Predicting Aggression using Domains of Self-Esteem: Direct and Indirect Aggression in Males and Females as a Function of Domain-Specific Self-Esteem

Carolyn Randolph Hodges
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PREDICTING AGGRESSION USING DOMAINS OF SELF-ESTEEM

Direct and Indirect Aggression in Males and Females

As a Function of Domain-Specific Self-Esteem

A Thesis

Presented to

The Faculty of the Department of Psychology

The College of William and Mary in Virginia

In Partial Fulfillment

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Master of Arts

by

Carolyn Randolph Hodges

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APPROVAL SHEET

This thesis is submitted in partial fulfillment of
the requirements for the degree of

Master of Arts

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ABSTRACT

Two studies examined the relationship between two different forms of aggression and evolutionarily-relevant domains of self-esteem in males and females. In Study 1, participants completed self-report measures of direct and indirect aggression, as well as self-perceived superiority, mate value, dominance, prestige, and global self-esteem. Study 2 repeated Study 1, utilizing peer-reports of aggression in addition to self-report. One-way ANOVAs indicated that males used more direct aggression than females. Males and females utilized equal amounts of indirect aggression. Multiple regression analyses indicated that dominance was a positive predictor of both forms of self-reported aggression in males and females, suggesting that indirect and direct aggression are auxiliary strategies used in the service of desired goals by dominant individuals. Prestige was an inverse predictor of both self-reported and peer-reported indirect aggression in males, but not females, suggesting that aggression is in conflict with the prestige strategy for males. Mate value, social inclusion, and global self-esteem were not related to either form of aggression. The relationships among sex, different forms of aggression, and domains of self-esteem are discussed.
PREDICTING AGGRESSION USING DOMAINS OF SELF-ESTEEM

Direct and Indirect Aggression in Males and Females

As a Function of Domain-Specific Self-Esteem
INTRODUCTION

Theories of human aggression have primarily been based on studies of male behavior. In light of the highly public nature of male conflicts in sports, politics, and war, along with vast sex differences in incidents of violence and murder, this emphasis is understandable. However, focusing on male aggression to the exclusion of that of females tends to lead to explanations of human aggression predicated exclusively on male behavior. In recent years, researchers have asserted that although females instigate few physical altercations, they express hostility and opposition through alternative means—through "indirect" aggression.

The purpose of the present paper is to examine the difference between direct and indirect strategies of aggression in males and females using an established predictor of aggressive behavior: self-esteem. In addition, this paper uses evolutionary theory as a guiding theoretical framework for making predictions on the nature of these differences.

Aggression: A Multifaceted Construct

The prevalence of violence and conflict across the world needs no introduction. Consequently, human aggression has been a focus of theorizing since early philosophers and a key topic of social research for many decades. The basic question at the heart of these endeavors is: Why do humans hurt one another? This simple inquiry has generated a profusion of research aimed at understanding the situations, emotions,
personalities, and other factors that predict when one individual will act aggressively towards another.

Early research focused entirely on understanding the variables that predict physical expressions of anger and frustration. Continuing efforts, however, have highlighted the broad and multi-faceted nature of antagonistic behavior (see Anderson and Bushman, 2002, for a summary). The expansion of our understanding of the construct of “aggression” has been facilitated by a clarification of its definition, which was, until recently, a point of contention.

The contemporary definition of human aggression is typically cited as: “any behavior directed toward another individual that is carried out with the proximate (immediate) intent to cause harm. In addition, the perpetrator must believe that the behavior will harm the target, and that the target is motivated to avoid the behavior” (Anderson and Bushman, 2002, p.28). By definition, aggressive behavior and actions may come in diverse forms simply because harm may be delivered in diverse ways.

This breadth in definition lends itself to the organization and categorization of aggression into multiple forms. The task of carving out the diversity of aggressive actions into meaningful categories has been approached differently by researchers. Buss (1961), for example, made a distinction between the primary forms of aggression: physical versus verbal, passive versus active, and direct versus indirect. Feshbach (1964) later added the dichotomy hostile versus instrumental aggression. Others have noted that the harm induced by aggressive acts and the means one uses to induce them may be either physical or psychological by nature (Shepard & Campbell, 1992). These categories are certainly
not exhaustive, yet they illustrate that aggression is a diverse and heterogeneous construct incorporating a variety of means.

Narrow emphasis on direct aggression. These dichotomies have, on a theoretical level, been widely accepted (e.g., Anderson & Bushman, 2002; Buss, 1961; Campbell, 1999); however, previous research has almost exclusively operationalized aggression in terms of physical and verbal aggression—those which Buss (1961) termed “direct”. Direct forms are those in which the aggressor confronts the target in a face-to-face situation (Bjorkqvist & Niemela, 1992). This may involve physical violence (e.g., hitting) or verbal assaults. These forms have been operationalized in experimental research using measures of aggression such as electric shocks (e.g., Buss, 1963; Epstein, 1965), loud noise blasts (e.g., Frodi, 1978), and hot sauce allocation (e.g., Kirkpatrick, Waugh, Valencia, & Webster, 2004; Liberman, Solomon, Greenberg, & McGregor, 1999).

The above cited dependent measures can be thought of as direct aggression for several reasons: the target’s physical body is harmed in some manner or verbal insults are exchanged, both parties are aware of the other’s identity, and each typically knows why the conflict is occurring. In face-to-face confrontations, both parties have an opportunity to read the other’s nonverbal behavior and act accordingly (Mazur, 1985). In addition, these altercations are sometimes public, resulting in the involvement of others in the conflict. These various characteristics influence the dynamics of the aggressive interaction in important ways; for example, retaliation is only possible when the identity of the aggressor is known.

Meta-analyses (Bettencourt & Miller, 1996; Eagly & Steffen, 1986; Frodi, McCauley, & Fromme, 1977; Hyde, 1984) on aggression research are heavily weighted
with these types of direct aggression measures. The reason for the historical emphasis on direct aggression may be due to the ease with which researchers can measure physical aggression and the salience of physical acts of aggression and violence in our society. These are certainly not trivial reasons; however, an unequal weighting of direct aggression obscures the full spectrum of agonistic behavior and results in an incomplete and incorrect characterization of behavior in the research literature.

Sex-specific behavior, in particular, may have become obscured; when direct measures of aggression are utilized to the exclusion of other forms, males are almost universally found to be more aggressive than females (e.g., Buss, 1963; Buss & Perry, 1992; Daly & Wilson, 1988; Epstein, 1965; Frodi, 1978; Kirkpatrick et al., 2002; Rogers, 1980; Richardson, Hammock, Smith, & Gardner, 1994). Reviews of gender differences in aggression estimate between 62-82% of men exceed the average woman in aggression measures (Bettencourt & Miller, 1996; Eagly & Steffen, 1986; Frodi, et al., 1977). Males are described as the more “aggressive sex” across a variety of disciplines from social psychology and neuroscience to anthropology and animal behavior.

The implication of the above statements is not to deny that males are more physically aggressive than females—a difference that has been robustly supported by research. Rather, the point of this brief review is that the theoretical construct of aggression has been touted as broad and multifaceted, yet the empirical analysis of the construct has been limited and narrow. With a broadening understanding of the nature of aggressive behavior, it may now be incorrect to assert that one sex is “more aggressive” than the other without first qualifying the type of aggression that is implied.
One result of this narrow view of aggression may be a misunderstanding of the causes and contexts of female aggression. In consonance with the available literature on sex differences in aggression, it is often implied that aggression in females is a diluted form of male aggression or an aberration from the female role or behavioral strategy (Mazur, 1985). In reality, however, aggression in females may manifest itself in distinct forms and for variant functions; that is, aggression in females may be qualitatively rather than quantitatively different from males. In a meta-analysis of provocation and gender in aggression research, Bettencourt and Miller (1996) found that when females were sufficiently provoked, they displayed levels of aggression equal to that of males. Overall levels of aggression were mediated by the subjective experience of negative affect and provocation intensity. In addition, males and females were provoked by dissimilar cues. These differences illustrate that the aggregation of participants across sex may obscure important empirical and theoretical components of aggressive behavior.

Because of these differences, in the future the debate over whether there are sex differences in aggression may prove simplistic and useless. The importance of moderating variables as well as the possibility of interactions between these variables and the different forms of aggression illustrates that it is an extremely complex construct in need of further research. This task, however, is intractable without a theoretical framework to guide predictions and organize research. Any theoretical description of sex differences in aggressive behavior must be able to account for the pattern of empirical findings (post-hoc and a priori) regarding the aggressive behavior of males and females. A question of particular relevance to the present paper is why males exceed females in physical aggression but less so in other forms. Evolutionary theory provides
the necessary theoretical basis on which to build an understanding of the function of aggression in males and females, and thus can make differential predictions on the nature of these differences.

**Aggression from an Evolutionary Perspective**

Aggression research in psychology has suffered from the lack of a theoretically strong organizing framework. Anderson and Bushman (2002) noted that research in aggression amounts to a “heap of stones” rather than a well-built house. Their ‘General Aggression Model’ consolidates aggression research into one descriptive theory, however, it does little to elucidate the functional significance of aggression in humans. Early sociobiological research in aggression (Lorenz, 1966) advanced the study of evolution and aggression, but did not elucidate psychological mechanisms (Campbell, 1999; Rohner, 1976). More recently, evolutionary psychology (Cosmides & Tooby, 1992; Pinker, 1997) has begun to clarify the role of evolution in shaping the mind and therefore is central in the present discussion. Before addressing sex differences in aggression using this framework, a few basic concepts should be clarified.

The central tenet of evolution by natural selection is that genes which aid in survival and reproduction in a given environment will be passed on to subsequent generations (Dawkins, 1976). In any population of sexually reproducing beings, there is variation in genotype. If certain genes confer a selective advantage over other genes in terms of survival and reproductive outcomes, then those genes will be more likely to survive in subsequent generations than others. Furthermore, if the social and environmental features that motivated this selective advantage are enduring, then these genes will come to dominate the population. Over the course of many generations, tiny
changes in genotypic makeup can produce complex phenotypic behavioral adaptations (Darwin, 1858).

Because resources aid in survival and are finite in nature, conflict over resources is an inevitable feature in the natural world. Because of this, organisms within and between species compete for the resources that will aid in survival of their genes because those that competed for resources and obtained them fared better than those that did not (Darwin, 1858; Dawkins, 1976). Selection has not only favored organisms that compete, but also those that weigh the costs and benefits of competition in order to achieve the most beneficial outcome. Accordingly, competition will increase as a function of the ultimate value of the resource via its inherent value or in situations where resources are scarce (Darwin, 1858). Aggression is one behavioral strategy that is motivated by competition over resources.

The term “resources” is typically used to denote valued commodities such as food, territories, or mates because of their direct influence on survival and reproductive outcomes. Human beings, however, value a broader array of assets, including the tangible and the intangible, which have a more indirect influence on ultimate (i.e., fitness-enhancing) outcomes. Although not commonly considered under the ‘resources’ category, interpersonal relationships (i.e. friendships, social connections, and group membership) are also “possessions” of sorts that humans and other primates invest in and vie for (De Waal, 1983). The reason for their value lies in the ultimate utility of cooperative relationships. In addition, reputation is a critical commodity for all individuals in social groups because it can influence whether one is chosen as an ally or long-term mate. Finally, other intangible resources like political power and social status
can be converted into social and reproductive opportunities. These various resources are valuable to their possessor because they increase the chances for survival and reproduction in some manner.

"Competition" is another category that is in need of further clarification. There are two primary ways to compete for or maintain possession of resources (Strier, 2000). First, individuals may compete directly for access to essential resources through agonistic contests. These situations, however, are risky because they carry potential costs (i.e. injury or death). Alternatively, individuals may compete for a position (i.e., status) that will confer preferential access to resources. Social species form hierarchies that dictate which animals receive preferential access to resources. An established hierarchy reduces physical agonistic encounters and the associated physical harm and fitness costs. Behavioral displays of strength and ability signal to others what the likely outcome of a contest would be without actually risking the costs of a direct encounter. Physical attack is therefore only one tactic utilized by individuals in competition for valued resources.

Just as selection has favored dominance hierarchies in order to reduce the cost of physical harm, selection has also favored a repertoire of social abilities that allow individuals to compete for resources without sacrificing survival or other assets such as allies or reputation. For example, humans have the ability to resolve disputes verbally.

In sum, evolutionary theory provides a theoretical foundation for conceptualizing aggression as a behavioral strategy used in competition for valued resources. In theory, different forms of aggression may be utilized for the attainment of different types of resources or in response to different situations. Humans have evolved social and cognitive abilities that allow us to compete for these resources with fewer risks, in
essence using more complex means to the same reproductive end. When individuals have different reproductive goals—as is often the case for males and females—different ways of aggressing may be a consequence.

Evolutionary theory and aggression in males. Evolutionary theorists, like those in other disciplines, have almost exclusively described aggression as a male phenomenon (e.g., Mazur & Booth, 1998; Pinker, 1997). The theoretical reason for this emphasis on male aggression is Parental Investment Theory (PIT; Trivers, 1972). PIT is predicated on the crucial reproductive difference between males and females—gamete size. Males continuously produce new sperm, whereas females are limited to a small number of eggs in a lifetime. Males can fertilize a female at any time of the month, while females require 28 days to move through a single reproductive cycle and are only capable of reproduction during a small window of that time. Additionally and most importantly, the minimum investment for mammalian females is significantly greater than most species, including gestation (9 months), lactation (1-4 years), and infant care (6+ years). In contrast, the minimum obligatory investment for males can be as little as a few minutes. Thus, the time and metabolic expenditure to produce offspring for males and females is vastly disparate. The behavioral strategies of each sex typifies the common trade-offs between quantity and quality.

Because females must invest more in offspring, they become the limiting resource in the overall production of viable offspring. Thus, evolution has favored males that seek out and compete for reproductive access to multiple females. Because the sex ratio is 50/50 and insemination is a zero-sum game, those males that inseminated multiple females do so at the expense of other males. In other words, males have an overall
higher fitness variance than females. The ultimate benefits (i.e., getting one’s genes into the next generation) to multiple inseminations for males are so great that males can be expected to incur substantial risks (e.g., physical aggression) in pursuit of this goal.

Females, on the other hand, have an overall lower fitness variance than males; that is, more females than males can anticipate producing at least one offspring in their lifetimes. This means that there is less incentive for females to fight for mates, i.e., the benefits to fighting for mates does not outweigh the potential costs.

Not only do females have less to gain by fighting for access to mates, but they also have more to lose. The mother’s presence is likely to be more essential to her offspring’s survival (and thus to her own reproductive success) than is the father’s. Among the hunter-gather Ache of Paraquay (Hill & Hurtado, 1996), death of the mother increases child mortality by a factor of five compared to a threefold increase when the father dies. These cost-benefit analyses have direct implications for the observed and expected incidences of physical aggression in males and females.

Females’ greater concern for survivorship and bodily integrity is shown in the mediational psychological mechanisms of personal survival found in aggression research. Eagly and Steffen (1986) found that women (more than men) judged that aggression was likely to pose dangers. This sex difference in perceptions of danger was a significant predictor of effect sizes in aggressive behavior across their meta-analyses. In addition, the size of the sex difference became greater as the seriousness of the possible injury increased. This point is important because it forms the basis for the argument that females should be more concerned with staying alive than are men and this in turn accounts for their low-risk strategies of conflict resolution.
Perhaps for this reason, highly dominant and aggressive females are less attractive to males. A male would have a better chance of producing a viable offspring with a female who protected herself more than a female who risked bodily harm. Research has shown that males find aggressive females less attractive than “typical” females (Snyder, 2003). Females, in turn, would not want to appear aggressive to males and so would choose ways of resolving conflict that did not include overt displays of aggression.

Summarizing, PIT has guided thinking in evolutionary psychology towards a characterization of males as the aggressive, competitive sex and females as the egalitarian, nurturing sex. Females are often assumed to be less aggressive because a lack of reproductive variance does not motivate strong selection. Research has shown, however, that females do have some fitness variance; those who have access to better resources produce healthier offspring (Pusey, Williams, & Goodall, 1997). Because of this, we can expect that if a female stands to gain status, resources, or a mate from displacing a rival, then there should be instances where females behave in ways that would increase this gain.

Evolutionary theory and aggression in females. Researchers have begun to question the traditional dichotomy of females as the “nurturing sex” and males as the “aggressive sex” on both empirical and theoretical grounds. In accordance with an evolutionary account of aggression, females should compete if the benefits to the acquisition of valuable resources outweigh the costs of competing for them or if the costs of losing acquired resources are outweighed by the costs of defending them.

PIT (Trivers, 1972) can also be utilized to explain the mechanisms of female aggression—when and where it does occur. In species where males invest in the female
and her offspring (typically in pair-bonded or monogamous species such as humans), females compete for access to investing males. Females value a constellation of characteristics in their long-term mates, such as kindness, intelligence, and ambition, because these characteristics help to ensure the bond will be successful, i.e. producing and rearing healthy offspring (Buss, 2003). Males that hold these characteristics and invest in their offspring are valuable because they increase the survival of offspring.

