

Band of Brothers or Band of Siblings?: An Evolutionary Perspective on Sexual Integration of Combat Forces

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Abstract

Sexual integration of combat forces presents underappreciated challenges. Sex differences in physical capacity remain important in modern warfare, and the sexes also differ in combat-relevant psychological traits, including risk taking and aggressiveness. Moreover, group dynamics have consequences for unit cohesion and combat performance. Men more easily participate in coalitions organized to mete out violence, a tendency enhanced in the presence of intergroup competition. Men's coalitions require lower levels of investment and can persist for longer in the face of within-group conflict than women's coalitions. Combat units rely on cohesion to enable performance, and introduction of women tends to reduce cohesion because, among other reasons, men often find it difficult to trust women. The attributes that soldiers value in comrades are ones that would have been important for primitive warriors, including strength, physical courage, and other aspects of masculinity, which may mean that women cannot evoke trust in their male comrades the way other men can.

Key Words: coalitions, sex differences, women in combat, military, risk taking, physical aggressiveness, cohesion, trust, combat motivation

Introduction

Throughout the ages, participation in violent intergroup conflict has been overwhelmingly the province of men. No modern society significantly relies, and virtually no premodern society relied, on women as combat soldiers. Not only is warfare a male occupation, in many ways it has been viewed as the quintessential “manly” pursuit. Unlike, say, the manufacture of musical instruments—a task that also tends cross-culturally to be performed by men (D’Andrade, 1966)—warfare has often been the defining feature of masculinity for a culture. In many primitive societies, for example, a male was not entitled to full status as a man until he distinguished himself in warfare, usually by killing an enemy (Turney-High, 1971, p. 161). Moreover, women were often among the “spoils” of primitive warfare and sometimes one of its primary goals (Chagnon, 1988).

Just as warfare has been associated with men, peace has been associated with women. Although the Shoshone girl Sacagawea is often erroneously referred to as Lewis and Clark’s “guide,” her most significant contribution to that epic journey was that her presence, in William Clark’s words, “reconciles all the Indians, as to our friendly intentions [because] a woman with a party of men is a token of peace” (Lewis & Clark, 1814/1904, entry of Oct. 13, 1805, p. 111). Similarly, Australian prospector Michael Leahy recalled the relief he felt when first contacting the highlanders of New Guinea in the early 1920s, when it appeared that the armed men were accompanied by women, leading his lowland native guide to assure him that there would be no fight (Connolly & Anderson, 1987, p. 24). Thus, it is not only a consistent pattern that men engage in warfare but also that

women do not (Brightman, 1996). This pattern parallels the exclusion of women from big-game hunting, as exemplified by the !Kung, who “believe that femaleness weakens the hunters’ prowess and endangers his chance of success” (Marshall, 1976, p. 96).

Many modern nations are now adopting policies that attempt to overturn the long-standing link between men and warfare. Some countries, such as Canada, Norway, and the Netherlands, have eliminated all bars to women serving in combat, though there have been few takers in those volunteer militaries (Browne, 2007a, p. 268). Others, such as the United States and Britain, have opened many formerly closed combat positions to women, while maintaining a ban on women in offensive ground combat, although even this exclusion has been subjected to heavy criticism (e.g., Solaro, 2006). The question is not, as some would have it, whether women can be good *soldiers*; they clearly can be and have been in large numbers. The real question is whether in the contemporary military they can be effective *warriors*, that is, people who possess “a strong individual existential commitment to combat” (Henriksen, 2007, p. 206) and enhance the effectiveness of their units.

A variety of assumptions underlie initiatives to expand women’s combat opportunities. One is that exclusion of women really never made sense; it was based on the assumption that because *many* women lacked the physical and emotional wherewithal to engage in combat, *all* women should be excluded. Underlying this view is the notion that there is really nothing inherently “masculine” about war—that the association between men and warfare is mere happenstance—and that warfare neither calls for nor rewards masculinity. One feminist professor, for example, has found it difficult “to pinpoint why it is that the army is more male than the university” (Addis, 1994, p. 17). Another perception is that although the historic reliance on men in combat may have made sense in the past, changes in the nature of warfare have transformed warfare from a contest of brawn into one of brains, rendering the sexes interchangeable in combat (Addis, Russo, & Sebesta, 1994, p. xv; De Groot, 1995, p. 259). Under this view, the primary obstacle to integration today is outdated sexist attitudes that cause men to resist inclusion of women into the “band of brothers.” These attitudes, it is argued, can be overcome by proper leadership and training (Harrell & Miller, 1997, p. 99).

The primary purpose of this chapter is to show that these assumptions are flawed. First, the sexes

differ on an array of combat-related physical and psychological dimensions. The most obvious, and least controversial, differences are physical. Despite claims to the contrary, these differences remain relevant, because modern combat continues to impose serious physical challenges (Browne, 2007a, pp. 59–72). Second, the assumption that men and women are largely identical in combat-relevant traits other than physical strength overlooks a vast literature on psychological sex differences. Many traits in which the sexes differ are critical to combat personnel, including physical aggressiveness, willingness to kill strangers at close range, and willingness to expose oneself to physical risk. On the other hand, nurturance and empathy, which are more characteristic of women, can interfere with combat performance. Some of these traits are difficult to measure meaningfully in advance of actual combat, and although there is overlap between the sexes on all of them, there is a serious question about whether there is enough to justify inclusion of women.

