I look especially good.

10. I do not regularly “date” or “see” people of the opposite sex.

11. When I start a conversation with someone of the opposite sex whom I do not know, that person usually seems eager to talk to me.

12. I often worry about what people of the opposite sex think about me.
Aggression Scenario and Questions Study 1.

“Imagine you’re at a party and a man (woman) you know from one of your classes carelessly spills a drink on you in front of several men (women) from your class, and does not apologize.”

After considering being in the aggression-provoking situation, participants responded to a total of eight 9-point aggression items with endpoints not at all and very much.

**Direct aggression items:**

1. Hit this person
2. Insult this person to his or her face
3. Push this person
4. Get in this person’s face

**Indirect aggression items:**

1. Spread negative information you’ve heard about this person
2. Tell a friend an embarrassing secret they’ve heard about this person
3. Try to exclude this person from a social group
4. Mention something bad you’ve heard about this person to other people who know them
Aggression Scenarios and Questions Studies 2 and 3.

**Male Scenarios**

“Imagine you’re at a party and a man you have never seen before is there; you assume he is here visiting a friend. You notice that women keep going up and talking to him because he is very handsome and charismatic. Later on at the party, he carelessly spills a drink on you in front of several men you know. Rather than apologizing, he looks down at the stain he caused and then walks away to refill his drink.”

“Imagine you’re at a party and a man you have never seen before is there; you assume he is here visiting a friend. You notice that he has been very unsuccessful trying to talk to women because he is very unattractive and awkward. Later on at the party, he carelessly spills a drink on you in front of several men you know. Rather than apologizing, he looks down at the stain he caused and then walks away to refill his drink.”

**Female Scenarios**

“Imagine you’re at a party and a woman you have never seen before is there; you assume she is here visiting a friend. You notice that men keep going up and talking to her because she is very beautiful and charismatic. Later on at the party, she carelessly spills a drink on you in front of several women you know. Rather than apologizing, she looks down at the stain she caused and then walks away to refill her drink.”
“Imagine you’re at a party and a woman you have never seen before is there; you assume she is here visiting a friend. You notice that she has been unsuccessful talking to men because she is very unattractive and awkward. Later on at the party, she carelessly spills a drink on you in front of several women you know. Rather than apologizing, she looks down at the stain she caused and then walks away to refill her drink.”

After considering being in the aggression-provoking situation, participants respond to a total of eighteen 9-point aggression items with endpoints “not at all” and “very much.”

**Direct aggression items:**

1. Hit this person
2. Insult this person to his or her face
3. Push this person
4. Get in this person’s face

**Indirect aggression items:**

1. Spread negative information you’ve heard about this person
2. Tell a friend an embarrassing secret you’ve heard about this person
3. Try to exclude this person from a social group
4. Make up bad stories about this person to tell other people
References