The benefits of a good mate and high status gives females reason to risk some costs in competition for these assets. Although researchers previously thought that females did not compete, mounting data is beginning to render this characterization untenable. Females have been shown to compete with other females on various dimensions from physical attractiveness and sexual reputation to intelligence and popularity (see Campbell, 2004, for a review). “Data show the gender difference in competitiveness to be one of kind rather than degree, with women and men competing in different ways and, to some extent, over different objectives, but not differing in overall strength of competitive feeling” (Cashdan, 1999, p.221). Because competition for resources fuels aggression, “competitive feeling” provides the requisite motivation for aggression.

Theoretically, human females have as many (ultimate) reasons for intra-sexual competition as males do. However, they are limited by the ultimate and subjective sense of potential danger posed by aggression. Thus, we would expect selection to have favored ways of aggressing among females that enhance the benefits of competition but reduce the physical costs.
Broadening Aggression Research: Indirect Aggression

In recent years, renewed interest has been shown in the concept of indirect aggression, a type of intended harm that is delivered circuitously (Bjorkqvist & Niemela, 1992). Indirect aggression is often used synonymously in the literature with social and relational aggression, although the terms are slightly different in definition. What these terms have in common, however, is a focus on the interpersonal capital that is often harmed by indirect aggression: social relationships, social status, and psychological well-being. This may take the form of slanderous rumors and reputation defamation, friendship and mate-ship manipulation, social rejection and ostracism, or negative facial expressions or bodily movements (Underwood, 2003). Indirect aggression has been promoted as “female aggression” (Bjorkqvist, 1994).

As already stated, part of the reason why physical aggression has received more interest by researchers as well as the public is the salience of direct encounters and the potential seriousness of physical harm (i.e. death). Harm, however, is a subjective concept to some degree. In indirect aggression research, harm is conceived of more broadly than in most aggression research. Harm can be inflicted on social relationships, psychological state (i.e. self-esteem), etc. Psychological and indirect forms of aggression can be experienced as extremely hurtful to the victim and thus can be an extremely effective tool in wounding one’s rival. Both social and physical aggression were rated by girls as equally harmful (Galen & Underwood, 1997). Another sample of girls and boys reported that being the victim of social aggression hurt more than physical aggression (Paquette & Underwood, 1999). Although indirect aggression may not make headlines, it can have important implications in terms of reproductive success.
Indirect aggression serves multiple goals, which appear to solve the problem of the danger imposed by direct aggression for females. The relative anonymity or covert strategy reduces the likelihood of retaliation by the target. The circuitous delivery reduces the likelihood of physical harm in an altercation or subsequently from retaliation. Furthermore, when aggression is concealed, the aggressor does not appear aggressive or dominant to others which could harm one's value as a mate or ally. Thus, indirect aggression functions to harm the target without placing the aggressor at a risk for danger.

For females, these characteristics solve the dangers of physical aggression by providing alternative means of competition. These arguments, however, also hold true for males. Although indirect aggression has been touted as "female aggression," the possibility remains that males use indirect aggression for the same reason as females: to reduce risk of physical harm and the dangers of face-to-face confrontation. The empirical research suggests that males also use indirect aggression, but whether they use it less often than females has yet to be clarified by empirical research.

*Sex differences in indirect aggression.* Much of the relevant research on indirect aggression is developmental in nature. Several child and adolescent studies have shown that indirect aggression is significantly more present in girls than in boys (Crick & Grot彼得, 1995; Galen & Luthan, 2000; Lagerspetz, Bjorkqvist, & Peltonen, 1988). Other studies, however, have demonstrated that boys use indirect aggression more than girls (Crick & Grot彼得, 1996; Paquette & Underwood, 1999; Richardson & Green, 1999; Rys & Bear, 1997), whereas others have not found any significant gender differences (Hennington, Hughes, Carell, & Thompson, 1998; Tomada & Schneider, 1997).
In adult populations, the sex difference in indirect and direct aggression is also far from clear. Kaukiainen (1992) found that 19-year-old women use greater indirect aggression than same-age males. Similarly, college-aged women have been shown to use psychological forms of abuse more than men in romantic relationships (Marshall, 1996; Valencia, 2000). Most researchers, however, have either found no gender difference (Bjorkqvist et al., 1999; Werner & Crick, 1999) or a difference favoring males (Green, Richardson, & Lago, 1996; Lindeman, 1997; Loudin, Loukas, & Robinson, 2003; Walker, Richardson, & Green, 2000).

The above cited studies in both the adult and developmental populations illustrate how inconclusive the research on the topic of sex differences in indirect aggression remains. Does it continue to occur past adolescence? Do sex differences continue to exist or have males “caught up” with females? Despite the ambiguity in the literature on this topic, researchers have adopted the sex difference in indirect aggression as if it were unequivocal (e.g., Anderson & Bushman, 2004). This may have influenced the public’s understanding on the topic as well; pop-psychology books on aggression in females have jumped in recent years (Blanco, 2003; Simmons, 2002; Underwood, 2003; Wiseman, 2002).

The relationship between sex and aggression, however, may be more complex and subtle than simple mean scores suggest. Looking beyond tallies to other predictive constructs, such as self-esteem, may provide clues as to the nature of indirect aggression and its occurrence in males and females. The second part of this paper will explore the role of self-esteem in the behavioral patterns of direct and indirect aggression.
Several questions frame this discussion: If it is in fact true that indirect aggression is a “female” strategy and direct aggression a “male” strategy, then are these different strategies for accomplishing the same goal (i.e., same end, different path) or are different strategies used because they accomplish different goals (i.e., different paths to different ends)? If it is the former, why are two different paths necessary? Alternatively, is it useful to think of these strategies of aggression in terms of sex differences at all? The present research will examine these questions not only by addressing mean differences in aggression in males and females, but also by asking if a similar proximal state—self-esteem—predicts indirect and direct aggression in males and females.

Self-Esteem

Self-esteem (SE) has been defined as “the totality of the individual’s thought and feeling having reference to himself as an object” (Rosenberg, 1975, p.7). In other words, SE is a global evaluation of one’s self that has both cognitive and affective components. Positive evaluations of the self continue to be regarded as a prerequisite of mental health and functioning primarily because high SE has been associated with a variety of positive outcomes including successful adjustment, coping abilities, positive affect, and better health (see Baumeister, 1998, for a review).

Predicting aggressive behavior using self-esteem. The relationship between a positive self-concept and multiple positive outcomes has led some to conclude that high global SE is an all-purpose “good” that should be promoted in all individuals (e.g. California Task Force to Promote Self-Esteem and Personal and Social Responsibility, 1990). Conversely, low SE is assumed to be an all-purpose “bad,” leading to cognitions, emotions, and behaviors that are maladaptive in all contexts. Thoughtful individuals
would agree that this is a simplistic way of characterizing a complex psychological state. Researchers, however, have fallen prey to this characterization, particularly in their theorizing on the relationship between SE and aggression. Overall, traditional theorizing on the relationship between low SE and aggression suffers from contradictions, ambiguities, and inconsistent empirical evidence (see Baumeister, Smart, & Boden, 1996, for a full discussion).

*Aggression and low self-esteem.* It has been widely asserted that one of the causes of aggression is low SE because it causes “self-doubting” individuals to lash out at others in an attempt to gain esteem (e.g., Feshbach, 1971; Goldstein & Rosenbaum, 1985). It is assumed that people with low SE are deeply motivated toward self-enhancement, because they desire more of what they lack. It is further assumed that these individuals expect to secure SE by violent and aggressive means, such as by dominating others.

Mounting research has now made these assumptions indefensible. In particular, findings on the behavioral, cognitive, and affective characteristics of those with low SE do not seem to describe an aggressive psychological profile. Individuals with low SE do not act as though they are strongly motivated to boost their SE; in fact, they often avoid situations that might increase their SE. In addition, they have an aversion to positive, enhancing feedback (Swann, 1987) and they are not keenly motivated to gain accurate feedback (Sedikides, 1993).

In contrast, a self-enhancement orientation has been shown to be typical of individuals with high SE (Baumeister, Tice, & Hutton, 1989; Tice, 1991). High SE has also been linked with higher aspirations (Baumeister & Tice, 1985) as well as escalated risk-taking following a failure or other ego threat (Baumeister et al., 1989). In addition,
reactions to negative feedback by those with high SE have been characterized as strong and sometimes irrational (Baumeister et al., 1989; Baumeister & Tice, 1985). Thus, the orientation towards self-enhancement that supposedly motivates those with a negative self-concept to “lash out” does not hold under the weight of empirical evidence.

Baumeister and colleagues (Baumeister, et al, 1996, Bushman & Baumeister, 1998) have proposed that aggression may actually be the result of threats to very high SE (i.e., narcissism), particularly when those threats come from others perceived to be weaker than the self. In other words, individuals behave aggressively when they receive feedback that contradicts and threatens their enhanced views of themselves. This type of negative feedback suggests to them that they should adopt less favorable views and, of course, individuals are extremely unwilling to amend their SE in a downward direction. It is important to note that in this conceptualization SE does not cause aggression; rather, it moderates the relationship between a frustrating or anger-invoking situation (that threatens SE) and the expression of an aggressive action.

Although empirical research has begun to clarify the nature of the self-concept in aggressive individuals, the theoretical reason for the relationship between aggression and SE—high or low—remains unclear. Like that of aggression, SE research has suffered from a lack of organizing theory. Without this, it is difficult to make predictions a priori about how SE will moderate aggressive actions. A guiding theory based in functionality would better aid researchers in understanding this relationship.

*The Functions of Self-Esteem*

Despite the extensive literature linking SE with so many interpersonal phenomena, very few researchers have put forth theories to explain the origin of the SE
motive itself. Many SE researchers have assumed that individuals seek high SE simply because they have an inherent ‘need’ for it without adequately addressing why a motive to maintain global SE exists at all or why certain events threaten SE when others do not. Recently, however, theorists have begun to address the function of SE beyond simply feeling good about one’s self and have speculated regarding the possible interpersonal functions of SE.

*Sociometer theory.* Leary and colleagues (Leary & Baumeister, 2000; Leary, 2004) assert that the SE system functions as an internal gauge (i.e. the “sociometer”) that is calibrated to scrutinize an individual’s inclusion or acceptance in relationships and social groups. They suggest that this gauge alerts individuals when they are in danger of being excluded or rejected from social groups and interpersonal relationships. In other words, low SE functions as a warning sign, which, in turn, motivates the individual to seek to readjust SE back to a comfortable homeostatic baseline. This is accomplished by seeking out social relationships and behaving in ways that will repair interpersonal bonds and group inclusion.

Sociometer theory has contributed a great deal to our understanding of the SE system; however, it doesn’t adequately address the relationship between SE and status-seeking behavior. That is, it does not take into account the existence of behavior that jeopardizes social relationships in the service of high SE. Thus it seems unlikely that the relationship between global SE and aggression is propelled solely by differences in social inclusion.

*Dominance theory.* In contrast to Leary, Barkow (1975, 1980) asserts that the function of SE is to monitor one’s social standing, which allows one to influence others
and maintain access to valuable resources. Barkow (1975) states that “natural selection transformed primate social dominance into human self-esteem” (p.557). He argues that the way in which we strive to maintain our self-esteem is by seeking prestige, which he defines very broadly (including acceptance, attention, respect, and dominance).

The problem with Barkow’s dominance theory is that he confounds social inclusion with prestige— in effect creating a tautology by characterizing everything related to SE with prestige. In addition, it doesn’t distinguish between the different ways that one can achieve status and acceptance.

What these two theories have in common is a focus on function and a conception of SE that is best described by Leary’s internal gauge analogy, the “sociometer,” in that SE reflects meaningful aspects of the social environment. The problem with sociometer and dominance theory is that they conceive of SE— like Rosenberg (1965) or other common SE measures— as one global construct, as if humans only needed to monitor one aspect of their social environment. One sociometer, even if it does monitor broad categories such as social inclusion or status, is too domain-general to predict the multi-faceted and diverse domains that characterize human social life.

**Domain-specific self-esteem.** Using a domain-specific approach to SE, Kirkpatrick and Ellis (2000) have proposed a model that categorizes domains of SE that correspond to meaningful spheres of social life. These domains are “meaningful” because they are consistent with distinct evolutionary functions. This theory is a refinement and expansion of Leary’s sociometer theory and Barkow’s dominance theory, incorporating the strengths of these theories while avoiding some of the weaknesses.
Whereas Barkow and Leary focus on a single gauge of social “success,” Kirkpatrick and Ellis reason that we have numerous sociometers designed by natural selection to gauge our levels of SE in distinct domains. The concept of domain-specific SE is predicated on the evolutionary psychological theory that the mind has evolved many specialized, domain-specific psychological mechanisms in order to solve the diverse adaptive problems in our ancestral past (see Pinker, 1997; Tooby & Cosmides, 1992). Just as one all-purpose visceral organ could not manage all the functions of the body, an all-purpose brain mechanism would not have been sufficient for solving the assorted survival and reproductive problems faced by our ancestors. It is therefore theoretically implausible that a general, all-purpose mechanism guides our interactions with the physical and social world.

In accordance with the domain-specific theory of mind, Kirkpatrick and Ellis (2000) assert that interpersonal relationships are monitored by a number of psychologically specialized sociometers. The authors identify three general categories of social relationships where this concept applies: cooperation within groups (i.e., social inclusion), competition within groups (for status, mates, etc.), and competition between groups.

As was proposed by Leary, Kirkpatrick and Ellis assert that one of our sociometers monitors our inclusion in social relationships and coalitions. Aggression against in-group members is likely to be a maladaptive strategy for highly socially-included individuals. In other words, the benefits of using aggression for the acquisition of resources would be outweighed by the loss of the cooperative, mutually beneficial interpersonal relationships that antagonistic actions could jeopardize.
In zero-sum or non-cooperative relationships, however, where an individual must compete with conspecifics for mates or other resources, a social inclusion sociometer would not be applicable. Because individuals must assess how they compare to others in status, skill, or attractiveness, a distinct sociometer that gauges one’s relative standing on these relevant competitive dimensions would be more advantageous. Obtaining an assessment of one’s relative chances of success is extremely functional because it helps one to decide the best strategy for maximizing gains while minimizing costs—much as individuals of other species initiate or avoid fights based on assessments of relative resource-holding potential (Gilbert, Price, & Allan, 1995; Parker, 1974). These particular aspects of within group competition—mating and status-seeking—make important contributions to our understanding of the context and cues of aggressive behavior.

From an evolutionary perspective, assessing one’s physical and interpersonal attractiveness is extremely important in judging one’s self amid the competition for mates. Spending too much time “courting” an individual with vastly higher attractiveness would be a waste of time and effort. Thus, *mate value* functions to solve this adaptive problem of competing for quality mates because it allows individuals to maximize their courtship efforts. This may be particularly true in high-school and college-aged populations, where mating competition is highly salient due both to students’ age and an environment in which both intra-sexual rivals as well as prospective mates are abundant and constantly present. Indeed, aggression has been shown to peak during these ages for both males and females (Daly & Wilson, 1988). Aggression in a mating context may embody a behavioral strategy utilized by dominant individuals against inferior competition in order to protect their current mates or relative footing in
mating competitions. In sum, those with high mate value SE would be more likely to aggress when another challenges their access or choice to mates.

Individuals not only must judge themselves against others in mate value, but also in social status. As stated above, Barkow’s dominance theory addresses the importance of SE as a gauge of status, but does not make a distinction between the diverse ways one may achieve it. Henrich and Gil-White (2001) suggest that dominance is a construct distinct from prestige, in that both are separate channels by which an individual can acquire status. Dominance is defined as the use of force or the threat of force to attain resources, whereas prestige is defined as a type of respect or deference that is freely conferred by others. For those utilizing a dominance strategy, the primary means for attaining and preserving social rank involve aggressing or threatening to aggress, evoking fear on the part of subordinates, and engaging in grandstanding. In stark contrast, those employing a prestige strategy apply their unique abilities and talents to gain the respect and support of others in order to ensure their social position. Those utilizing a prestige strategy would be restrained in their use of aggression because it is often in opposition with winning the support of others. Those using a dominance strategy, on the other hand, must rely on their use of force to gain support or compliance from others.

**Domain-Specific Self-Esteem and Aggression**

From this theoretical perspective, global SE becomes an inadequate construct for assessing these highly disparate domains. A domain-specific SE, however, not only encompasses a measure of social inclusion, but also measures of superiority, interpersonal attractiveness, and status in situations of within-group competition. This
conceptualization of specific domains has provided a further refinement of the empirical link between SE and aggression.

In a study of this relationship, Kirkpatrick et al. (2002) examined the ability of domains of SE to predict behavioral measures of aggression in two laboratory experiments. In both studies, participants filled out self-report questionnaires tapping different domains of SE (self-perceived superiority, mate value, social inclusion) as well as global SE. In Study 1, participants were then asked to write a short essay (on abortion) and then were given the chance to aggress (as measured by the hot-sauce allocation measure; Lieberman, et al., 1999) against the reviewer of an essay the participant had written. Multiple regression analyses showed that self-perceived superiority (reflecting high self-perceived status) was positively predictive of aggression, whereas social inclusion was inversely related to aggression. In addition, global SE was unrelated to aggression.