Finally, and more important, however, is the fact that irrespective of the characteristics of an individual woman, she is still a woman, and the fact of her sex by itself can have an array of effects on her unit’s performance. Effective combat units are cohesive, and introduction of women can interfere with cohesion even if individual women possess the traditional warrior attributes. Moreover, men seem less inclined to trust women in dangerous situations. Although beyond the scope of this chapter, inclusion of women can also have adverse effects as a consequence of sexual competition and other sexual tensions, in addition to factors such as men’s tendency to protect women, potential rape of captured women, and effects of women’s reproductive role, such as pregnancy, menstruation, and motherhood (especially single motherhood) (Browne, 2007a).

Combat-Related Physical and Psychological Sex Differences

The first set of sex differences consists of individually measurable traits. Some of these differences are important in their own right, and they can also affect group dynamics in a number of ways described later. Although some can be effectively measured in advance, others cannot.

Physical Differences

The most obvious, and least controversial, differences are in physical capacity, including strength, speed, throwing speed and accuracy, aerobic and anaerobic capacity, endurance, and pain tolerance,

not to mention height, weight, and bone mass (Browne, 2007a, pp. 19–27). Although the magnitude of the sex difference varies from trait to trait, there is very little overlap between the sexes on some of them, such as upper-body strength (Pheasant, 1983). The probability that a man selected at random from the population will have greater upper-body strength than a randomly selected woman typically ranges between 95% and 99%, depending upon the sample and the measure employed. Many of these differences are observable in children and increase with puberty (Thomas & French, 1985). This male physical advantage reflects a common primate, even mammalian, pattern. In most such species, sexual dimorphism in size and strength is an evolutionary consequence of male-male competition (Plavcan & Van Schaik, 1997), and as will be seen later, this dimorphism is coupled with psychological adaptations facilitating intrasexual competition.

The need for strength and endurance in modern combat has not disappeared. In fact, the infantry soldier of today carries more gear than his World War II counterpart (Scales, 2005). Although most soldiers will not engage in hand-to-hand combat, which relies primarily on upper-body strength, some still do, and such combat is the last resort of all warriors—whether infantry riflemen, tank drivers, or downed fighter pilots attempting to resist capture or to escape (McConnell, 1985)—and even of those occupying support positions. Many other combat tasks require strength, as well, including lifting of heavy artillery shells, damage-control tasks on a warship, carrying a machine gun, or digging fighting holes. Because combat is physically arduous and must be sustained in adverse conditions, knowing how to perform a task and being able to perform it in training are not enough. Although Israeli women serve as tank instructors, for example, they are not eligible for combat assignments in the Armored Corps because they lack the endurance to load heavy shells for extended periods (Schechter, 2004). Even if one's assigned job is not physically demanding, combat may render it so. If a ship is struck by a missile, all hands may have to turn to the tasks of damage control, such as fire fighting, flood limitation, and evacuation of the wounded. The difference between a ship's sinking and staying afloat may turn on the crew's ability to sustain such intense physical activity (Peniston, 2006, pp. 150–151, 156).

Women who would serve in combat would not be randomly selected, and self-selection would ensure that women who volunteered would be more

male-like than average. Self-selection has only limited effects, however. A 2002 British Ministry of Defence study found that only about one-tenth of 1% of female recruits and 1% of trained female soldiers could satisfy the physical standards for infantry and armor (Ministry of Defence, 2002, p. B-5). Similarly, a study by the US Navy found that although virtually all male sailors could meet the standards for critical damage-control tasks, most women could not (Presidential Commission, 1992, p. 74). The very different physical-fitness standards that the military sets for the two sexes reflect its recognition of these large sex differences. For example, 18-year-old females in the US Army are required to do only about one-third the number of push-ups as 18-year-old males and are allowed more time to run 2 miles than 41-year-old men (Vanden Brook, 2006).

Finally, the sexes differ in their tolerance for pain. A major review of pain studies found average effect sizes of between 0.5 and 0.6 for both pain threshold (the level at which a stimulus is perceived as painful) and pain tolerance (the level at which pain is no longer bearable) (Riley, Robinson, Wise, Myers, & Fillingim, 1998). The importance of a soldier's ability to endure physical pain scarcely requires mention. A wounded soldier must sometimes continue to fight despite his wounds, and the more pain he is experiencing, the less able he is to fight.

In some respects, physical sex differences present the easiest challenge for sexual integration, because sex-neutral physical tests could, in principle, be used to screen applicants, although rigorous standards would exclude most women. As we will see later, however, psychological sex differences create more difficult issues.

Psychological Sex Differences

The sexes differ on average in a variety of psychological attributes, including risk taking, physical aggression, fear, and empathy. Many of these differences are observable early in childhood and increase substantially at the time of puberty. Like physical sex differences, these psychological differences may have substantial impact on combat performance.