In Kirkpatrick et al.'s (2002) second study, the experiment was modified to simulate a mating competition. Participants (who had been pre-selected as not currently involved in committed relationship), were led to believe that they were competing against another same-sex participant for the chance to collaborate with an opposite-sex partner on a subsequent task. Participants again wrote an essay, however—in contrast to Study 1—the essay was a self description, which the opposite-sex participant was to use as a way to choose between them. The competing participants were then given the chance to read and evaluate their competitor's essay, and then allowed to view the competitor's comments (which were manipulated to be positive or negative). Finally, participants allocated hot-sauce to their competitor as in Study 1. In this experiment, only self-
perceived mate value surfaced as a positive predictor of aggression. Again, global SE failed to predict aggressive behavior. These experiments provided the first empirical support for the utility of domain-specific SE in the prediction of aggressive behavior.

This pattern of results was further supported by Webster and Kirkpatrick (in press). Participants completed the same measures of SE as in Kirkpatrick et al. (2002). In addition, they also filled out hostility and aggression questionnaires: the Buss-Durkee Hostility Inventory (Buss & Durkee, 1957) and the Aggression Questionnaire (Buss & Perry, 1992). The laboratory session mirrored Kirkpatrick et al.’s Study 1 except that participants wrote a self-relevant essay (as in Kirkpatrick et al.’s Study 2) rather than a political one. In consonance with Kirkpatrick et al.’s (Study 2), multiple regression analysis showed that self-perceived mate value was a positive predictor of self-reported and behavioral (i.e., hot-sauce weights) measures of aggression. Social inclusion emerged as an inverse predictor of self-reported hostility and aggression. Interestingly, global SE emerged as an inverse predictor of behavioral aggression—even when all other domains of SE were controlled. One reason for this finding may be that mate value, social inclusion, and superiority are not an exhaustive list of domains of SE that are aggregated under global SE.

These studies have provided support for the conception of SE as put forth by Kirkpatrick and Ellis (2001); that is, certain domains of SE predict aggression better than global SE and that these domains predict aggression differentially. Furthermore, these domains have functional significance; mate value and superiority is relevant for within-group competition, whereas social inclusion gauges within-group cooperation. Aggression, as a multifaceted behavioral strategy, is differentially related to these
functional domains; within-group forms of competition are the SE dimensions that relate positively to aggression, while those forms related to cooperative relationships (i.e., social inclusion) relate inversely to aggression.

It is important to note that the questionnaire measures used in Kirkpatrick et al. (2002) and Webster and Kirkpatrick (in press) were not created for the expressed purpose of assessing domain-specific SE. Rather, these measures were culled from the available literature to approximate the constructs outlined in Kirkpatrick and Ellis (2000). What has been left out of these two studies is a differentiation between different strategies of status competition. Self-perceived superiority only assesses the degree to which students see themselves as higher than their peers on various attributes, but it does not take into account the routes that the individuals took to achieve their superiority. In order to address this discrepancy, Buttermore, James, and Kirkpatrick (2004) created the Self-Perceived Social Status Scale (SSSS)—a measure designed to differentiate between status-seeking strategies as proposed by Henrich and Gil-White (2001) (i.e. prestige and dominance).

Johnson, Burk, & Kirkpatrick (2005) examined the utility of the SSSS, global SE, and testosterone in the prediction of aggression (as assessed by the Aggression Questionnaire; Buss & Perry, 2002). In a simultaneous regression analysis, dominance emerged as a positive predictor of overall aggression while prestige was a negative predictor (global SE was again unrelated). These empirical results fall in line with the conceptualization by Henrich and Gil-White; aggression is part and parcel of the dominance strategy but in conflict with the prestige strategy.
Predicting Direct and Indirect Aggression

These studies have demonstrated that different components of SE differentially affect aggressive responding. This not only holds true for self-reported actions, but also laboratory measures of aggression. All measures assessed in previous research, however, fall under the category of direct aggression. No research has yet examined the relationship between domains of SE and indirect aggression. Thus, the present studies will target this unexplored relationship.

The relationship between the domains of SE and different forms of aggression (i.e., direct vs. indirect) is not easy to predict given the shortage of empirical research in the area. The results of the present studies might plausibly take two general directions: On the one hand, the relationship between indirect aggression and SE may show the same pattern as that of direct aggression and SE—simply because both fall under the broad definition of aggression. That is, dominance or mate value SE would predict increased use, and social inclusion or prestige decreased use, of any aggression strategy—direct or indirect.

On the other hand, indirect aggression may show an opposite pattern: Those who are lower in SE may choose indirect routes to aggression because direct routes are perceived as too dangerous or risky. This option is consistent with the idea that indirect aggression is a female strategy; direct aggression poses risks which are addressed by indirect aggression. Either way, we should expect to see differential prediction with the domains of SE, and so expectations for each of these domains will be discussed in turn below.
Because results found in the present study will be compared to findings in past studies, it is important to take a moment to discuss what is known about the similarities and differences between the two measures—specifically, the widely used Aggression Questionnaire (AQ; Buss & Perry, 2002), used in Webster and Kirkpatrick and Johnson et al., and the Richardson Conflict Response Questionnaire (RCRQ; Richardson & Green, 2003), used in the present studies. The AQ includes four components of overall aggression: cognitive (i.e., hostility), affective (i.e., anger), and instrumental (i.e., physical and verbal) aggression. The actual behaviors assessed by the AQ are exclusively direct—physical and verbal aggression. The two components are virtually identical to the RCRQ’s measure of direct aggression and thus results should parallel those found by Webster and Kirkpatrick and Johnson et al.

The hostility and anger components are less directly comparable; however, Richardson and Green (2003) have examined the parallels between the AQ and the RCRQ using semi-partial correlations (i.e., removing the variance of indirect from direct, and vice-versa), which are relevant to this discussion. Results showed that indirect—but not direct—aggression was correlated with hostility scores. According to Buss and Perry, hostility represents feelings of ill-will and injustice, and includes items such as “I sometimes feel that people are laughing at me behind my back.” This describes the mindset of an individual who believes that others are acting indirectly aggressive towards them, which may cause them to aggress indirectly in return. Because of this overlap between hostility and indirect aggression, we might tentatively predict that results of the present study would mirror those of Johnson et al. for these scales.
Dominance and mate value are domains of within-group competition and have been shown to relate positively to direct aggression. Although the same may be true for indirect aggression, the possibility also remains that opposite may be true; individuals with low dominance and mate value may be forced to use indirect aggression because they lack the qualities that would allow them to compete with others through the “normal”— public and face-to-face— route.

Prestige is also a domain of within-group competition; however, there is no reason to suspect that it would be positively related to aggression in either form. It may, however, be related more to indirect than direct. As already described, Johnson et al. found that prestige was a significant inverse predictor of only hostility, which has been shown to correlate with indirect aggression. Thus, individuals who are low in prestige may choose indirect means of competition more often than direct because they lack the influence, respect, and backing of other individuals.

The relationship between indirect aggression and social inclusion is difficult to predict. On the one hand, all types of aggression can potentially harm social bonds. On the other, individuals may use indirect aggression in an attempt to gain the best of both worlds— reap the benefits of competition yet also attempt to maintain social ties. In a sample of older adults, Walker et al. (2000) found that indirect aggression was associated with having larger but less connected social networks, whereas direct aggression was not related to social networks. This suggests that the form of aggression used may be related to social inclusion, but the exact nature of this relationship is difficult to predict based on past research. Theoretically, it seems implausible that indirect aggression would deliver benefits over and above those of cooperative social relationships.
Overall, the relative dearth of research on indirect aggression and self-esteem does not lend itself readily to confident predictions. In addition, it is difficult to say how SE will mediate the sex—aggression relationship. Although a strong case was made in the introduction for the importance of differentiating males and females in the study of aggression, the literature does not suggest that this should also be done for the relationship between aggression and SE. It does, however, remain a possibility that certain domains of SE could predict aggression in one sex better than the other.

The Present Study

The purpose of the present study is to identify and distinguish direct and indirect forms of aggression in males and females using questionnaire measures, and to clarify the relationship between these forms and domain-specific SE. In particular, the present study will attempt to: a) measure sex differences in mean levels of direct and indirect aggression, b) replicate findings on the relationship between domain-specific SE and direct aggression from Kirkpatrick et al. (2002), Webster & Kirkpatrick (in press), and Johnson et al. (2005) using a different aggression measure than was previously used in these studies, c) expand upon Kirkpatrick et al. (2002) and Webster & Kirkpatrick (in press) by using more differentiated predictors (i.e., substituting self-perceived superiority with dominance and prestige, as in Johnson et al.) as well as checking for interactions between sex and domains of SE, and finally, d) extend these findings on direct aggression to the prediction of indirect aggression.
STUDY 1

The present study aimed to differentiate aggressive strategies used by males and females using specific domains of SE as predictors. Participants completed questionnaires designed to assess direct and indirect forms of aggressive behavior as well as levels of SE in different evolutionarily-relevant domains of social life.

Regarding sex differences, it was hypothesized that females would exhibit more indirect aggression, whereas males would exhibit more direct aggression. The possibility of interactions between sex and domains of SE when predicting aggression was left open for exploration. In accordance with results found in Kirkpatrick et al. and Webster and Kirkpatrick, it was hypothesized that superiority and mate value would predict increased direct aggression, social inclusion would predict decreased direct aggression, and global SE would be unrelated to aggression when these domains of SE are controlled.

Incorporating findings from Johnson et al., it was hypothesized that dominance and prestige would provide better prediction of status-relevant SE than self-perceived superiority and that betas would be significant in opposite directions; dominance would predict increased direct aggression, while prestige would predict decreased direct aggression. The relationships between domains of SE and indirect aggression are predicted to mirror those between SE and direct aggression.

Method

Participants

One hundred and seventy-nine (104 females, 75 males) William and Mary students between the ages of 18 and 29 (median of 18) volunteered to participate in fulfillment of an introductory psychology course requirement.
**Procedure and Materials**

Materials consisted of a set of 6 questionnaires, counterbalanced for order effects. Participants filled out the packet of questionnaires in group sessions ranging in size from 1-14 individuals (See Appendix A for verbatim script). All participants signed a consent form before beginning the study (See Appendix B). The questionnaires took approximately one half hour to complete, after which participants were thanked and debriefed.

Students responded to questions based on their perceptions of their own behaviors and beliefs on the constructs of self-esteem and aggression (See Appendix for individual scale items.). Responses on all SE assessments were given on a scale ranging from 1 (strongly disagree) to 7 (strongly agree), unless otherwise noted below.

**Self-Esteem Scales.** Measures of SE included Rosenberg’s (1965) 10-item global SE scale (Appendix D) and five domain-specific SE scales representative of the three major dimensions described by Kirkpatrick and Ellis (2001):

1. **Mate Value SE** was assessed using a 12-item measure. The *Self-Perceived Mating Success Scale* (Landolt, Lalumiere, & Quinsey, 1995) measures mate value, or the degree to which members of the opposite sex see the respondent as an attractive potential sexual and romantic partner (See Appendix E). Sample items include, “Members of the opposite sex that I like, tend to like me back” and “I do not receive many compliments from members of the opposite sex” (reverse scored).

2. **Competitive SE** measures how individuals compare themselves to others. This construct was assessed using two measures previously employed for this purpose:
(a) The *Self-Attributes Questionnaire* (Pelham & Swann, 1989), which asks participants to rate themselves relative to other students their age on 15 socially desirable characteristics (e.g. intelligence, trustworthiness, athletic ability), hereafter referred to as *Self-Perceived Superiority* (see Appendix G). Rankings were made in terms of percentile ranks, ranging from A (bottom 5%) to J (top 5%), which were coded from 1 (i.e. A=1) to 10 in data entry.

(b) The forty-item *Self-Perceived Social Status Scale* (SSSS; Buttermore, James, & Kirkpatrick, 2003). This scale was adapted from the *California Psychological Inventory's* Dominance Subscale (Megargee, 1972) and the *Social Dominance Scale* (Leary, Cottrell, and Phillips, 2001), with additional items generated by Buttermore et al. (2003). The measure yields scores in two domains—dominance and prestige— as distinguished by Henrich and Gil-White (2001; See Appendix F). The 7-item dominance subscale includes items such as, “I am willing to use aggressive tactics to get my way” and “I demand respect from members of my peer group.” Cronbach’s alpha for the dominance subscale has previously been found to be .78 (Buttermore, 2003); alpha in the present study was .81. Prestige items include, “There are some matters on which I am considered an expert by others” and “Members of my peer group respect and admire me.” Alpha for the prestige scale has previously been reported as .78; in the present study, alpha for the 6-item subscale was found to be .84.

3. Social Inclusion was evaluated using two measures utilized for this purpose in past research (Leary and Cottrell, 1999): the nine-item *Inclusionary Status Scale* (Spivey, 1990) and the ten-item *Interpersonal Support Evaluation List* (Cohen, Mermelstein, Kamarck, & Hoebman, 1985). Because of their item content overlap and high inter-correlation,
they were joined to create a single measure, hereafter referred to as *Self-Perceived Social Inclusion* (see Appendix H). Sample items include: “If I wanted to have lunch with someone, I could easily find someone to join me” and “I don’t often get invited to do things with others” (reversed scored).

**Direct and Indirect Aggression Questionnaire (DIAQ).** This questionnaire was created by the researcher by combining items from two widely used measures: the Abusive Behavior Inventory (ABI; Shepard & Campbell, 1992), which assesses physical and psychological aggression in adult romantic relationships, and the Richardson Conflict Response Questionnaire (RCRQ; Richardson & Green, 2003), which was intended for use among child populations. These measures were consolidated in order to incorporate all possible behaviors that might fall under these components for a college-aged population.

Richardson and Green (2003) explicitly state that the RCRQ should be modified to suit the particular sample of participants and the focus of the research. To this effect, both the instructions and the individual items were modified slightly. Regarding the instructions, the RCRQ asked participants to indicate the frequency with which they might engage in the behaviors when angry, whereas the present study asked participants to imagine a situation where a same-sex friend/acquaintance had made them very angry (see Appendix I for more detail). Individual items were modified for first-person perspective (e.g., “Yelled or screamed at them” became “I yelled or screamed at her”). In addition, different versions were created for males and females (e.g., the female version read “I cursed at her,” and the male, “I cursed at him.”).
Like the RCRQ, the adapted DIAQ included two components: direct and indirect aggression. Along with 8 filler items, the 13-item direct aggression subscale includes items such as: “I threatened to hit or throw something at him/her” and “I pushed, grabbed, or shoved her”. Cronbach’s alpha for the direct aggression subscale was .88. The 15-item indirect aggression subscale includes items such as: “I gossiped about her behind her back with other friends” and “I started hanging out with someone else as a kind of revenge”. Cronbach’s alpha for the indirect aggression subscale was .87. Responses on the DIAQ were given on a scale ranging from 1 (never) to 7 (always).

Results and Discussion

The purpose of Study 1 was to predict different aggressive strategies using domains of self-esteem. In consonance with past research, it was hypothesized that males would report more direct aggression, whereas females would report more indirect aggression. In addition, it was hypothesized that high dominance and mate value SE would predict increased aggression, high prestige and social inclusion SE would predict decreased aggression, and global SE would be unrelated to aggression.

Preliminary Analyses

Descriptive statistics for questionnaire measures can be found in Table 1. All scales had good internal consistency.

Several of the SE scales were correlated; see Table 2 for coefficients. For males and females, prestige, superiority, mate value, social inclusion, and global SEs were all positively correlated with one another ($p<.05$ for all). This is similar to correlations found in previous studies (Kirkpatrick et al., 2002; Webster & Kirkpatrick, in press;
Valencia, 2001). For males, dominance was not correlated with any other measures of SE. For females, dominance was positively correlated with prestige and superiority.

Direct and indirect aggression were only moderately correlated ($r=.29, p<001$). This correlation suggests that although the two forms are similar, they are not simply redundant measures of the same construct.

**Sex Differences in Aggressive Strategies**

A one-way analysis of variance was conducted to compare males and females on direct and indirect aggression scores (see Table 1). Males reported significantly more direct aggression ($M=2.36$, $SD=.81$) than females ($M=1.60$, $SD=.51$), $F(1,177)=58.07$, $p<001$. Also as hypothesized, females reported more indirect aggression ($M=2.32$, $SD=.82$) than males ($M=2.17$, $SD=.69$), although this difference was not significant, $F(1,177)=1.69$, $p=.20$.

Several researchers suggest that the reason a significant difference between males and females in indirect aggression has not been found in several previous studies may be biased self-reporting in the form of social desirability or self-presentation biases (Bjorkqvist et al., 1992; Cashdan, 1999). For instance, individuals’ self-reported indirect aggression was significantly lower than their perceptions of others’ indirect aggression (Gregoski & Richardson, as cited in Richardson & Green, 2003). Several steps will be taken to decrease this bias in Study 2 and will be described in more detail in that section.

**Domain-Specific Self-Esteem and Aggression**

The second aim of Study 1 was to determine the relationship between specific domains of SE and different forms of aggression.
Data analyses. The domain-specific SE scales and the DIAQ were initially analyzed using correlations; however, in order to assess the degree to which the various domains of SE were predictive of the tendency to aggress over and above other measures of SE, multiple regression was the primary analysis. As a first step, each of the SE scales was probed for an interaction with sex. Interaction terms were created using cross-products and then added separately to the full model (i.e., using all predictors: dominance, prestige, social inclusion, mate value, and global SE). For example, when searching for a sex by prestige interaction, the interaction term was tested in a regression equation with all predictors—so that the variance for the interaction was captured over and above that attributable to sex and prestige. This analysis was performed for each interaction term separately. If any other interactions were not significant, sex was added to the model as a sixth predictor. If any interactions were significant, males and females were analyzed separately. Results of these analyses indicated no significant interaction with sex for any of the predictors (p >.05 for all). Thus, males and females were aggregated under the variable ‘sex’ for all models described below.

Predicting direct aggression. Direct aggression was positively correlated with dominance only (r=.42; p <.001); see Table 6.

Multiple regression analyses were initially performed in the same fashion as Kirkpatrick et al. (2002), Webster and Kirkpatrick (in press), and Johnson et al. (2005) in an attempt to replicate these findings using a different aggression measure.

In accordance with Kirkpatrick et al. and Webster and Kirkpatrick, measures of superiority, social inclusion, mate value, and global SE were used to predict direct aggression (results shown in Table 4). With sex controlled, neither superiority nor social
inclusion were significant, failing to replicate Kirkpatrick et al.'s Study 1. Mate value, however, was marginally significant ($\beta = .13, p < .10$), providing a tentative replication of Kirkpatrick et al.'s Study 2 and Webster and Kirkpatrick. Also consistent with these studies, global SE was not a significant predictor of direct aggression.

It is important to note that the aggression measures used in the present study are not identical to those used previously. The present study used self-reports of aggression, whereas Kirkpatrick and colleagues' used a behavioral measure. Although Webster and Kirkpatrick included the Buss-Durkee Hostility Inventory and the Buss and Perry Aggression Questionnaire in addition to the behavioral measures, these analyses predicted "overall aggression," which, in these scales, includes not only physical and verbal items, but also hostility and anger components as well. Thus, although significant findings in the present study would have provided support for previous findings, lack of significance does not necessarily call them into question.

Like Webster and Kirkpatrick, Johnson et al. also used the Buss and Perry (1992) Aggression Questionnaire as the dependent variable with prestige, dominance, and global SE as predictors. These authors, however, conducted separate analyses for the aggression subscales, allowing a more equitable comparison between the Aggression Questionnaire's subscale measures of physical and verbal aggression and the DIAQ measure of direct aggression. Mirroring these analyses, prestige, dominance, and global SE were used to predict direct aggression, but for males only. Dominance emerged as a significant predictor ($\beta = .41, p < .001$), while prestige and global SE were not significant—providing an exact replication of Johnson et al. (see Table 5).
The present analysis integrated these studies by utilizing measures of social inclusion and mate value (as used in Kirkpatrick and colleagues’ research) along with the status-relevant measures of dominance and prestige in lieu of superiority. In a multiple regression equation examining the effects of sex, dominance, prestige, mate value, social inclusion, and global SE, two significant predictors emerged: sex ($\beta = .45, p < .001$) and dominance ($\beta = .33, p < .001$). The results of this model are shown in Table 6 and illustrate that dominance remains a robust predictor of direct aggression in the strongest test of the hypotheses. These findings also demonstrate the utility of using the SSS scale over the superiority scale as a measure of self-perceived status.

*Predicting indirect aggression.* Indirect aggression was positively correlated with dominance ($r = .27, p < .01$); however, analysis by sex showed that this was true only for females ($r = .35, p < .001$), but not for males ($r = .16$).

Because Kirkpatrick et al. and Webster and Kirkpatrick only measured aggression in ways that could be compared to direct aggression, parallel multiple regression analyses were not conducted for indirect aggression as they were not deemed necessary in light of the analyses to follow.

Johnson et al., however, included the subscale measure of “hostility” from the Aggression Questionnaire (Buss & Perry, 1992), which has been shown to be strongly correlated with indirect aggression (Richardson & Green, 2003). In an attempt to extend their findings for hostility to indirect aggression, dominance, prestige, and global SE were used to predict indirect aggression (for males only). None of these predictors, however, was significant (see Table 5). This is in contrast to Johnson et al., who found dominance to be a positive predictor and prestige an inverse predictor of hostility. Of course,
hostility and indirect aggression are different scales and, although correlated, surely tap different components; hostility is conceived of by Buss and Perry as the cognitive component of aggression, whereas indirect aggression is a measure of actual behavior.

Using the full model (i.e., sex, dominance, prestige, mate value, social inclusion, and global SE) to predict indirect aggression, several variables were significant predictors (see Table 6). Similar to direct aggression, dominance was a positive predictor ($\beta = .29, p < .05$). In addition, mate value was also a positive predictor ($\beta = .18, p < .05$), while social inclusion was a nearly significant inverse predictor ($\beta = -.21, p < .07$).

Surprisingly, sex was also significant ($\beta = .18, p < .05$); females used more indirect aggression than males. As cited in the above section, a significant sex difference was not found for indirect aggression using a t-test. There are two possible explanations for this finding: 1) regression analyses granted the power necessary to detect the difference, and/or 2) indirect aggression was mediated by another variable present in the regression equation. The most likely candidate is dominance— because dominance was higher in males (see Table 1), equalizing males and females on dominance in the regression equation pushed females' scores on indirect aggression above males.

In summary, partial support was found for the hypotheses. Different aggression strategies may typically be used by males and females; males were shown to use more direct and females more indirect aggression. The latter difference, however, was found only in the regression analyses. Predicting aggression using domain-specific SE, Study 1 partially replicated and extended findings from previous studies to another form of aggression— indirect. Dominance was a strong positive predictor of direct (as in Johnson et al.) and indirect aggression, while global SE was not significant. Results
generally support the idea that direct and indirect aggression are complementary strategies; that is, both strategies of aggression are used by the same type of dominant individuals—males or females.

**STUDY 2**

Bjorkqvist et al. (1992) argue that self-report is an inappropriate way to measure engaging in indirect aggression because of the low correlations between self-reports and peer-ratings for these types of behaviors. In order to assess this discrepancy, the experiment will be replicated using peer-reports as an additional source for participants’ aggressive behavior. It is hoped that by obtaining third-party reports on aggressive behavior in Study 2, a more accurate picture of actual aggression may emerge. Participants will ask a same-sex peer to participate in order to verify aggression scores. Peer-reports have been used successfully in a number of studies examining these behaviors (e.g., Werner & Crick, 1994).

The second change to be made in Study 2 concerns the phrasing of the instructions on the aggression scale. The original DIAQ used in Study 1 asked participants to imagine a general situation where a friend or acquaintance had made them very angry. These instructions were phrased ambiguously in order to include real or imagined scenarios with friends or acquaintances. The questionnaire, however, may have been too ambiguous. People may become angry for a wide variety of reasons, which could have obscured relationships among the variables. The experiment will be replicated using a more specific scenario in order to standardize the anger-evoking scenario across participants (discussed in more detail in the Materials section).
The changes made to the DIAQ instructions were not simply more specific— it was made more specific to target a mating-relevant context. Rather than imagine a situation where they had been very angry, they were asked to imagine a situation where a same-sex friend or acquaintance had become involved with their girlfriend (or boyfriend, in the female version) which had made them very angry. As Kirkpatrick et al. demonstrated, functionally distinct domains of SE are sensitive to context; when their experiment was altered to simulate a mating context, mate value emerged as a positive predictor of aggression where it had not been previously. The present study will be altered to specifically target instances of aggression used in intra-sexual competition.

Finally, biased self-reporting may be remedied using a different mode of administration. Keiser and Sproull (1986) suggest that computer-based data collection allows participants more anonymity, which would decrease social desirability and self-presentation biases. To this effect, participants and their same-sex peer will fill out the questionnaires online.

With these changes made, it is anticipated that there will be greater variance in reported aggression, yielding more predictive ability for the SE scales. As in Study 1, it was hypothesized that dominance and mate value SE would predict increased aggression, prestige and social inclusion SE would predict decreased aggression, and global SE would be unrelated to aggression.
Method

Participants

One hundred and sixty-three (74 females, 89 males) William and Mary students between the ages of 18 and 22 (median of 18) volunteered to participate in fulfillment of an introductory psychology course requirement.

As a check on compliance, participants were asked at the end of the study if they completed the questionnaires accurately and honestly to the best of their ability. They were asked to indicate that they did not want their data included in the final analysis if this was not the case. Four participants were excluded because they indicated that they did not want their data included. In addition, one participant was excluded because there was no variability in his data (i.e., all responses were “1”). After exclusions, the final N used in the following analyses was 158 (74 females, 84 males).

Materials

Materials consisted of the same questionnaires used in Study 1, with two exceptions. First, a same-sex peer of the participant was asked to take part in the study as well. Peers were asked to rate the participant on a modified DIAQ adapted for third-person perspective. For example, the peer-report instructions asked peers to imagine a situation where the participant’s boyfriend became involved with a same-sex other and to indicate how the participant would likely act in that situation. For the individual items on the scale, where the self-report items read “I kicked or punched her,” the peer-report read “She kicked or punched her.” See Appendix K for the male and female versions of the DIAQ-Peer (compare to DIAQ for participants in Appendix I).
Second, the DIAQ for the participant was modified slightly, as already described above. In Study 1 the questionnaire (female version) read: “Try to imagine situations in the past where a female acquaintance did something that made you really angry. How did you typically act in these situations?” The version used in Study 2 read: “Try to imagine the following scenario happening to you: A female friend/acquaintance becomes involved with your boyfriend or dating partner without your knowledge. This makes you really angry. How do you think you would react to this situation?” The questionnaire was changed in this way for two reasons. First, the altered wording may reduce self-report biases in indirect aggression; research has shown that participants are more willing to admit to gossiping in situations that involve cheating in relationships (De Backer, 2002). Second, this altered wording changes the scenario from a general anger-invoking situation to a specific, mating-relevant situation. As was shown in Kirkpatrick et al., a mating-relevant situation tapped mate value SE as a significant predictor.

Procedure

In contrast to Study 1, Study 2 was conducted online. On the initial webpage, participants were asked to read and sign an informed consent (see Appendix C). Participants then registered using their ID name and a password of their creation in order to “sign” their informed consent. After registering, participants were asked to fill out the above-listed questionnaires. After completion of the questionnaires, participants emailed their ID name and password to one same-sex friend (therefore each friend remained anonymous). Friends then completed one questionnaire (DIAQ for Friend; Appendix K) online. Both participant and friend were asked to make sure that the other was not present when the questionnaires were filled out. Neither member of the dyad
was able to access the responses of the other. Upon completion of the questionnaires, participants were thanked and debriefed.

Results and Discussion

Preliminary Analyses

Descriptive statistics for questionnaire measures can be found in Table 1; again, all scales showed good internal consistency.

A comparison of the data from Study 1 and 2 reveal significant differences in responses between the two studies. These results indicate that the various changes implemented in Study 2 may have had two effects on the data. First, responses were indeed less socially desirable, as was suggested by Kiesler and Sproull (1986). Mean levels of prestige, status, global SE, mate value, and social inclusion were all significantly lower in Study 2 (p < 0.01 for all; see Table 1). Conversely, dominance, direct aggression, and indirect aggression scores were significantly higher (p < 0.001 for all).

Second, the range and standard deviations were smaller for every scale assessed in Study 2, suggesting that participants were less likely to consider the ends of the scale. 'Clicking' on the response rather than manually writing in a number may have caused participants to be less varied in their answers. In addition, internal consistency of indirect and direct aggression scales increased. It is difficult to pinpoint what caused these differences— the mode of administration, the altered wording of the aggression questionnaire, or differences between first and second semester participants. Nevertheless, there is no discernable reason why the relationships between the variables also changed— this possibility, however, does exist.
Several of the SE scales were correlated and present a somewhat different pattern than in Study 1; see Table 3 for coefficients. For both males and females, prestige was positively correlated with dominance and superiority, and dominance with global SE. For males, prestige was positively correlated with mate value but not with social inclusion or global SE as in Study 1, whereas dominance was correlated with prestige, mate value, and global SE but not superiority as in Study 1. For females, prestige was positively correlated with dominance and superiority but not with mate value, social inclusion, or global SE as in Study 1. The most pronounced difference between the two studies among the correlations was that prestige, social inclusion, mate value, and global SE were all inter-correlated in Study 1 but not in Study 2. Furthermore, prestige was more closely aligned with dominance in Study 2. These differences may have implications for the primary regression analyses in Study 2 compared with Study 1.

Direct and indirect aggression were correlated for both males ($r=.53, p<.001$) and females ($r=.48, p<.001$), again suggesting that the two forms of aggression are related but distinct components.

Sex Differences in Aggressive Strategies

A one-way analysis of variance was conducted to compare males and females on direct and indirect aggression scores (see Table 1). As in Study 1, males reported significantly more direct aggression ($M=3.31, SD=1.30$) than females ($M=2.53, SD=.94$), $F(1,157)=18.27, p<.001$. Females, however, reported no more indirect aggression ($M=3.46, SD=1.22$) than males ($M=3.38, SD=1.25$), $F(1,157)=.20, p=.66$. This finding was corroborated by peer-reports of the participants' aggression. Male peers reported significantly more direct aggression by male participants ($M=3.39, SD=1.16$) than female
peers reported of the female participants ($M=2.38$, $SD=.96$), $F(1,157)=34.62$, $p<.001$.

Female peers reported more no more indirect aggression ($M=3.72$, $SD=1.21$) than male peers ($M=3.81$, $SD=1.17$), $F(1,157)=0.24$, $p=.63$.

In sum, results of Study 1 and several previous findings (Crick & Grotpeter, 1995; Galen & Luthan, 2000; Lagerspetz, et al., 1988; Kaukiainen, 1992) suggested that there may be a small difference in the use of indirect aggression favoring females; however, the present study found that this difference— at least as measured by the DIAQ— is not significant. These findings are in agreement with other studies that have failed to show sex differences in indirect aggression (Bjorkqvist et al., 1999; Hennington, et al., 1998; Tomada & Schneider, 1997; Werner & Crick, 1999).

**Domain-Specific SE and Aggression**

Multiple regression analyses were again used to examine the relationship between specific domains of self-esteem and different forms of aggression. As described in Study 1, interaction terms were created using cross-products to examine sex differences in the relationship between the SE scales and the aggression measures. Predicting direct aggression, a significant sex by social inclusion interaction ($p<.05$) as well as a nearly significant sex by prestige interaction ($p=.11$) emerged, both of which will be given more discussion below. Predicting indirect aggression, a nearly significant sex by prestige interaction ($p=.11$) emerged as well. Males and females will first be included in the same model and then, because of these interactions, analyzed separately.

*Predicting direct aggression.* Results indicate no significant correlations between the SE scales and the DIAQ (see Table 7). When males and females were analyzed separately, however, direct aggression was positively correlated with social inclusion for
females \( r=.24, p<.05 \) and negatively correlated with prestige for males \( r=.22, p<.05 \); see Table 3.

Multiple regression analyses were initially conducted in another attempt to replicate findings in Kirkpatrick et al. (2002), Webster and Kirkpatrick (in press), and Johnson et al. (2005).

As in Kirkpatrick et al. and Webster and Kirkpatrick, the domains of superiority, social inclusion, mate value, and global SE (controlling for sex) were used to predict direct aggression. As was found in Study 1, none of the predictors were significant (see Table 4). It was hoped that the changes made in Study 2 would result in a stronger relationship between these predictors and direct aggression. Thus, the most obvious reason for the discrepancy between the present and past studies concerns the different methodology.

Also, paralleling analyses from Johnson et al., prestige, dominance, and global SE were used to predict direct aggression for males (see Table 5). Prestige emerged as a significant inverse predictor \( \beta =-.28, p<.05 \)— a relationship that was absent in Study 1. The higher correlation between dominance and prestige in Study 2 \( r=.31 \) compared to Study 1 \( r=.20 \) is likely the reason why dominance was not significant in this single instance (as it was in nearly every other analysis). Global SE was again not significant (in accordance with Study 1 and Johnson et al.).

For the strongest test of the hypothesis, sex, dominance, prestige, mate value, social inclusion, and global SE were combined in a single regression equation. Only sex achieved significant \( \beta =-.30, p<.001 \). Both dominance (positively) and prestige (negatively), however, were marginally significant \( \beta =.14, p<.10 \) and \( \beta =-.16, p<.06 \),
respectively. Results of this model are presented in Table 7. Because of the moderate positive correlation between prestige and dominance, more power is required to tease apart differences.

Due to the significant sex by social inclusion interaction ($p < 0.05$), males and females were analyzed separately. Social inclusion was a significant inverse predictor of direct aggression for females ($\beta = 0.26, p < 0.05$) but not for males ($\beta = -0.09, p = 0.40$). In addition, the sex by prestige interaction also approached significance ($p = 0.12$); prestige was a significant inverse predictor for males ($\beta = -0.31, p < 0.05$) but not for females ($\beta = 0.01, p = 0.97$).

Comparison of self-reported and peer-reported direct aggression scores. Self-rated direct aggression was correlated with peer-rated direct aggression ($r = 0.42, p < 0.001$); however, this was only true for males ($r = 0.43, p < 0.001$).

Paired-samples $t$-tests indicate that males' self-rated direct aggression ($M = 3.31, SD = 1.30$) was not significantly different from peer-rated direct aggression ($M = 3.39, SD = 1.16$). The same was true for females: self-rated direct aggression ($M = 2.53, SD = 0.94$) was no different than peer-rated ($M = 2.38, SD = 0.96$); see Table 1.