RISK TAKING

One of the largest sex differences is in risk-taking behavior, especially with respect to physical risks, with the difference peaking in young adulthood (Wilson & Daly, 1985). Although in most laboratory studies, sex differences are only moderate (Byrnes, Miller, & Schafer, 1999), in naturalistic

settings, the differences are stark, whether in high-risk employment, recreation, or simply “lifestyle.” In the workplace, for example, men are overwhelmingly represented in risky employment, with well over 90% of workplaces deaths in the United States being males (Bureau of Labor Statistics, 2003). In a meta-analysis of sex differences in risk taking, Byrnes, Miller, and Schafer (1999) concluded that “males took risks even when it was clear that it was a bad idea,” while females seemed “disinclined to take risks even in fairly innocuous situations or when it was a good idea to take a risk” (p. 378). This finding is significant for military risk taking, because many militarily appropriate risks are, from a personal perspective, a “bad idea,” even if they are a good idea from an institutional perspective. The sexes also differ in the effect of emotions on their risk-taking behavior, as anger increases risk taking among men but does not do so for women, while disgust inhibits risk taking among women, but it does not for men (Fessler, Pillsworth, & Flanson, 2004), effects that would be predicted to influence combat behavior.

FEAR

Risk taking and fear are intimately related, as the latter tends to inhibit the former. Females from childhood through adulthood experience higher levels of fear than males (McLean & Anderson, 2009). Indeed, sex differences in expression of fear are observable even in infancy (Nagy et al., 2001), and they increase into adulthood (Gullone & King, 1997). Sex differences in fear and risk perception have two components. Women are more likely than men to perceive risk, and even when they perceive the same level of risk as men, they have higher levels of fear about the risk. For example, notwithstanding the fact that women are less frequently victimized by violent crime, they are more fearful of it than men (Smith & Torstenson, 1997), with women’s fear being highest among those of peak reproductive age. Women’s heightened fear of crime does not appear to be just a function of their special vulnerability to rape, as it extends to other crimes as well, such as murder—even though women are substantially less likely to be murdered than men—and to property crimes. When two snipers were terrorizing the Washington, D.C., area in 2002, women reported being substantially more likely than men to modify their behaviors, even though objectively there was a very low risk of harm and men made up more than two-thirds of the sniping victims (Zivotofsky & Koslowsky, 2005). A study of male and female

soldiers serving in support positions during the Gulf War, none of whom had seen combat, found that women reported experiencing significantly more psychological stress than men, especially stress related to anticipation of combat (Rosen, Wright, Marlowe, Bartone, & Gifford, 1999). Women also suffer more from posttraumatic stress disorder (PTSD), a sex difference that is not entirely attributable to sex differences in sexual assault (Pratchett, Pelcovitz, & Yehuda, 2010). Similarly, Israeli girls suffer more from PTSD than boys after terror attacks, a difference that is largely a result of their greater fear levels (Laufer & Solomon, 2009).

PHYSICAL AGGRESSION

The sexes also differ in their attitudes toward, and willingness to engage in, physical aggression. Like risk taking, sex differences in physical aggression appear early in development, being present from about 2 years of age. Fights among school children, for example, are overwhelmingly between boys (Boulton, 1993). A meta-analysis of aggression studies found that the age group showing the largest sex difference is 18–21-year-olds ($d = 0.66$), followed closely by 22–30-year-olds ($d = 0.60$) (Archer, 2009), the prime demographics for combat soldiers. As aggressive behavior becomes more dangerous, the sex difference in aggression increases. Thus, when criminal behavior is considered, which is typically not done in psychological studies of aggression, the sex difference is even more compelling. Between 1976 and 2004, almost 90% of convicted murderers in the United States were male (as were over three-quarters of their victims) (Fox & Zawitz, 2006). In 2000, state and federal prisons held approximately 1.3 million inmates (US Department of Justice, 2003, p. v), of whom 93% were male (and a greater proportion of male prisoners than female prisoners were serving time for violent offenses). Men not only engage in more physical forms of attack, they also have more positive attitudes toward aggression, being more likely to view it as an acceptable way of achieving one’s ends and experiencing less guilt and anxiety about engaging in aggression than women do (Campbell & Muncer, 1994).

EMPATHY AND NURTURANCE

Although perhaps not as obvious as the case with traits such as risk taking and aggression, sex differences in empathy and nurturance are also relevant to combat service. The psychological process of “pseudo-speciation” (Eibl-Eibesfeldt, 1979,

pp. 122–125), which allows—or even encourages—soldiers to kill, is the antithesis of compassion and sensitivity. Indeed, it is a mechanism that precludes empathy, for only by categorizing the enemy as someone not entitled to a full measure of compassion is it possible for most people to kill without experiencing the guilt that usually follows the killing of another human being. A high degree of empathy not only engenders a reluctance to kill, it also increases the psychological cost of killing if that reluctance is overcome. Having engaged in conduct inconsistent with their personal natures, many soldiers have a difficult time living with what they have done and in extreme cases suffering from PTSD (Kilner, 2002).

From childhood, girls engage in more nurturing behavior than boys, and in all societies, women engage in overwhelmingly more parental care than men (Hewlett, 1988). Women also score higher on most measures of empathy (Baron-Cohen & Wheelwright, 2004), which may be responsible for the heightened guilt and anxiety that women feel about acting aggressively (Archer, 2004). The sexes also differ in the circumstances that attenuate empathy. A study comparing empathic responses of men and women using functional magnetic resonance imaging (fMRI) of the brain found that although both sexes showed activation in areas of the brain that respond to their own pain and to observation of pain in others when “innocent” people were electrically shocked, when someone who “deserved” harm (in the study, someone who had played a game unfairly) was shocked, the empathic response of men, but not of women, was substantially reduced (Singer et al., 2006). On the other hand, areas of the brain associated with reward processing showed enhanced activation in men, but not women, when the “deserving” player was shocked. These findings suggest that men’s empathy may be more easily “switched off” than women’s and that men may derive greater satisfaction from at least some sorts of physical revenge.

The fact that women are likely to feel greater empathy for the enemy (and more fear) than men is consistent with reports from Iraq suggesting that women are suffering PTSD at a substantially higher rate and of a more serious nature than men (Scharnberg, 2005), despite the fact that they are exposed to substantially less combat danger. Thus, women may be less likely than men to kill and more likely to pay a heavy psychological cost for it when they do.

Studies May Underestimate the Magnitude of Sex Differences

Sex differences in individual traits such as risk taking, fear, aggressiveness, dominance, and empathy are substantial, but there is significant overlap between the sexes in many of these traits. Psychological studies may underestimate the magnitude of the relevant sex differences, however. One reason is that the traits, though often correlated, are not perfectly so, meaning that the sex imbalance among those possessing substantial amounts of all of the relevant traits would be greater than for any one trait. As Del Giudice (2009) has shown, simultaneous measurement of multidimensional constructs will often yield effects much larger than the average of the unidimensional separate effects.

Another reason that the magnitude of sex effects may be underestimated is that the relevant emotions may not have been activated. It is one thing to ask city dwellers whether they would be willing to spend a night in the woods in grizzly-bear country; it is quite another thing to put them in a bear-filled forest and observe their physiological, emotional, and behavioral responses, or to determine whether they have voluntarily placed themselves in such positions. Thus, measures of observed behaviors tend to reveal larger effects than paper-and-pencil trait measures or even self-reports (Archer, 2004; Byrnes et al., 1999). Moreover, some sex differences, such as those in risk taking, are enhanced in group settings (Ronay & Kim, 2006), despite usually being measured in individual settings.

Examining people’s actual physically risky behavior is likely to provide a more accurate view of relevant sex differences than laboratory studies. One real-world demonstration of men’s greater risk-taking propensity comes from the Carnegie Hero Fund Commission, which bestows awards for heroism. Johnson (1996) found that 92% of the recognized acts of heroism from 1989 through 1995 were performed by men. There was also a significant difference in the beneficiaries of the heroism: Over half of those rescued by women were known to the rescuer, while over two-thirds of those rescued by men were strangers. Similar results were obtained in a study of rescues in the United Kingdom, with over 94% of rescuers being male, and a majority of those rescued by men being strangers compared to less than 20% for women (Lyons, 2005). The same pattern is exhibited in the awarding of the United States Lifesaving Association’s (USLA) Medal of Valor, which is presented to professional lifeguards who

have risked their lives to an extraordinary degree, with all 35 of the medals bestowed through 2008 having been awarded to men (USLA, n.d.). The USLA also bestows its Heroic Act Award on non-lifeguards who have risked their lives to an extraordinary degree in a rescue or attempted rescue of an unrelated person, with 38 of 48 such awards having been given to men (and 7 of the women given awards were among 16 collegiate sailors in 2002 who had engaged in a single rescue, with the awards being granted for their collective efforts rather than for individual actions) (USLA, n.d.; International Sailing Federation, 2002).

A subset of the Carnegie awards may be even more telling on the subject of sex differences. Most of the Carnegie awards examined by Johnson involved nonaggressive actions, such as rescuing a victim from fire or drowning. More relevant to the combat question are situations in which there is not only a substantial risk of death or serious injury but also a need to confront physically violent people. So, who are the people who foil robberies, chase down purse snatchers and carjackers, and rescue others from criminal assaults? The Carnegie awards suggest that it is men who are the principal protectors of crime victims. Between 1998 and July 2006, over 90% of the almost 800 awards went to males (Browne, 2007a, pp. 35–36). Eighty-two of the awards went to people responding to an assault, and the pattern there is revealing. First, men were much more likely to engage the assailant physically. Of the 47 rescuers responding to an assailant armed with a gun, 5 were women, but none of these women physically engaged the assailant, whereas 35 of the 42 male rescuers did. Second, men were much more likely to sustain fatal injuries in the process. Ten rescuers were killed while aiding assault victims, all of them men. Third, men were much more likely to intervene to protect a stranger. Only 40% of the women were rescuing strangers, compared to 90% of the men. Another study specifically focusing on individuals who intervened to thwart violent crimes, such as muggings, armed robberies, and bank holdups, found that only 1 of 32 rescuers in the sample was female (Huston, Ruggiero, Conner, & Geis, 1981).