Using friend-rated aggression as the dependent variable, the same multiple regression analyses were conducted as described above for self-rated aggression. No significant predictors emerged for friend-rated direct aggression in male or females; see Table 10. This is similar to findings for self-report in Study 2 which also found no significant predictors (using an alpha of 0.05) among the SE scales.

Predicting indirect aggression. Correlations among the SE scales and the DIAQ indicate that indirect aggression was positively related to dominance ($r = 0.23, p < 0.01$) and
inversely with superiority ($r=-.18, p<.05$); see Tables 4 and 7. Analyses by sex indicated that this latter correlation was negatively correlated with superiority only for males ($r=-.27, p<.05$); see Table 3.

In another attempt to replicate the finding for the hostility subscale of the Aggression Questionnaire used in Johnson et al., dominance, prestige, and global SE were used to predict indirect aggression for males. In contrast to Study 1, prestige emerged as a negative predictor ($\beta=-.30, p<.01$) and dominance a positive predictor ($\beta=.35, p<.01$); see Table 5. This provides an exact replication of the pattern of results found in Johnson et al. and suggests that the hostility scale on the Aggression Questionnaire and indirect aggression scale are closely related. Hostility may tap the thoughts that motivate indirectly aggressive actions.

Using the full model to predict indirect aggression, only dominance was found to be significant ($\beta=.31, p<.001$); see Table 7. In contrast to Study 1, sex was not a significant predictor.

Comparison of Self-reported and peer-reported indirect aggression scores. Participants’ self-rated indirect aggression was positively correlated with peer-rated indirect aggression for males ($r=.43, p<.001$) and females ($r=.37, p<.001$).

Paired-samples $t$-tests indicate that males’ self-rated indirect aggression ($M=3.38, SD=1.25$) significantly different from peer-rated indirect aggression ($M=3.81, SD=1.17$). Females’ self-rated indirect aggression ($M=3.46, SD=1.22$) was significantly lower than friend-rated indirect aggression ($M=3.72, SD=1.21$), $t(83)=3.20, p<.002$; see Table 1.

A reoccurring theme in the indirect aggression literature is the problem of self-deception and the social desirability bias in self-reported aggression measures. Bjorkqvist
et al. (1992) have suggested that peer-reports provide a more accurate gauge of an individual's aggression. Although there is no way to assess the actual likelihood of aggression using the present studies' measures, the present analysis does suggest that SE scales are more closely related to self-reported than peer-reported aggression. Inter-correlations and lack of significant difference between self- and peer-rated aggression suggests that—at least for a college-aged sample—self-reports are a better tool to use when comparing SE scales to aggression.

Using peer-rated aggression as the dependent variable, the same multiple regression analyses were conducted as described above. No significant predictors emerged for peer-rated direct aggression in male or females. For males, prestige was a negative predictor of friend-rated indirect aggression ($\beta = .40, p < .05$); see Table 10. This supports Study 2's findings on self-report for males as well, which also found prestige to be a significant inverse predictor of indirect aggression in males only. Overall, this finding indicates that highly prestigious males use less indirect aggression strategies, presumably because they have no need for them.

Combined analyses for Study 1 and 2

Despite several methodological differences between Study 1 and 2, it seemed desirable to combine the two data sets to increase power. Before doing so, interactions were examined to determine if significant differences in the predictive power of the various independent variables existed between Study 1 and 2. In order to test for an interaction between data source (Study 1 versus Study 2) and domains of SE, cross-products were created and then added to the full model in the same fashion as previously described for interactions with sex. Predicting direct aggression, there were no
significant differences between Study 1 and 2. In other words, the relationship between each domain of SE and direct aggression did not change significantly in the second study. Predicting indirect aggression, only significant interaction with dominance emerged ($p < .05$). However, the change in $R^2$ associated with this interaction was very small ($R^2_{\text{change}} = .010$). Therefore, combining the data from the two studies seemed justified.

**Sex Differences in Aggressive Strategies**

Not surprisingly, males reported significantly more direct aggression ($M=2.86$, $SD=.09$) than females ($M=1.99$, $SD=.06$), $F(1,336)=60.87$, $p < .001$. This result confirms the hypothesis and falls in line with a large body of past research indicating that males use more physical and verbal aggression than females (e.g. Eagly & Steffen, 1986).

As confirmed by Study 2, females reported more indirect aggression ($M=2.79$, $SD=.09$) than males ($M=2.81$, $SD=.09$), $F(1,336)=0.01$, $p=.91$. In the regression equation with all predictors, sex (favoring females) approached significance ($\beta=.09$, $p=.07$) — a result that had been found significant in Study 1. Overall, however, results from both studies indicate that indirect aggression is not used more often by females than by males.

**Domain-specific SE and Aggression**

Although the interaction terms were not significant for the combined data, males and females were nonetheless analyzed separately — simply because it had been done in Study 2 (which comprised half of the combined data).

**Predicting direct aggression.** Again following analyses from Kirkpatrick et al. and Webster and Kirkpatrick, the domains of superiority, social inclusion, mate value, and
global SE (controlling for sex) were used to predict direct aggression. Although no significant predictors were found in analyses for Study 1 and Study 2, superiority emerged as a significant inverse predictor of direct aggression ($\beta = -.12, p < .05$) (see Table 4). This finding is in contrast to what was found in Kirkpatrick et al.’s Study 1. Differences in dependent measures may account for this disparity; Kirkpatrick et al. used a behavioral measure, whereas the present study used self-report. Webster and Kirkpatrick, however, used self-report and did not find superiority to be a significant predictor; in addition, the beta weights were similar to those found in the present study ($\beta = -.08$ in the present study and $\beta = -.10$ in Webster & Kirkpatrick).

Echoing analyses from Johnson et al., prestige, dominance, and global SE were used to predict direct aggression for males. As in Study 1 (and marginally in Study 2), dominance was a significant positive predictor ($\beta = .21, p < .01$). Prestige—although in the predicted direction—was not a significant inverse predictor ($\beta = -.12, r = .15$) as had been found in Study 2 (see Table 5). Global SE was again non-significant. These findings provide an exact replication of Johnson et al.’s findings for physical and verbal aggression (subscales of the AQ).

Using the full model to analyze the combined data set, three significant predictors emerged. Not surprisingly, sex was significant ($\beta = -.33, p < .001$); males being higher than females. Dominance was a positive predictor ($\beta = .19, p < .001$) and prestige a negative predictor ($\beta = -.12, p < .05$); see Table 8). This finding confirms what was speculated earlier—the positive correlation between dominance and prestige required more power to tease out the unique contributions of these two variables. These findings also demonstrate the utility of the SSS scale over the self-perceived superiority scale.
In this analysis, social inclusion was a significant inverse predictor for females ($\beta = -0.31, p < 0.01$) but not for males ($\beta = -0.08, p = 0.53$). It should also be noted that prestige was a nearly significant inverse predictor of direct aggression for males ($\beta = -0.18, p = 0.06$) but not for females ($\beta = 0.03, p = 0.98$). Similarly, mate value was a nearly significant positive predictor for males ($\beta = 0.16, p = 0.07$) but not for females ($\beta = -0.01, p = 0.91$).

**Predicting indirect aggression.** Extending findings for Johnson et al. to indirect aggression, dominance, prestige, and global SE were included in a regression for males. As was found in Study 2, prestige was a negative predictor ($\beta = 0.20, p < 0.01$) and dominance a positive predictor ($\beta = 0.20, p < 0.01$) (see Table 5). Global SE was again absent. Overall, the present findings provide strong support for those of Johnson et al.

Using the full model to predict indirect aggression, the only significant predictor was dominance ($\beta = 0.23, p < 0.001$). Sex was nearly significant (as described above) and prestige was in the predicted direction ($\beta = 0.10, p = 0.12$). Social inclusion, mate value, or global SE did not contribute any significant variance (see Table 8). In all equations, data source was a significant predictor ($p < 0.001$ for all).

Due to a significant sex by prestige interaction ($p < 0.05$), males and females were analyzed separately. Prestige was a significant inverse predictor for males ($\beta = -0.19, p < 0.05$) but not for females ($\beta = -0.07, p < 0.46$). There were no other significant differences between males and females.

**General Discussion**

With these two studies, I attempted to address two primary research issues: sex differences in aggression strategies and the relationship between domain-specific self-esteem and direct and indirect aggression.
Sex Differences in Aggression Strategies

Both studies indicated that self-reported direct aggression— in its physical and verbal forms— is utilized in conflict situations significantly more often by males than females. This finding was corroborated by friend reports in Study 2. These results fall in line with the large body of research that has also found this robust sex difference in aggression (e.g., Eagly & Steffen, 1986).

Neither Study 1 nor 2, however, conclusively showed that females utilize indirect modes of aggression more than males. This finding was further supported by friend reports in Study 2. Although the general conception in the popular (Blanco, 2003; Simmons, 2002; Wiseman, 2002; Underwood, 2003) and research literature is that indirect aggression is the “female” aggression strategy (e.g., Anderson & Bushman, 2002; Bjorkqvist et al., 1992), only a fraction of the research on the topic has yielded significant differences favoring females. There are several possible reasons for the discrepancies among indirect aggression findings in the research literature.

Inconclusive findings may be due differences in the age groups studied, and thus to the developmental trajectory of indirect aggression. Utilizing longitudinal research, Bjorkqvist et al. (1992) has shown that sex differences in aggression strategies follow a particular developmental path because the types of strategies utilized at certain ages coincides with verbal and social development. Small children, who have not yet acquired verbal and social skills to any substantial degree, resort to physical means of conflict resolution. Later, the expansion of language skills allowed more routes for the expression of aggression beyond those of physical force, i.e. verbal aggression. Girls develop verbal skills before boys and as a consequence, use verbal aggression before
boys. Finally, as social intelligence develops, the individual learns more covert means of being aggressive that utilizes more complex verbal and interpersonal knowledge. The authors suggest that indirect aggression does not emerge until age 10 because it requires more social intelligence than physical or verbal aggression.

Other researchers have suggested that this ontological sequence recapitulates the phylogenetic one (Hawley, 1999). In other words, as primates evolved verbal and language skills, consciousness, and mentalizing (i.e. theory of mind) abilities, more avenues of competition and aggression were utilized and cultivated. In this way, the use of particular aggression strategies is, in part, a function of the psychological tools at one's disposal. Just as we would not expect a small child or mentally-handicapped individual to use shrewd forms of competition, we would also not expect highly verbally and socially intelligent adult to utilize physical violence to resolve conflicts.

This developmental sequence makes intuitive and theoretical sense and has been supported by research. This conceptualization, however, says little about the differences in aggression strategies utilized by adults. The present research indicates that from ages 18-24 indirect strategies are utilized as much by males as by females. Perhaps by college-age, boys have “caught up” with girls in their social intelligence, and, as a result, their use of indirect and social means of aggression.

Alternatively, the difference between direct and indirect aggression may not map neatly onto the sex divide; that is, it may be incorrect to categorize indirect aggression as a “female” strategy. Bjorkqvist, Osterman, and Lagerspetz (1994) suggest that males may use indirect aggression in different ways than females. The authors describe the difference between “social manipulation” and “rational-appearing” forms of indirect
aggression. Social manipulation describes behaviors such as backbiting and the spreading of false rumors—features that typify adolescent indirect aggression. “Rational-appearing” is explained as aggression that is masked by rational statements, appearing and presented in rational form as “no aggression at all,” but perceived by the target as an injurious and unjust attack. In a study of employees (Bjorkqvist, Osterman, & Hjelt-Back, as cited in Bjorkqvist et al., 1994), males utilized rational-appearing significantly more than females, whereas females showed a trend toward greater use of social manipulation.

Bjorkqvist and colleagues suggest that the reason for the development of more “refined” strategies of aggression (i.e., indirect) may be pressure of social norms and the need to maintain social relationships. Because aggressive behavior is socially undesirable and could harm social bonds, there is always the need to conceal one’s aggression, i.e., to make it appear as something else. The “rational” aggression found among adults is perhaps a further development of covered techniques, more sophisticated than usual indirect aggression, and even harder to counter.

This view of indirect aggression implies that those who use this form of aggression should be more concerned about the social judgments of others. Indirect and social manipulation, however, are seen as just as socially undesirable as physical and verbal forms; Richardson and Green (2003) found that a measure of social desirability was negatively correlated with indirect aggression but not direct aggression. In other words, those who were concerned with the approval of others were least likely to use indirect aggression.
Different aggression strategies may be used in different social settings that are independent but related to sex. Lagerspetz, Bjorkqvist, and Peltonen (1988) suggest that the typical structure of peer groups may facilitate certain types of aggression. Girls usually form small, intimate groups, while boys form bigger, less defined groups. These authors assert that indirect aggression may be more effective in girls' typical social setting than boys—although the reason for this conjecture is not apparent in their theorizing.

Another relevant factor may be the relative physical strength of the two sexes. Although males are on average physically stronger than females, there are wide differences in strength within sex. Smaller, less physically able or confident individuals may choose indirect strategies as a route with fewer potential physical costs. The "effect/danger ratio" is a term that has been used to describe an individual's subjective interpretation of the likely consequences of an aggressive act (Walker & Richardson, 1998). For example, older adults have been shown to use indirect aggression more as they age, purportedly because the danger potentially incurred in physical aggression far outweighs the effects.

In the present study, the question under discussion perhaps should not be, 'Why weren't females shown to use indirect aggression more?', but 'Why shouldn't males use indirect aggression as well? If it is a strategy that works, why shouldn't they want to reduce the likelihood of physical danger? From an evolutionary perspective, males in pair-bonds should be less likely to use physical aggression because their survival is almost as crucial to offspring survival as is the mother's. This possibility has not yet been explored in research.
The present research suggests that females are not necessarily more indirectly aggressive than males, but that—in contrast to direct aggression—they do use this strategy of aggression in conflict resolution as often as males. In the past, researchers have conceptualized aggression as a primarily male behavior; however, this research—among others—demonstrates that both males and females display various types of aggressive behavior. The use of aggression likely depends on the presence of a myriad of variables in the given situation. These variables may at times fall along the sex divide, but not necessarily so. Future research on indirect aggression may benefit from conceptualizing indirect aggression as an alternative conflict strategy, rather than as a "female" strategy per se.

In light of the present findings, it becomes clear that if human aggression is measured only as physical and verbal aggression, researchers will only perceive and understand a small percentage of antagonistic behavior. Utilizing these measures allows researchers to uncover the subtle ways that humans negotiate and maintain social dominance and political hierarchies. This has important implications for how we conceptualize and study status-seeking and competitive behavior in humans.

Domain-Specific SE and the Prediction of Aggression

The second goal of the present studies was to examine differences in aggression strategies using Kirkpatrick and Ellis' (2000) model of domain-specific SE. Although differences were found between the two studies conducted, only the compiled data (controlling for data source) will be discussed below.

Replication of past studies. Results in the current study replicated the overall finding of Kirkpatrick et al. (2002), Webster & Kirkpatrick (in press), and Johnson et al. (2005)
that aggression is related to functionally distinct domains of SE. Several differences, however, were found between the present study and these past studies, which will be discussed in more detail in the following sections. In addition, the present studies extended past research by demonstrating that domains of SE are not only able to differentially predict direct aggression but also indirect aggression, and that this holds true for both males and females.

Superiority. Previous research on domain-specific SE has utilized measures of self-perceived superiority to assess within-group competition. Several of these studies (Kirkpatrick et al., Study 1; Valencia, 2000) have found that superiority (as assessed by the Pelham & Swann, 1989, measure) is a positive predictor of aggression, whereas others have not. The present research also did not find superiority to be a positive predictor of aggression; in fact, when the data were combined (and all other domains were controlled), superiority emerged as an inverse predictor. The most obvious reason for this finding is the differences in methodology and dependent measures used in these studies. In addition, the present study was designed to make finer distinctions between forms of aggression—distinctions that were not easily compared with other measures. Thus, although an exact replication of Kirkpatrick et al. would have provided some support for this study, the lack of significant result does not automatically call it into question.

In any case, the superiority scale may not be the best way to assess self-perceived status as conceptualized by Kirkpatrick and Ellis (2001). The scale falls prey to the same arguments as does global SE: it is too general to assess functional domain-specificities in self-perceived status. For instance, the scale asks participants to rate themselves on
physical attractiveness (a characteristic related to mate competition) as well as items such as trustworthiness (a characteristic more closely aligned with within-group cooperation). For this reason, the SSS scale was included in the packet of questions along with the superiority questionnaire in order to tap different dimensions of status-relevant behavior.

**Dominance.** Across nearly all regression analysis performed in the present study, dominance emerged as a significant predictor of both direct and indirect aggression—in both males and females. This robust finding replicates that of Johnson et al. (2005), who found that dominance predicts overall aggression (and all its subscales) in males as assessed by the Aggression Questionnaire (AQ; Buss & Perry, 1992). The present research extends this finding to the prediction of aggression in females—which conforms to the same pattern as males. This study also showed that dominance is predictive of another measure of aggression (the DIAQ) which included an alternative form (indirect).