Becker and Eagly (2004) have argued that the Carnegie awards provide a skewed view of the true sex distribution of heroes. They argue that the association of heroic behavior with men reflects a failure to appreciate women's heroic behavior. Heroic behavior, they say, has two components:

It is both risky and prosocial. They acknowledge that men are generally more inclined to engage in risky behaviors, but they argue that women are more likely to engage in prosocial behaviors, so these two tendencies might be expected to cancel each other out in producing the sex distribution of heroes. The heroic acts of Carnegie medal recipients count as heroic, they argue, but so, too, do a number of other behaviors that women are as likely—or even more likely—to engage in. They examined data from the “Righteous Among the Nations,” which recognizes non-Jews who risked their lives to save Jews during the Holocaust. They found that in Poland, the Netherlands, and France, men and women were roughly equally likely to be listed, although if married couples were excluded—because of uncertainty about whether the husband and wife were equally involved in the activity—women predominated.

It is unclear whether the Holocaust study taps into behaviors that are strongly implicated in daring physical exploits, such as combat service. Certainly, assisting Jews was risky business, although the point of the activity was avoiding detection rather than engaging in violent confrontation. It is also difficult to draw any inferences about global sex differences in heroic behaviors (or the lack thereof) from this sample without knowing what the men were doing while the women were aiding Jews. In all three countries studied, there was an active resistance against the Nazis. Members of the resistance—who were predominantly male—engaged in a variety of behaviors, including attacks on the enemy, sabotage, acquisition and transmission of intelligence, distribution of underground newspapers, organizing strikes, as well as providing shelter not only to Jews but also to Allied soldiers and downed airmen. Moreover, presumably many of the husbands of the women who were listed were serving in the military (or dead). When all of these activities are cumulated, it is likely that there was a strong disproportion of men involved. Thus, Becker and Eagly's conclusion (p. 173) that “women made heroic choices at least as often as men” is possible only by carving out one particular facet of resistance to the Nazis, notably one that was carried on surreptitiously and primarily in the home. Although Becker and Eagly express hope that their research will produce a “cultural shift whereby heroism will be viewed as more androgynous” (p. 175), their data do not establish that such a shift is warranted.

Individual Sex Differences and Combat Motivation

The aforementioned traits—risk taking, fear, physical aggressiveness, and empathy—all show substantial sex differences, and all are related in one way or another to combat motivation. Obviously, combat demands risk taking, willingness to engage in physical aggression, and sufficient depersonalization of the enemy to allow his killing. Empathy may affect combat motivation by inhibiting the willingness to kill, and men's diminished empathy for those who "deserve" punishment may enhance their willingness to kill the enemy. Moreover, the strength of the mother–infant bond seems to make the long deployments sometimes required by military service more difficult for mothers than for fathers (Browne, 2007a, pp. 255–256). In addition to causing greater psychological pain for women, this may also undermine their performance.

The fear that is ever present on the battlefield also affects combat performance, but its impact is complex, because soldiers face an array of fears in battle. The most obvious of these fears are of death and serious injury. Such fears are negatively motivating, and women's greater fear of physical harm predictably would result in a greater reduction in motivation to fight. As Campbell (1999) has shown, women have evolved to act as though they see less potential gain and more potential loss than men do from exposing themselves to physical risks.

Perhaps surprisingly, however, fear of death and injury are not necessarily the greatest fears that men face in combat. Rather, men's greatest fear going into battle, especially men going into battle for the first time, is that they will show themselves to be cowards (Dollard, 1944, pp. 18–19). Commenting on the American soldier in World War II, Stouffer and colleagues noted that combat is a "dare," and "one never knew for sure that he could take it until he had demonstrated that he could" (Stouffer et al., 1949, pp. 131–132). Showing cowardice in battle brought not just censure for cowardice itself; even more powerfully, "to fail to measure up as a soldier in courage and endurance was to risk the charge of not being a man."

Why do so many men fear cowardice even more than their own deaths? Primarily because of the "desire to appear a man amongst men," and battle is the "acid test." As Holmes (1985, pp. 142–143) puts it, "there are occasions when this desire to preserve status is quite literally stronger than the fear of death." The "status" that the soldier seeks is not a hierarchical status—in fact, it is unrelated to formal

military rank—but rather a kind of "membership" status. Unlike other situations in which men compete against each other for top positions, as in tribal or corporate politics (see Browne, 2002), men in combat units seek acceptance into the "band of brothers"; they seek acknowledgment of other men that they are valuable coalition partners. As Keegan (1993, p. 226) observed of the soldier, "It is the admiration of other soldiers that satisfies him—if he can win it."