It was suggested in the Introduction that indirect aggression may be used by less dominant individuals because direct routes might be too dangerous and risky. The findings, however, suggest that indirect aggression is simply another tactic used by the same types of dominance-oriented individuals to assert their superiority or status. From an evolutionary perspective, aggression is an adaptive behavioral strategy only for those who have a tenable expectation of success. This reasoning applies to both direct and indirect strategies—because both forms potentially carry negative consequences, only those that felt that they had a good chance of avoiding those consequences (or a chance to secure a large payoff) would utilize these tactics.
The present study has shown that dominance and aggression are related; however, the direction of causality is unclear. Data analysis was conducted with the assumption that dominance causes aggression, but, of course, the reverse could also be true. In light of this, it is not clear how dominance should be defined and conceptualized: whether it should be thought of as a motivation to achieve status through force or as a position of status that was achieved through the use of force—or some combination of the two. Henrich and Gil-White (2001) do not make these distinctions, referring instead to dominance as a strategy that involves the use or threat of aggression. It is likely that the state of affairs in the "real world" is one of reciprocal causality; however, future researchers should nevertheless attempt to clarify the nature of the relationship between dominance and aggression.

Prestige. The utility of the SSS scale is that it allows for the measurement of different means for attaining status. Prestige, as an alternative to dominance, emerged as an inverse predictor of direct and indirect aggression in males. Using the AQ, Johnson et al. (2005) found that prestige was an inverse predictor of hostility, but not anger, physical, or verbal aggression. The present study replicated this finding (with indirect as an approximation of hostility and direct as analogous to physical and verbal aggression). In the full model, prestige also achieved significance (inversely) for direct aggression.

Prestige, as the proposed non-violent strategy for obtaining status, can be thought of as an alternative route to acquiring respect and resources. This research confirms that physical and verbal aggression is in conflict with the prestige strategy, which involves earning status rather than taking it by force. In addition, because this
strategy involves gaining the respect and trust of others, behaviors that are particularly underhanded (i.e. indirect aggression) would certainly undermine this respect.

Interestingly, prestige only contributed to the prediction of indirect aggression in males, but was unrelated to that of females. That is, high and low prestige females are equally likely to engage in indirect aggression, whereas only low prestige males use indirect aggression. This is further corroborated by peer-reports; high prestige males were seen by their peers as less indirectly aggressive, but the same was not true for females. An explanation for this finding does not readily present itself. Henrich and Gil-White (2001) do not give much discussion to sex differences in their essay on the nature of dominance and prestige. Perhaps males do not need indirect aggression when they are high in prestige because they know they have the backing of others. High prestige females, however, may not feel that they can count on the support of others. Future research should target the role of prestige in males’ and females’ status.

The present studies’ findings on dominance and prestige are particularly impressive given the positive correlation found between the two. Prestige and dominance were positively correlated, yet they predicted aggression in opposite directions; prestige predicted less aggression whereas dominance predicted more aggression. Henrich and Gil-White (2000) introduced the domains of dominance and prestige as alternative routes. In practice, however, the two might be used concurrently but in varying degrees by different individuals. Aggression would vary along with the differential use of these strategies.

It should also be noted that aggression is not used exclusively by dominant individuals. As was stressed in the introduction, aggression is a broad category of
behaviors that may be used by different individuals in different contexts—not all of which are antisocial. Indeed, aggression against out-group members (e.g. war) or against in-group members who violate shared laws or norms are seen by some as distinctly pro-social. A prestigious individual would undoubtedly find themselves in situations where some form of aggression was expected by others. One way to distinguish between aggression used by prestigious individuals versus that by dominant individuals may be the degree to which others in the group perceive the aggression as pro-social (i.e., benefiting the group) or antisocial (i.e., selfish). Distinctions such as these cannot really be captured by the measures of direct and indirect aggression. I might speculate, however, that when prestigious individuals use direct aggression they are doing so with the confidence that it will be received well (i.e., perceived as justified) by the other members of the group—those whose respect the prestigious individual requires.

In attempt to tap some of these issues, I created a new variable containing several similarly themed elements of the self-perceived superiority scale. The self-rated attributes of “trustworthiness/loyalty”, “honesty/helpfulness”, and “moral/ethical ideals” were averaged to approximate a single “moral/altruistic” superiority. When this variable was added to the full model, it was a strong inverse predictor of indirect aggression—over and above other domains of SE (results of this model are presented in Table 9). Thus, those that hold a sense of moral superiority (most indicated that they saw themselves as higher than 90-95% of those their age on these characteristics) were far less likely to engage in indirect aggression than those of “average” moral superiority (even the lowest scorers saw themselves as higher than 60-80% of the population—an inflation far above all others items on the scale). This was not the case for direct
aggression; those with high moral SE were equally likely to use direct forms as those with low moral SE (thus demonstrating that the above cited relationship cannot be reduced to a general social desirability bias).

As argued in the Introduction, certain inherent characteristics of direct and indirect aggression make them more or less appropriate in certain contexts. Because direct aggression is often public, the justifiability (and thus, morality) of the aggression becomes open for approval or disapproval by others. Those with a low moral SE may want to hide their aggression from others by using indirect aggression, fearing that others would otherwise find their aggression unjustified. This point becomes clearer in the case of direct aggression; those with high moral superiority would feel no need to hide their aggression from others—confident as they are that their actions would be perceived as justified. Thus, the relationship between prestige and aggression is intimately tied to group-relevant variables, such as perceived social acceptance.

Social Inclusion. In contrast to other studies (Kirkpatrick et al. Study 1, Valencia, 2000), social inclusion was not found to be predictive of aggression in a strong test of the hypotheses (i.e., in the full model including all predictors). Correlations, however, were in the predicted (negative) direction. It is important to note that many of the domains of SE are highly inter-correlated and the issue of multicollinearity may put the differences between the present research and past findings, as well as the divergence of Study 1 and 2, into perspective. In particular, there is a high degree of conceptual and empirical overlap between the domains of social inclusion and prestige, which are highly correlated ($r=.51$, combined data). Prestige, by definition, is conferred by members of the group
and thus social inclusion is a prerequisite of prestige. Future research should focus on teasing apart variance in these domains.

There is also a large conceptual overlap between social inclusion and moral SE. The characteristics that make up this variable—trustworthiness, helpfulness, generosity, altruism, etc.—are inherently other-referent qualities. Thus, the concept of being a “good, moral, or worthwhile” person is meaningless in absence of the social group. Thus, the moral SE variable emerged as a mitigator of aggression—a role that had been expected of the social inclusion domain. Perhaps these characteristics actually tap social inclusion better than the questionnaires chosen to measure it.

As was the case for the superiority scale, the social inclusion scale was not designed specifically to test within-group cooperative domains as described in Kirkpatrick and Ellis (2001). Because of this, it was not well designed to capture evolutionarily-relevant features of group-level social inclusion. The scale does not differentiate between inclusion by mates, family members, or instrumental coalitions—social relationships that are qualitatively different from an evolutionary point of view. Others have made similar distinctions; using factor analysis, Crocker et al. (2003) have shown that “family support” and “approval of generalized others” are distinct components of college-students self-worth that both fall under the same “social inclusion” construct. Future research should focus on refining the concept and measurement of the social inclusion domain.

Whereas prestige was found to be an inverse predictor of aggression for males, social inclusion mitigated aggression for females. Aggression may be thought of as a second-choice strategy when other, more pro-social ones are not available. For males
and females, the first-choice options may be different—for males, prestige and for females, social support. Although males and females were not significantly different on their ratings of these domains, they nevertheless might value them differently. This certainly falls in line with past research and theorizing. In response to threats and other stress, females have been shown to use the “tend and befriend” strategy—in contrast to males’ use of the traditional “fight or flight” strategy (Taylor, Klein, Lewis, Gruenewald, Gurung, and Updegraff, 2000). Ironically, I argued in the Introduction that this characterization should not be taken for granted in the sex and aggression literature, yet this characterization is what I conclude from my findings.

**Mate Value.** Like social inclusion, mate value was not predictive of aggression—as had been found in other studies (Kirkpatrick et al. Study 2; Webster & Kirkpatrick, in press). The reason for this—other than differences in methodology—are not clear. Many of the same arguments made in the previous section on social inclusion also apply to mate value. Like the other SE scales, the mate value scale was not specifically designed by Kirkpatrick and Ellis (2001) and thus may not be well suited to make certain distinction—such as those between short-term/sexual and long-term/romantic mate values. Aggregation over these two constructs may obscure interesting relationships between mate value, aggression, and sex.

**Global SE.** Global SE was again shown to be a superfluous measure when domain-specific self-esteem are accounted for. In consonance with Bushman and Baumeister (1998), the results of this study indicate the lack of predictive value of global SE in understanding aggression. In theory, if global SE amounts to a sort of aggregate subjective assessment of numerous domain-specific sociometers, and if particular
domains are associated with aggression differentially (and even in the opposite direction in some cases), then global measures of SE should be much weaker predictors of aggression than will domain-specific measures. This conjecture was supported in the present research. In fact, the domain-specific scales predict aggression above that of global SE, so it is unclear what it is that global SE actually assesses. Global SE has emerged several times as a positive predictor (Webster & Kirkpatrick, Study 1) even when other domains were controlled. The authors hypothesized that some unmeasured, residual component of SE was responsible for this finding. Future research on a moral SE construct may fill this void.

Theoretical considerations. Overall, the present research utilized evolutionary theory as a guiding theoretical framework for making predictions regarding the relationships between sex, different forms of aggression, and domain-specific self-esteem. Other theoretical perspectives commonly cited in aggression research—most notably Bandura’s (1977) Social Learning Model and Anderson and Bushman’s (2002) General Aggression Model (GAM)—were not addressed in this paper for several reasons.

Social Learning theory and other social constructivist theories assert that the individual acquires behavior from others in the social group (i.e., models) through observational learning or direct reinforcement. This theory is relevant to the question of why certain individuals, cultures, or sub-cultures may be more or less aggressive than others; however, it is not useful in attempting to ask why similarities in aggressive behavior appear across cultures and species; for example, why males are more aggressive than females across nearly all animal species and human cultures (Daly & Wilson, 1988). Social Learning theory also does not address the question of why certain patterns of
behavior are perpetuated and maintain through observational learning or why certain individuals are chosen as models while others are ignored. By taking an evolutionary perspective, I am not arguing that learning and cultural influences do not affect individual differences in aggressive behavior, nor am I attempting to purposely ignore competing theories. Different theories are more or less relevant to different empirical questions and levels of analysis. An evolutionary perspective was relevant to the particular questions asked in this study, and so was utilized as a guiding theory.

The GAM (Anderson & Bushman, 2002) and other descriptive theories (Berkowitz, 1993; Zillman, 1979) are primarily concerned with organizing and describing the *types* of factors that influence aggressive behavior. They do not, however, allow one to make predictions *a priori* regarding which particular factors are involved. For example, the GAM says that aggressive behavior will be mediated by aggressive cognitions, but is not able to predict the particular nature of those cognitions. Again, my aim was not to ignore these influential theories; rather, evolutionary theory was used as a theoretical foundation because it offers a framework for making predictions under novel conditions. More detailed explanations on the merit of using evolutionary theory to guide predictions in empirical research on aggression and sex differences can be found in Daly and Wilson (1988), Campbell (1999), and Pinker (1997, 2001).

*Limitations and Future Directions*

It should be noted that effect sizes for the different domains of SE were generally relatively small. Small effect sizes, however, should be expected in light of several factors: First, limitations regarding the generalizability of college samples is particularly relevant for the study of aggression and sex differences. Aggression among college
populations (particularly one that is relatively affluent and elite) is difficult to study given the low incidences of many types of aggressive acts. In addition, similar goals and living arrangements for men and women on college campuses make differences in attitudes and behaviors less prevalent. Second, the use of self-report, Likert-scale methodology makes finding relationships between variables more difficult because of the inherent limitations of these methods. Thus, effect sizes found in the present study are likely underestimates of those that might be found in other populations of study using a different methodology.

In addition, the present study (like those of Kirkpatrick et al., 2002 and Webster & Kirkpatrick, in press) utilized SE measures that were not specifically designed to reflect the specific evolutionary domains of SE outlined by Kirkpatrick and Ellis (2001). Instead, the measures used for mate value and social inclusion were gathered from the existing literature, and, as discussed, have problems. The development of the SSSS was a first step in this direction—just as it has refined our conception of superiority and status SE, other scales designed specifically to capture the dimensions outlined by Kirkpatrick and Ellis (2001) would further facilitate research on this topic.

Another limitation of this study involves the use of self-reported aggression without a laboratory, experimental measure of actual indirect and direct aggression. Including a behavioral measure of aggression could further clarify sex differences in aggression as well as the relationship between self-reported SE and actual behavior. The problem, however, is that a behavioral measure of indirect aggression is not readily available or intuitively easy to pinpoint. In some reviews of indirect aggression research, "psychological harm" has been characterized as giving negative feedback on evaluation
forms or making unfriendly or rude comments to an opinion surveyor (Eagly & Steffen, 1986). There is no evidence to suggest, however, that these measures are a valid way to assess the likelihood of actual indirect aggression.

One difference between the present study and those previous is that only one friend was used as a peer-report; the typical developmental paradigm consists of an entire class' peer-reports. Participants in this study likely selected an individual who was a friend, who, a priori, had positive opinions of the participant. Adversaries would undoubtedly have very different perceptions of the individual's behavior than did friends. Future research might investigate aggression strategies in established adult groups (e.g., sorority houses, dormitories) so that multiple peer-reports may be obtained.

Conclusions

This study contributed to the literature on the topic of aggression by clarifying sex differences in strategies of aggression. Researchers in the indirect aggression literature tout indirect aggression as the "female" strategy; however, it is clear from the present research that both males and females use this strategy.

In addition, this study further demonstrated the utility of an evolutionary-based, domain-specific SE in differentially predicting another form of aggression—indirect. The present research suggests that direct and indirect aggression are auxiliary strategies utilized by dominant individuals in the service of desired goals. Factors that mitigate aggression are prestige for males and social inclusion for females. Future research is needed to more fully understand the complex relationship between sex, forms of aggression, and domains of SE.
TABLE 1

DESCRIPTIVE STATISTICS FOR SELF-ESTEEM AND AGGRESSION SCALES

<table>
<thead>
<tr>
<th>Scales</th>
<th>Study 1 Males</th>
<th>Females</th>
<th>α</th>
<th>Study 2 Self-Rated Males</th>
<th>Females</th>
<th>α</th>
<th>Study 2 Friend-Rated Males</th>
<th>Females</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Agg</td>
<td>2.35 (0.81)***</td>
<td>1.60 (0.51)</td>
<td>.88</td>
<td>3.31 (1.31)***</td>
<td>2.53 (0.94)</td>
<td>.92</td>
<td>3.39 (1.16)***</td>
<td>2.38 (0.96)</td>
<td>.93</td>
</tr>
<tr>
<td>Indirect Agg</td>
<td>2.17 (0.69)</td>
<td>2.31 (0.62)</td>
<td>.87</td>
<td>3.38 (1.25)</td>
<td>3.46 (1.22)</td>
<td>.93</td>
<td>3.81 (1.12)</td>
<td>3.72 (1.21)</td>
<td>.93</td>
</tr>
<tr>
<td>Dominance</td>
<td>3.75 (0.81)**</td>
<td>3.42 (0.87)</td>
<td>.81</td>
<td>3.92 (0.48)*</td>
<td>3.74 (0.51)</td>
<td>.82</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Prestige</td>
<td>4.98 (0.75)</td>
<td>4.93 (0.68)</td>
<td>.84</td>
<td>4.55 (0.61)</td>
<td>4.44 (0.54)</td>
<td>.88</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Superiority</td>
<td>7.16 (0.95)**</td>
<td>6.80 (0.80)</td>
<td>.75</td>
<td>7.18 (1.06)</td>
<td>7.07 (0.90)</td>
<td>.83</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Mate Value</td>
<td>4.36 (1.18)</td>
<td>4.44 (1.25)</td>
<td>.94</td>
<td>4.10 (0.82)</td>
<td>4.10 (0.94)</td>
<td>.95</td>
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<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Social Inclusion</td>
<td>5.31 (0.78)</td>
<td>5.58 (0.75)*</td>
<td>.90</td>
<td>4.12 (0.28)</td>
<td>4.13 (0.32)</td>
<td>.92</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
<tr>
<td>Global SE</td>
<td>5.49 (1.03)</td>
<td>5.42 (1.01)</td>
<td>.91</td>
<td>4.18 (0.45)</td>
<td>4.29 (0.40)</td>
<td>.90</td>
<td>na</td>
<td>na</td>
<td>na</td>
</tr>
</tbody>
</table>

Note: Study 1: N=179 (104 F, 75 M), Study 2: N=159 (74 F, 85 M). Cells depict means (standard deviations are in parentheses).