Fear of not measuring up as a man, unlike fear of death or injury, is positively motivating, because it causes men to engage in behaviors that might hasten their death. Because women do not feel a man's need to be considered a "man among men," they are likely to be less inclined to expose themselves to the risk of death to achieve that respect. They may be motivated by a desire not to be labeled cowards, but that probably tends to be a relatively weak motivation for women, since to label a woman a "coward" is far less insulting than labeling a man one. Indeed, one seldom hears that label being attached to a woman. The dictionary defines "coward" as "one who shows disgraceful fear or timidity" (Merriam-Webster, 2005). We do not decline to label women cowards because they do not display fear or timidity but rather because we do not find women's fear or timidity disgraceful. Thus, the reluctance to label women cowards arises not because women are physically braver than men but because they are not and are not expected to be, a phenomenon captured by Aristotle's observation that "a man would be thought a coward if he had no more courage than a courageous woman" (Aristotle, 2000, p. 109). The reduced expectation of women's courage raises an additional problem, which is that because of the strong equality norms in combat units, the failure to expect much courage from female soldiers may have the effect of defining bravery down for all (Browne, 2007a, pp. 108–111).

In theory, average sex differences could be dealt with through improvements in personnel selection. As discussed previously, the physical disparity between men and women could be rendered largely irrelevant by the imposition of rigorous sex-neutral physical standards. Selection criteria might also be identified that would, on a wholesale basis, attempt to distinguish individuals who would also possess the requisite combination of risk taking, physical aggressiveness, and courage that would allow them to be lions in combat. Thus could a small cohort of women be created who were as physically and psychologically suited to ground combat as their male comrades.

Reality is different from theory, however. One of the truisms of combat is that it is never known before the shooting starts who will perform well and who will not (Marshall, 1947, p. 61; Richardson, 1978, p. 95). Good performance in training often does not translate to good performance in combat, and people who perform poorly in training may turn out to be masters of the battlefield. Moreover, no matter how accurate individual selection criteria might be made, there is another, more difficult problem: No matter what the individual attributes of a female warrior, she is still a woman, and her femaleness may affect a unit's effectiveness in a variety of ways, a problem obscured by an atomistic focus on individual traits. As we will see later, these group dynamics raise serious doubts about whether women can be fully integrated into male combat groups.

Differences in Single-Sex and Mixed-Sex Groups

Group dynamics are critical in combat, as a vast literature on combat motivation shows. Men fight for many reasons, but if any reason could be labeled primary, it is that they fight for their comrades with whom they have bonded. This bond—often characterized as “male bonding (Tiger, 1969)—is a powerful one. In addition to the “horizontal cohesion” that connects the “band of brothers” is the “vertical cohesion” between leaders and subordinates. The prospect of integration raises a number of questions that are critical to combat effectiveness. Do men have an innate predisposition to resist introduction of women into certain all-male groups even if the women possess as much strength, aggressiveness, and inclination to take risks as many men? Or, if men lack an inclination to actively resist their introduction, do they also lack the psychological mechanisms that will affirmatively facilitate inclusion of women in combat groups? Moreover, if women are eligible to be combat soldiers, they will also be eligible to be combat leaders, leading to the question of whether men are as inclined to follow a woman into battle as they are another man. It may be that for very fundamental reasons women do not evoke in men the same feelings of comradeship and “followership” that men do. Although the Standard Social Science Model (SSSM) view is that men and women, and male, female, and mixed-sex groups, are different only because of social learning, there is substantial reason to believe that something more fundamental is at play.

Male Coalitionary Psychology: The “Male Warrior Hypothesis”

All-male groups are common throughout the world—whether secret societies, warrior groups, street gangs, sports teams, or college fraternities. They are often involved with the use of force, which is virtually a male monopoly. Intergroup hostility and competition in humans occurs primarily between groups of men and can be activated (among men but not women) by even subtle cues of intergroup conflict (Yuki & Yokota, 2009), and in public-goods games, men, but not women, increase their group contribution when intergroup competition is activated (Van Vugt, De Cremer, & Janssen, 2007). Whereas women tend to form their identity based upon their relationships with other individuals, men are more likely to form their identity based upon the group (sports team, fraternity, etc.) to which they belong and are more likely to engage in costly sacrifice for their group (Gabriel & Gardner, 1999).

Where does this tendency of men to band together in circumstances of intergroup competition come from? It seems likely that our species' history of “frequent and violent intergroup conflict has shaped the social psychology and behavior of men in general” (Van Vugt et al., 2007). The “male-warrior hypothesis” of Van Vugt and colleagues posits that men possess a psychology that makes them more likely to engage in coalitionary behavior and intergroup rivalry than women, because of the reproductive benefits that coalition membership brought to ancestral males involved in conflicts with outgroups.

Sex differences in group behavior are observable even in children and suggest a phylogenetic history of such differences. A principal function of play in both humans and nonhumans is to prepare the individual for the challenges of adulthood (Parker, 1984). The spontaneous aggregation of boys into all-male groups, as well as the play hunting and fighting that these groups engage in—even when discouraged by adults—performs such a function in boys, just as play child care seems to for girls. By age 6, boys, but not girls, spontaneously form multichild groups, and much of their play takes place in such groups (Benenson, Apostoleris, & Parnass, 1997). Boys obtain substantial emotional rewards from this group play, despite its rough and dominance-oriented nature (Martin & Fabes, 2001), and the thrill-motivated risky play that children, especially boys, engage in seems to function to reduce anxiety associated with hazardous activities and allow

them to master dangerous situations (Sandseter & Kennair, 2011).

The tendency of boys to form coalitions in which they struggle for dominance is likely the result of an “evolved motivational disposition associated with coalitionary male-male competition” that prepares them for their traditional role (Geary, Byrd-Craven, Hoard, Vigil, & Numtee, 2003, p. 457). Moreover, many of the specific behaviors involved in boys’ play—running, throwing, and tracking projectiles—mirror skills important in primitive warfare. Thus, rough-and-tumble play in boys, including play fighting, serves the twin functions of providing experience in negotiation of dominance hierarchies and also in practicing specific behaviors useful in adulthood for engaging in intergroup competition. Most organized male sports also involve the strength (especially upper-body strength), speed, and throwing ability that would have been important in hunting and warfare (Lombardo, 2012), and the greater sport “fandom” displayed by males is probably a by-product of male coalitional psychology (Winegard & Deaner, 2010).

The banding together of males into all-male groups is not simply a consequence of a “formalized hostility” to women but in large part due to a “positive valence” between men (Tiger, 1969, p. xii). Consistent with the male warrior hypothesis, Tiger argued that men tend to bond most strongly in situations involving power, force, and dangerous work, and that they consciously and emotionally exclude females from these groups. These interpersonal effects are visible in a variety of male groups, including soldiers, police, and firefighters, and appear to be related to characteristic sex differences in group dynamics.

Sex Differences in Group Formation and Attachment

Males and females tend to self-organize into—and be most comfortable—in different kinds of groups. Men’s relationships tend to be broad, shallow, and activity centered, while women’s tend to be narrow, deep, and emotion centered. Accordingly, despite the stereotype of greater female sociality, men report significantly more close friends than women do (Vigil, 2007), they are more tolerant of same-sex peers than women (Benenson et al., 2009), and their friendships are more resistant to termination because of conflict than female friendships (Benenson & Alavi, 2004). Men have a lower threshold for creating large cooperative groups and can maintain them with lower levels of investment.

The flip side of that tendency explains the lack of persistence of the groups after their members physically separate, as male friendship tends to be “proximity and activity dependent” rather than “talk dependent,” as female friendships are (Gurian, 1999, pp. 48–49). This activity dependence led Gurian to characterize men’s friendships as “fragile,” yet it may be this very dynamic that allows the group bonding to occur in the first place, and it may contribute to the widely held belief that the “bonding” that cements soldiers is in fact “male bonding.” Male comradeship is sustained by proximity and shared tasks and experiences, and it is made stronger if the experience is a difficult and dangerous one (Gray, 1959, pp. 89–90). A man’s ability to work in a common endeavor with his comrades is not dependent upon his affection toward individual unit members, and male groups can be sustained even in the presence of internal conflict. What is required among the members is not affection but trust.

Female relationships are fragile in a different way from men’s, as they are emotionally deeper but at the same time more subject to disruption by conflicts. As Geary and Flinn (2002) have observed, if male coalitions required the same level of investment as female groups, they could not be sustained at their often large size. Women have a lower threshold for conflict and interpersonal slight (Vigil, 2007), and they are more likely to form exclusionary alliances and ostracize members of the group (Benenson, Antonellis, Cotton, Noddin, & Campbell, 2008; Benenson, Hodgson, Heath, & Welch, 2008), facts that are likely related to the greater difficulty that women have in cooperating with people (especially other women) they do not like (Fisher, 1999, pp. 43–44). In contrast, ostracism by males would be detrimental to the effectiveness of their large coalitions organized for warfare or big-game hunting. Female relationships are more egalitarian than those of males, and females are less comfortable with hierarchy than males are (Benenson & Schinazi, 2004), a tendency that seems to hold true even among military women (Browne, 2007a, pp. 165, 212–213). Although women value group membership, that is largely because it provides an opportunity to develop and maintain relational attachments, whereas men are more likely to value membership for the collective identity that it provides in addition to the individual relationships that it facilitates (Seeley, Gardner, Pennington, & Gabriel, 2003). Consistent with the notion that males may be more tightly bound to their groups, men have been found to be less likely than women

to defect from a group in the presence of intergroup competition in circumstances in which it is more individually beneficial to leave (Van Vugt & Park, 2010).

These differences in group structure and attachment may have substantial combat implications. The military is heavily dependent upon the cohesiveness of combat groups, and fostering the bond among soldiers is one of the primary objects of military training. The military structure deemphasizes individualism, and the soldier is “constantly reminded of his responsibilities to his buddies, to his leaders, to the squad, to the platoon, and ultimately to the people and the nation or party through the structure of his immediate unit” (Henderson, 1985, p. 18). Men’s greater valuing of collective identity would tend to strengthen the bonding of the group, thereby enhancing combat performance.