Asterisks indicate significant differences between males and females. Superscript indicates significant difference between self-rated and peer-rated. *p<.05, **p<.01, ***p<.001.
**TABLE 2**

CORRELATIONS AMONG SELF-ESTEEM AND AGGRESSION SCALES

(STUDY 1)

<table>
<thead>
<tr>
<th>Scale</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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</thead>
<tbody>
<tr>
<td>1. Direct Agg.</td>
<td>.42**</td>
<td>.09</td>
<td>.41**</td>
<td>.18</td>
<td>.16</td>
<td>-.01</td>
<td>-.09</td>
<td></td>
</tr>
<tr>
<td>2. Indirect Agg.</td>
<td></td>
<td>-.16</td>
<td>.16</td>
<td>.05</td>
<td>-.16</td>
<td>-.22</td>
<td>-.12</td>
<td></td>
</tr>
<tr>
<td>3. Prestige</td>
<td></td>
<td>.13</td>
<td>.56**</td>
<td>.68**</td>
<td>-.63**</td>
<td>.55**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Dominance</td>
<td></td>
<td>.24*</td>
<td>.41**</td>
<td>-.70**</td>
<td>-.59**</td>
<td>.56**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Mate Value</td>
<td></td>
<td></td>
<td>.66**</td>
<td>.51**</td>
<td>.57**</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>6. Social Inclusion</td>
<td></td>
<td></td>
<td></td>
<td>.41**</td>
<td>.28**</td>
<td>.23**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Global SE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.72**</td>
<td>.46**</td>
<td></td>
<td>.51**</td>
</tr>
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<td>8. Superiority</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.60**</td>
<td>.48**</td>
<td>.42**</td>
</tr>
</tbody>
</table>

*Note.* Correlations for males shown above females within each cell (females are italicized).

Bolded coefficients indicate that the correlation for males and female combined were significant at the .05 level.  *p < .05, **p < .01.*
TABLE 3
CORRELATIONS AMONG SELF-ESTEEM AND AGGRESSION SCALES (STUDY 2)

<table>
<thead>
<tr>
<th>Scale</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<th>7</th>
<th>8</th>
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</thead>
<tbody>
<tr>
<td>1. Self-rated Direct</td>
<td>-</td>
<td>.17</td>
<td>.48**</td>
<td>.37**</td>
<td>-.22*</td>
<td>.05</td>
<td>-.12</td>
<td>-.12</td>
<td>-.19</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>.12</td>
<td>.54**</td>
<td>-.10</td>
<td>-.08</td>
<td>.06</td>
<td>-.06</td>
<td>-.07</td>
<td>.02</td>
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<tr>
<td>2. Friend Direct</td>
<td>.27*</td>
<td></td>
<td>.67**</td>
<td>.05</td>
<td>.02</td>
<td>.06</td>
<td>-.01</td>
<td>-.14</td>
<td>.12</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>.43**</td>
<td></td>
<td>-.20</td>
<td>.27*</td>
<td>-.06</td>
<td>-.05</td>
<td>.14</td>
<td>-.23*</td>
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<tr>
<td>3. Self-rated Indirect</td>
<td></td>
<td>.37**</td>
<td>.09</td>
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<td></td>
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<td></td>
<td>-.23*</td>
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<td>.05</td>
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<td>4. Friend Indirect</td>
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<td>.01</td>
<td>.16</td>
<td>.32**</td>
<td>-.05</td>
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<tr>
<td>5. Prestige</td>
<td>.31**</td>
<td>.01</td>
<td>.51**</td>
<td>-.05</td>
<td>.38**</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>.31**</td>
<td>.16</td>
<td>.07</td>
<td>.36**</td>
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<td></td>
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<tr>
<td>6. Dominance</td>
<td>.01</td>
<td>.16</td>
<td>.32**</td>
<td>-.01</td>
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<td></td>
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<td>8. Social Inclusion</td>
<td></td>
<td>.41**</td>
<td>.10</td>
<td>.10</td>
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<td>- .05</td>
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<td>10. Superiority</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>-.01</td>
<td></td>
</tr>
</tbody>
</table>

Note. Correlations for males shown above females within each cell (females are italicized). Bolded coefficients indicate that the correlation for males and female combined were significant at the .05 level.

* p < .05, ** p < .01.
**TABLE 4**

MULTIPLE REGRESSION PREDICTING DIRECT AGGRESSION FROM DOMAIN-SPECIFIC SE

(REPLICATION OF KIRKPATRICK ET AL. AND WEBSTER & KIRKPATRICK)

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Study 1</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Study 2</th>
<th></th>
<th></th>
<th></th>
<th>Combined Data</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
<td>β</td>
<td>r</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>-0.80</td>
<td>.11</td>
<td>-.53**</td>
<td>-.50**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.81</td>
<td>.10</td>
<td>-.36**</td>
<td>-.38***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superiority</td>
<td>-0.07</td>
<td>.07</td>
<td>-.08</td>
<td>.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-0.14</td>
<td>.06</td>
<td>-.12*</td>
<td>-.13*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mate Value</td>
<td>0.07</td>
<td>.05</td>
<td>.13†</td>
<td>.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.14</td>
<td>.06</td>
<td>.11</td>
<td>.12*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Inclusion</td>
<td>0.08</td>
<td>.09</td>
<td>.09</td>
<td>.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.09</td>
<td>.08</td>
<td>-.09</td>
<td>.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global SE</td>
<td>-0.10</td>
<td>.07</td>
<td>-.14</td>
<td>-.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Study 1: *N*=178, Study 2: *N*=159, Combined: *N* = 338. Effects of data source are controlled for in the combined data analysis. For sex, negative values signify a difference favoring males. *p* < .05, **p** < .01, ***p*** < .001, †p < .10.
### TABLE 5

**MULTIPLE REGRESSION PREDICTING DIRECT AND INDIRECT AGGRESSION FROM DOMAIN-SPECIFIC SE**

*(REPLICATION OF JOHNSON ET AL.)*

<table>
<thead>
<tr>
<th>SE Scales</th>
<th>Predicting Direct Aggression</th>
<th>Predicting Indirect Aggression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Predicting Direct Aggression</td>
<td>Predicting Indirect Aggression</td>
</tr>
<tr>
<td></td>
<td>$B$</td>
<td>$SE B$</td>
</tr>
<tr>
<td>Study 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dominance</td>
<td>0.41</td>
<td>0.11</td>
</tr>
<tr>
<td>Prestige</td>
<td>0.12</td>
<td>0.15</td>
</tr>
<tr>
<td>Global SE</td>
<td>0.09</td>
<td>0.11</td>
</tr>
<tr>
<td>Study 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dominance</td>
<td>0.49</td>
<td>0.31</td>
</tr>
<tr>
<td>Prestige</td>
<td>-0.60</td>
<td>0.24</td>
</tr>
<tr>
<td>Global SE</td>
<td>-0.50</td>
<td>0.32</td>
</tr>
<tr>
<td>Combined Data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dominance</td>
<td>0.38</td>
<td>0.13</td>
</tr>
<tr>
<td>Prestige</td>
<td>-0.20</td>
<td>0.14</td>
</tr>
<tr>
<td>Global SE</td>
<td>-0.03</td>
<td>0.12</td>
</tr>
</tbody>
</table>

*Note.* Study 1: $N=75$, Study 2: $N=85$, Combined: $N = 160$. Males only. Effects of data source are controlled for in the combined data analysis. For sex, negative values signify a difference favoring males. *$p<.05$, **$p<.01$, ***$p<.001$, †$p<.10$. 
### Table 6

**MULTIPLE REGRESSION PREDICTING DIRECT AND INDIRECT AGGRESSION:**

**FULL MODEL USING ALL PREDICTORS (STUDY 1)**

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Predicting Direct Aggression</th>
<th>Predicting Indirect Aggression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SEB$</td>
</tr>
<tr>
<td>Sex</td>
<td>-0.68</td>
<td>.10</td>
</tr>
<tr>
<td>Dominance</td>
<td>0.29</td>
<td>.06</td>
</tr>
<tr>
<td>Prestige</td>
<td>-0.05</td>
<td>.09</td>
</tr>
<tr>
<td>Mate Value</td>
<td>0.05</td>
<td>.04</td>
</tr>
<tr>
<td>Social Inclusion</td>
<td>0.03</td>
<td>.09</td>
</tr>
<tr>
<td>Global SE</td>
<td>-0.07</td>
<td>.06</td>
</tr>
</tbody>
</table>

*Note.* $N = 179$. For sex, negative values signify a difference favoring males.

*$p < .05$, ***$p < .001$, $p < .10$.***
<table>
<thead>
<tr>
<th>Variable</th>
<th>Predicting Direct Aggression</th>
<th>Predicting Indirect Aggression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
</tr>
<tr>
<td>Sex</td>
<td>-0.73</td>
<td>.19</td>
</tr>
<tr>
<td>Dominance</td>
<td>0.34</td>
<td>.20</td>
</tr>
<tr>
<td>Prestige</td>
<td>-0.33</td>
<td>.17</td>
</tr>
<tr>
<td>Mate Value</td>
<td>-0.04</td>
<td>.11</td>
</tr>
<tr>
<td>Social Inclusion</td>
<td>0.20</td>
<td>.32</td>
</tr>
<tr>
<td>Global SE</td>
<td>-0.28</td>
<td>.23</td>
</tr>
</tbody>
</table>

Note: N = 159. For sex, negative values signify a difference favoring males.

**p < .01, ***p < .001, †p < .10.
<table>
<thead>
<tr>
<th>Predictors</th>
<th>Predicting Direct Aggression</th>
<th>Predicting Indirect Aggression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
</tr>
<tr>
<td>Sex</td>
<td>-0.73</td>
<td>0.10</td>
</tr>
<tr>
<td>Dominance</td>
<td>0.29</td>
<td>0.07</td>
</tr>
<tr>
<td>Prestige</td>
<td>-0.20</td>
<td>0.10</td>
</tr>
<tr>
<td>Mate Value</td>
<td>0.01</td>
<td>0.05</td>
</tr>
<tr>
<td>Social Inclusion</td>
<td>0.17</td>
<td>0.11</td>
</tr>
<tr>
<td>Global SE</td>
<td>-0.08</td>
<td>0.08</td>
</tr>
</tbody>
</table>

Note: N = 338. Effects of data source are controlled for in the combined data analysis. For sex, negative values signify a difference favoring males.

*p < .05, ***p < .01, ****p < .001, p<.10.
### TABLE 9
MULTIPLE REGRESSION PREDICTING DIRECT AND INDIRECT AGGRESSION:
FULL MODEL INCLUDING MORAL SE (COMBINED DATA)

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Predicting Direct Aggression</th>
<th>Predicting Indirect Aggression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
</tr>
<tr>
<td>Sex</td>
<td>-0.73</td>
<td>.10</td>
</tr>
<tr>
<td>Dominance</td>
<td>0.27</td>
<td>.07</td>
</tr>
<tr>
<td>Prestige</td>
<td>-0.18</td>
<td>.10</td>
</tr>
<tr>
<td>Mate Value</td>
<td>0.01</td>
<td>.05</td>
</tr>
<tr>
<td>Social Inclusion</td>
<td>0.18</td>
<td>.11</td>
</tr>
<tr>
<td>Global SE</td>
<td>-0.09</td>
<td>.08</td>
</tr>
<tr>
<td>Moral SE</td>
<td>-0.05</td>
<td>.04</td>
</tr>
</tbody>
</table>

*Note. N = 337. Effects of data source are controlled for in the combined data analysis. For sex, negative values signify a difference favoring males. *p < .05, **p < .01, ***p < .001, †p < .10.*
### TABLE 10

MULTIPLE REGRESSION PREDICTING PEER-RATED DIRECT AND INDIRECT AGGRESSION:

**FULL MODEL (STUDY 2)**

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Predicting Peer-Rated Direct Aggression</th>
<th>Predicting Peer-Rated Indirect Aggression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SE_{B}$</td>
</tr>
<tr>
<td>Sex</td>
<td>-1.02</td>
<td>.18</td>
</tr>
<tr>
<td>Dominance</td>
<td>0.01</td>
<td>.19</td>
</tr>
<tr>
<td>Prestige</td>
<td>-0.10</td>
<td>.16</td>
</tr>
<tr>
<td>Mate Value</td>
<td>0.18</td>
<td>.11</td>
</tr>
<tr>
<td>Social Inclusion</td>
<td>-0.11</td>
<td>.30</td>
</tr>
<tr>
<td>Global SE</td>
<td>-0.16</td>
<td>.22</td>
</tr>
</tbody>
</table>

*Note. N = 159. For sex, negative values signify a difference favoring males.

**$***p < .01, $****p < .001.**
Thank you for participating in this study.

Please read the informed consent form on the first page and sign. Tear off the form from the packet and I will collect it. That way your name will not be associated with your questionnaire.

Then, complete the entire packet of questions. Check to make sure you have answered all of the questions.

When you are finished, turn over your packet and wait until the end of the session. I will tell you when the time is up.

Thank you.
APPENDIX B
COLLEGE OF WILLIAM AND MARY

PSYCHOLOGY DEPARTMENT CONSENT FORM

Researcher(s): Carolyn R. Hodges (Advisor: Dr. Lee A. Kirkpatrick)

This is to certify that I, ____________________________________________________ am
at least 18 years old and have been given the following information with respect to my
participation in this study.

1. **Purpose of the research:** The purpose of this study is to gather information about how
   individuals understand themselves and interact with others.
2. **Procedure to be followed:** Participants will be asked to fill out a series of questionnaires.
3. **Discomforts and risks:** None.
4. **Time duration of participation:** 30 minutes.
5. **Statement of confidentiality:** All answers will be kept strictly confidential; names will not
   be used.
6. **Voluntary participation:** Yes.
7. **Incentive for participation:** Course credit.
8. **Termination of participation:** Participation may be terminated at any time.
9. **Questions regarding the research should be directed to:** Carolyn Hodges; College of William
    and Mary, Millington 128-E; 540-588-4639; crhodg@wm.edu, or Dr. Lee A.
    Kirkpatrick; lakirk@wm.edu
10. **Questions or concerns regarding participation in this research should be directed to:** the Psychology
    Department Chair (Dr. Larry Ventis, ext. 1 – 3897), or the Chair of the Protection of
    Human Subjects Committee for William and Mary (Stanton F. Hoegerman, 221-3901

I agree to participate in this study and have read all the information provided on this
form.

Name (please print) :  ______________________________________________________

Signature :  ______________________________________________________________

Date :  ___________________________ Age:  ___________________________
Website instructions / Informed consent / Registration for PARTICIPANT

Participants will go to the web site and be instructed as follows:
Welcome to the William and Mary Study on Self-Awareness and Social Behavior

Thank you for participating. Your sincere and conscientious effort is greatly appreciated and is essential for the quality of the study.

Researchers: Carolyn Hodges and Dr. Lee Kirkpatrick

Instructions: Please read all instructions before beginning

Welcome to the Self-Awareness and Social Behavior study. We will be asking you to complete a set of online questionnaires regarding your personality and behavior. They should take about 20-25 minutes to complete. Your answers will be completely confidential. In addition, you are allowed to terminate your participation in this study at any time without penalty if you contact the researcher to inform them of your participation. Unfinished questionnaires without notification will not receive credit.

Friend Participation: In order to better understand the relationship between how we view ourselves and how others view us, we require that you invite a same-sex friend to participate as well. The friend's questionnaire will also be collected online so that they may complete it on their own time. It is very short and should take them no more than 5-7 minutes. Neither you nor your friend will be able to access your own or the other's responses. Please do not discuss the experiment with your friend until after they have completed their questionnaire.

After completing your questions, please email your friend your ID name along with the password that you created specifically for this experiment. Once their questionnaire is completed, you will receive credit.

-For all questions, you will need to click on the button representing your response.

-Although some of the questions in different sections may seem redundant, they do focus on slightly different issues.
- Make certain that you respond to each question. If you do not answer a question you will be prompted to re-enter missing responses when you submit your form.

- For ease of presentation, the questionnaires are divided into groups. After you have completed all the questionnaires in a group you will see a "Go to the next page" box. Left-click on this box to submit your responses.

The study will be explained in more detail after questionnaires are completed. Know that your responses will be treated with the utmost respect. All data will be analyzed and reported confidentially, and no individual's responses will ever be singled out. Your answers will be kept in a hidden, password-protected file that can only be accessed by the researchers.

Please answer the questions honestly as the validity of this study depends upon your honesty and cooperation. You can answer the questions just as you would answer questions on any other web-based survey.

**Informed consent agreement for PARTICIPANT:**

I consent to participate in this research in which I will answer a series of questions about my personality and behavior. It should take approximately 20-25 minutes to complete the questionnaire session. I understand that all the information I submit will be completely confidential, and that my participation in this study is voluntary. I understand that I may choose to terminate my participation at any time, without fear of punishment or reprisal. I understand that I will receive 0.5 hours of credit in exchange for my participation. By registering for this study, I certify that I have read and understood the above information and voluntarily consent to participate in this research.

**Registration:**

Register by clicking on the Register button below. You will need to use your W&M ID name and create a password for you and your friend. You may choose any password you want, but do not use your W&M password because you will have to share it with your friend. If you and your friend are intro psych students, both of you must register as normal and complete your questionnaires and then send your password to the other so they may sign up as your friend.

To register for the study, click here: After registering, you will be able to log in and complete the questionnaires. There are no set time periods to fill out the questionnaires, but please complete them in a private location (dorm room is perfect), and most importantly, in the absence of your friend. When you and your friend have completed the questionnaires, credit will be assigned.

If you are using INTERNET EXPLORER, you may find it easier to complete the form by changing to FULL-SCREEN mode. How you do this will depend upon the specific version of Explorer you are running.
If you are confused about any aspect of this experiment, please email the researcher with questions before you begin.

Thank you very much for your participation; it is an essential and valuable part of the quality of research at William and Mary.
Carolyn Hodges: crhodg@wm.edu

Website instructions / Informed consent / Registration for FRIEND OF PARTICIPANT

Participants will go to the web site and be instructed as follows:
Welcome to the William and Mary Study on Self-awareness and Social Behavior

Thank you for participating. Your sincere and conscientious effort is greatly appreciated and is essential for the quality of the study.

Researchers: Carolyn Hodges and Dr. Lee Kirkpatrick

Instructions: Please read all instructions before beginning

Welcome to the Self-awareness and Social Behavior study. We will be asking you to complete a 5-7 minute questionnaire regarding your friend’s typical behavior. You should know that your answers will be completely anonymous; neither you nor your friend will be able to access your answers. If you do not want to participate, please contact your friend so that they might ask another person to participate instead. Your friend will not receive credit for their participation until you have completed your questionnaire.

-For all questions, you will need to click on the button representing your response; you can answer the questions just as you would answer questions on any other web-based survey..

-Make certain that you respond to each question. If you do not answer a question you will be prompted to re-enter missing responses when you submit your form.

The study will be explained in more detail after questionnaires are completed. Know that your responses will be treated with the utmost respect. Your data will be analyzed and reported anonymously, and no individual’s responses will ever be singled out. Your answers will be kept in a hidden, password-protected file that can only be accessed by the researchers.

Please answer the questions honestly as the validity of this study depends upon your honesty and cooperation.
Informed consent agreement for FRIEND:

I consent to participate in this research in which I will answer a series of questions about my friend's personality and behavior. It should take approximately 5-7 minutes to complete the questionnaire session. I understand that all the information I submit will be completely confidential, and that my participation in this study is voluntary. I understand that I may choose to terminate my participation at any time, but that I must notify my friend if I choose not to participate. By registering for this study, I certify that I have read and understood the above information and voluntarily consent to participate in this research.

Registration:

Register by clicking on the Register button below. You will need to get your friend's W&M ID name and the unique experiment password that was created by your friend. If you and your friend are intro psych students, both of you must register as normal and complete your own set of questionnaires before signing on as a friend.

To register for the study, click here: After registering, you will be able to log in and complete the questionnaire. There are no set time periods to fill out the questionnaire, but please complete it in a private location (dorm room is perfect), and most importantly, in the absence of your friend.

If you are confused about any aspect of this experiment, please email the researcher with questions before you begin.

Thank you very much for your participation; it is an essential part of the quality of research at William and Mary.

Carolyn Hodges: crhodg@wm.edu
## APPENDIX D
### ROSENBERG SELF-ESTEEM SCALE

Indicate the degree to which you disagree or agree with each statement below by writing a number between 1 and 7 in the space provided.

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I feel that I am a person of worth, at least on an equal basis with others.</td>
<td>1=Strongly disagree</td>
</tr>
<tr>
<td>2</td>
<td>I feel that I have a number of good qualities.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>All in all, I am inclined to feel that I am a failure.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>I am able to do things as well as most other people.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I feel I do not have much to be proud of.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I take a positive attitude toward myself.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>On the whole, I am satisfied with myself.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>I wish I could have more respect for myself.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I certainly feel useless at times.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>At times I think I am no good at all.</td>
<td></td>
</tr>
</tbody>
</table>

1. ____
2. ____
3. ____
4. ____
5. ____
6. ____
7. ____
8. ____
9. ____
10. ____
APPENDIX E
SELF-PERCEIVED MATING SUCCESS SCALE

Indicate the degree to which you disagree or agree with each statement below by writing a number between 1 and 7 in the space provided.

1 = Strongly disagree  2 = Disagree  3 = Slightly disagree  4 = Neutral  5 = Slightly agree  6 = Agree  7 = Strongly agree

1. _____ Members of the opposite sex often comment that I would make a good boyfriend/girlfriend.

2. _____ I do not receive many compliments from members of the opposite sex.

3. _____ I am able to attract individuals I find desirable as relationship partners.

4. _____ I receive sexual invitations from members of the opposite sex.

5. _____ I can have as many sexual partners as I choose.

6. _____ I am able to attract individuals I find desirable as sexual partners.

7. _____ Members of the opposite sex that I would like to date, tend to like me back.

8. _____ Members of the opposite sex notice me.

9. _____ I receive many compliments from members of the opposite sex.

10. _____ Members of the opposite sex are not very attracted to me.

11. _____ Members of the opposite sex want to spend time with me and “get to know me.”

12. _____ Members of the opposite sex are attracted to me.
APPENDIX F
SELF-PERCEIVED SOCIAL STATUS SCALE
Indicate the degree to which you disagree or agree with each statement below by writing a number between 1 and 7 in the space provided.

1 = Strongly disagree  2 = Disagree  3 = Slightly disagree  4 = Neutral  5 = Slightly agree  6 = Agree  7 = Strongly agree

1. ____ I sometimes do favors for people to get on their good side.
2. ____ I tend to dominate social situations.
3. ____ Members of my peer group respect and admire me.
4. ____ Others believe they can push me around.
5. ____ I defer to others when decisions have to be made.
6. ____ I am willing to use aggressive tactics to get my way.
7. ____ Others do not value my opinion.
8. ____ People often 'let it slide' when I fail to meet my obligations.
9. ____ I enjoy having control over others.
10. ____ I feel inferior to members of my peer group.
11. ____ I must admit that I try to see what others think before I take a stand.
12. ____ Others recognize me for my contributions to my social groups.
13. ____ I do not like to give orders.
14. ____ Members of my peer group do not want to be like me.
15. ____ It is pretty easy for people to win arguments with me.
16. ____ I don't mind compromising with other people.
17. ____ I have high status in my social groups.
18. ____ I am easily intimidated by dominant individuals.
19. ____ Others know it is better to let me have my way.
20. ____ There are some matters on which I am considered an expert by others.
21. ____ I have high rank in my social groups.
22. ____ I demand respect from members of my peer group.
23. ____ It makes me uncomfortable when others publicly praise me.
24. ____ Others find my advice helpful.
25. ____ I have access to resources that others do not.
26. ____ I do not enjoy having authority over other people.
27. ____ My unique talents and abilities are recognized by others.
28. ____ Others do not second guess my choices.
29. ____ I do not mind taking orders and being told what to do.
30. ____ When I am being introduced, I don’t like the person to make lengthy
   comments about what I have done.
31. ____ My opinions hold greater weight relative to others’ in my social group.
32. ____ I try to control others rather than permit them to control me.
33. ____ I don’t have a forceful or dominant personality.
34. ____ If I have done something well, I make sure I call it to other people’s
   attention.
35. ____ People seem naturally to turn to me when decisions have to be made.
36. ____ I often try to get my own way regardless of what others may want.
37. ____ I have gained distinction and social prestige among my peers.
38. ____ I am held in high esteem by those I know.
39. ____ I believe I have to fight my way to the top.
40. ____ Others consider what I will think before making choices.
APPENDIX G

This questionnaire has to do with your attitudes about some of your activities and abilities. For the 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.

1. intellectual/academic ability
2. social skills/competency
3. artistic and/or musical ability
4. athletic ability
5. physical attractiveness
6. leadership ability
7. common sense
8. emotional stability
9. sense of humor
10. discipline
11. moral/ethical ideals
12. trustworthiness/loyalty
13. generosity/helpfulness
14. creativity
15. unique talents/abilities
APPENDIX H

SELF-PERCEIVED SOCIAL INCLUSION

Indicate the degree to which you disagree or agree with each statement below by writing a number between 1 and 5 in the space provided.

1 = Strongly disagree  2 = Disagree  3 = Slightly disagree  4 = Neutral  5 = Slightly agree  6 = Agree  7 = 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.
11. ___ I sometimes feel that other people avoid interacting with me.
12. ___ I can't rely on my friends or family in times of need.
13. ___ People often seek out my company.
14. ___ If I want to socialize with my friends, I am generally the one who must seek them out.
15. ___ I am fortunate to have many caring and supportive friends.
16. ___ Others shun me.
17. ___ I think there are many people who like to be with me.
18. ___ I often feel like an outsider in social gatherings.
19. ___ I feel welcome in most social situations.
APPENDIX I
DIRECT AND INDIRECT AGGRESSION SCALE
FEMALE VERSION

Please indicate how often you would do the behaviors below by writing a number between 1 and 7 in the space provided. Remember that there are no right or wrong answers; try to answer as closely as possible to what you would ACTUALLY do.

1=Never  2=Very rarely  3=Rarely  4=Sometimes  5=Often  6=Very often  7=Always

Try to imagine situations in the past where a female acquaintance did something that made you really angry. How did you typically act in these situations?

1. ___ I yelled or screamed at her.
2. ___ I did things to irritate her.
3. ___ I threatened to hit or throw something at her.
4. ___ I made up stories to get her in trouble.
5. ___ I did not show I was angry.
6. ___ I cursed at her.
7. ___ I threw something at her.
8. ___ I tried to make her look stupid.
9. ___ I stomped out of the room.
10. ___ I made negative comments about her appearance to someone else.
11. ___ I hit (or tried to hit) her with something hard.
12. ___ I insulted her or called her names to her face.
13. ___ I talked the matter over.
14. ___ I spread rumors or unflattering stories about her.
15. ___ I sulked and refused to talk about it.
16. ___ I kicked or tripped (or tried to kick or trip) her.
17. ___ I dropped the matter entirely.
18. ___ I took something that belonged to her.
19. ___ I hit (or tried to hit) her, but not with anything.
20. ___ I gossiped about her behind her back with other friends.
21. ___ I pushed, grabbed, or shoved her.
22. ___ I called her names behind her back.
23. ___ I told others not to associate with her.
24. ___ I waited until I calmed down and then discussed the problem.
25. ___ I told others about the matter.
26. ___ I threw something (but not at her) or smashed something.
27. ___ I destroyed or damaged something that belonged to her.
28. ___ I gathered other friends to my side.
29. ___ I tried to shut her out of my social group.
30. ___ I started hanging out with someone else as a kind of revenge.
31. ___ I purposely ignored her or pretended like she didn’t exist.
32. ___ I tried to pick a fist fight with her.
33. ___ I debated or argued with her.
34. ___ I told secrets or private information about her to other friends.
35. ___ I teased her.
36. ___ I purposely flirted with her dating partner or “crush”.
DIRECT AND INDIRECT AGGRESSION SCALE  
MALE VERSION

Please indicate how often you would do the behaviors below by writing a number between 1 and 7 in the space provided. Remember that there are no right or wrong answers; try to answer as closely as possible to what you would ACTUALLY do.

1=Never  2=Very rarely  3=Rarely  4=Sometimes  5=Often  6=Very often  7=Always

Try to imagine situations in the past where a male acquaintance did something that made you really angry. How did you typically act in these situations?

1. ____ I yelled or screamed at him.
2. ____ I did things to irritate him.
3. ____ I threatened to hit or throw something at him.
4. ____ I made up stories to get him in trouble.
5. ____ I did not show I was angry.
6. ____ I cursed at him.
7. ____ I threw something at him.
8. ____ I tried to make him look stupid.
9. ____ I stomped out of the room.
10. ____ I made negative comments about his appearance to someone else.
11. ____ I hit (or tried to hit) him with something hard.
12. ____ I insulted him or called him names to his face.
13. ____ I talked the matter over.
14. ____ I spread rumors or unflattering stories about him.
15. ____ I sulked and refused to talk about it.
16. ____ I kicked or tripped (or tried to kick or trip) him.
17. ____ I dropped the matter entirely.
18. ____ I took something that belonged to him.
19. ____ I hit (or tried to hit) him, but not with anything.
20. ____ I gossiped about him behind his back with other friends.
21. ____ I pushed, grabbed, or shoved him.
22. ____ I called him names behind his back.
23. ____ I told others not to associate with him.
24. ____ I waited until I calmed down and then discussed the problem.
25. ____ I told others about the matter.
26. ____ I threw something (but not at him) or smashed something.
27. ____ I destroyed or damaged something that belonged to him.
28. ____ I gathered other friends to my side.
29. ____ I tried to shut him out of my social group.
30. ____ I started hanging out with someone else as a kind of revenge.
31. ____ I purposely ignored him or pretended like he didn’t exist.
32. ____ I tried to pick a fist fight with him.
33. ____ I debated or argued with him.
34. ____ I told secrets or private information about him to other friends.
35. ____ I teased him.
36. ____ I purposely flirted with his dating partner or “crush”.
APPENDIX J
DIRECT AND INDIRECT AGGRESSION SCALE—REVISED
(INSTRUCTIONS; STUDY 2)

FEMALE VERSION
Try to imagine the following scenario happening to you: A female friend/acquaintance becomes involved with your boyfriend or dating partner without your knowledge. This makes you really angry. How do you think you would react to this situation? Remember that there aren’t right or wrong answers; try to answer as closely as possible to what you would ACTUALLY do by writing a number between 1 and 7 in the space provided.

MALE VERSION
Try to imagine the following scenario happening to you: A male friend/acquaintance becomes involved with your girlfriend or dating partner without your knowledge. This makes you really angry. How do you think you would react to this situation? Remember that there aren’t right or wrong answers; try to answer as closely as possible to what you would ACTUALLY do by writing a number between 1 and 7 in the space provided.
APPENDIX K
DIRECT AND INDIRECT AGGRESSION SCALE -- PEER
FEMALE VERSION

Try to imagine the following scenario happening to your friend: A female friend/acquaintance of hers becomes involved with her boyfriend or dating partner without her knowledge. This makes her really angry. How do you think she would react to this situation? Remember that there aren’t right or wrong answers; try to answer as closely as possible to what you think she would do by writing a number between 1 and 7 in the space provided.

1 = Not at all likely
2 = Very unlikely
3 = Unlikely
4 = Maybe
5 = Likely
6 = Very likely
7 = Definitely

1. ___ She yelled or screamed at her.
2. ___ She did things to irritate her.
3. ___ She threatened to hit or throw something at her.
4. ___ She made up stories to get her in trouble.
5. ___ She did not show she was angry.
6. ___ She cursed at her.
7. ___ She threw something at her.
8. ___ She tried to make her look stupid.
9. ___ She stomped out of the room.
10. ___ She made negative comments about her appearance to someone else.
11. ___ She hit (or tried to hit) her with something hard.
12. ___ She insulted her or called her names to her face.
13. ___ She talked the matter over.
14. ___ She spread rumors or unflattering stories about her.
15. ____ She sulked and refused to talk about it.
16. ____ She kicked or tripped (or tried to kick or trip) her.
17. ____ She dropped the matter entirely.
18. ____ She took something that belonged to her.
19. ____ She hit (or tried to hit) her, but not with anything.
20. ____ She gossiped about her behind her back with other friends.
21. ____ She pushed, grabbed, or shoved her.
22. ____ She called her names behind her back.
23. ____ She told others not to associate with her.
24. ____ She waited until she calmed down and then discussed the problem.
25. ____ She told others about the matter.
26. ____ She threw something (but not at her) or smashed something.
27. ____ She destroyed or damaged something that belonged to her.
28. ____ She gathered other friends to her side.
29. ____ She tried to shut her out of her social group.
30. ____ She started hanging out with someone else as a kind of revenge.
31. ____ She purposely ignored her or pretended like she didn’t exist.
32. ____ She tried to pick a fist fight with her.
33. ____ She debated or argued with her.
34. ____ She told secrets or private information about her to other friends.
35. ____ She teased her.
36. ____ She purposely flirted with her dating partner or “crush”.

DIRECT AND INDIRECT AGGRESSION SCALE -- PEER
MALE VERSION

Try to imagine the following scenario happening to your friend: A male friend/acquaintance of his becomes involved with his girlfriend or dating partner without his knowledge. This makes him really angry. How do you think he would react to this situation? Remember that there aren't right or wrong answers; try to answer as closely as possible to what you think he would do by writing a number between 1 and 7 in the space provided.

1 = Not at all likely
2 = Very unlikely
3 = Unlikely
4 = Maybe
5 = Likely
6 = Very likely
7 = Definitely

1. ____ He yelled or screamed at him.
2. ____ He did things to irritate him.
3. ____ He threatened to hit or throw something at him.
4. ____ He made up stories to get him in trouble.
5. ____ He did not show he was angry.
6. ____ He cursed at him.
7. ____ He threw something at him.
8. ____ He tried to make him look stupid.
9. ____ He stomped out of the room.
10. ____ He made negative comments about his appearance to someone else.
11. ____ He hit (or tried to hit) him with something hard.
12. ____ He insulted him or called him names to his face.
13. ____ He talked the matter over.
14. ____ He spread rumors or unflattering stories about him.
15. ____ He sulked and refused to talk about it.
16. He kicked or tripped (or tried to kick or trip) him.
17. He dropped the matter entirely.
18. He took something that belonged to him.
19. He hit (or tried to hit) him, but not with anything.
20. He gossiped about him behind his back with other friends.
21. He pushed, grabbed, or shoved him.
22. He called him names behind his back.
23. He told others not to associate with him.
24. He waited until he calmed down and then discussed the problem.
25. He told others about the matter.
26. He threw something (but not at him) or smashed something.
27. He destroyed or damaged something that belonged to him.
28. He gathered other friends to his side.
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32. He tried to pick a fist fight with him.
33. He debated or argued with him.
34. He told secrets or private information about him to other friends.
35. He teased him.
36. He purposely flirted with his dating partner or “crush”.
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