Cohesion and Combat Groups

It is common today to emphasize the quantitative and technological aspects of war, but it is wrong to think that material factors necessarily determine the outcome of a battle. The importance of the “moral factor” in combat has long been recognized. Xenophon observed two and a half millennia ago that “not numbers or strength brings victory in war; but whichever army goes into battle stronger in soul, their enemies generally cannot withstand them” (Xenophon, 1947, p. 64). Over 2,000 years later, Napoleon gave voice to the same thought in his famous observation that “in war the moral is to the material as three to one” (Heinl, 1966, p. 196).

Although a variety of influences can be important in motivating men to fight, there is a relatively broad consensus among those who have observed and studied the behavior of men in combat—and among those who have been in battle—that they fight primarily for their survival, for their immediate comrades, and for their standing in the eyes of those comrades. As Henderson (1985) has noted, “the only force strong enough to make the soldier willing to advance under fire is his loyalty to the small group and that group’s expectations that he will advance” (p. 107). The bond that cements this loyalty and holds groups of fighting men together is widely viewed by students of the military as critical to combat effectiveness. This bond, a combination of trust and reciprocal obligation (Ingraham & Manning, 1981), leads individuals to value the group more than they value themselves and inclines them to further group objectives at substantial peril to themselves. When men lack connection to a

bonded group, they are substantially less likely to persevere in the face of adversity (Shils & Janowitz, 1948).

A striking feature of men’s wartime memoirs is the deep emotional connection they had with their comrades, a connection often compared favorably in strength to the male–female bond. Caputo (1977, p. xvii) observed that “the communion between men is as profound as any between lovers.” Indeed, it is more so, he says, as “it does not demand for its sustenance the reciprocity, the pledges of affection, the endless reassurances required by the love of men and women.” This bond is paradoxical in that it is simultaneously intense and ephemeral. Unlike the male–female bond, which can endure—though not always easily—long periods of separation, the bond among fighting men is transitory, usually lasting only as long as the group is together. Moskos (1970) found, for example, that once a squad member left Vietnam to return home, he seldom contacted those remaining behind and they seldom contacted him (pp. 145–146). Thus, it may be wrong to characterize the bond that cements a cohesive group as “friendship,” as some do (MacCoun, Kier, & Belkin, 2006); indeed, it is not necessary that all members of the group even like each other.

Despite the US military’s current emphasis on diversity, one of the leading contributors to group cohesion is a set of “common attitudes, values, and beliefs” (Henderson, 1985, p. 75). Thus, psychological homogeneity within a squad is associated with greater combat effectiveness (Watson, 1978, pp. 116–117). Traditionally, part of the shared values for combat troops has been the bond of masculinity (Marlowe, 1983), a bond that women simply cannot share.

High levels of cohesion are associated with substantial benefits both to the individual and the group. Members of cohesive groups express less anxiety about physical dangers (Kellett, 1982, p. 45), and individuals who have strong group identification can withstand more physical pain (Buss & Portnoy, 1967). Group cohesion also seems to enhance psychological resilience and protect against PTSD (Brailey, Vasterling, Proctor, Constans, & Friedman, 2007), and it allows units to cope better with extended periods of sleeplessness in operations (Noy, 1991). Acts of heroism are also more likely to emerge from highly cohesive units than from less cohesive units (Gal & Gabriel, 1982). Squads exhibiting high cohesion have also been found to perform at a higher level than other squads (Goodacre, 1953), though

the arrow of causation no doubt points in both directions.

Although the importance of cohesion to military performance has been “a staple of military doctrine for 2500 years” (Manning, 1991, p. 456), the evidence from social science remains equivocal (Kier, 1998). As one leading researcher on military cohesion put it, “There is little consensus concerning the who, what, where, when, how, and why of cohesion” (Siebold, 1999, p. 6). Discussions of cohesion in the literature tend to fall into one of two categories: descriptions of an almost mystical force that is of central importance in combat, and descriptions of a dry sociological construct that is difficult to understand, let alone measure, and not obviously related to any particular outcome.

Most sociological and psychological studies on cohesion have been conducted in settings that do not closely mimic the combat environment. Many studies are performed on civilians (often college students), and those that have been conducted on military subjects have concentrated primarily on peacetime tasks. These studies have generally found that “social cohesion”—which is sometimes described as “interpersonal attraction”—is not positively correlated with group performance, while “task cohesion”—shared commitment to achieving goals—is correlated, albeit moderately, with performance (Mullen & Copper, 1994; Rostker, 1993, pp. 291–294). Though no doubt ignorant of these studies, soldiers appear to be aware of the difference between these forms of interpersonal relationship, as soldiers in effective units often choose different colleagues for combat tasks than they select to accompany on leave (Watson, 1978, p. 114). However, given the tendency of females to select their friends when picking teams for sports—rather than choosing the best player, as boys do (Evans, 1986)—that same behavior might not be true for women.

One problem with laboratory measures of cohesion is that they may not be capturing the relevant phenomenon (Manning & Fullerton, 1988). Cohesion is viewed by the military as a “performance enabler” rather than a “performance enhancer” (Griffith, 2007). Rather than enhancing technical performance, it correlates with military performance “by maintaining the organized group at its tasks in the face of severe stresses of battle” (Marlowe, 1979, as cited in Griffith, 2007). Because sociological studies of cohesion generally do not take place in particularly stressful conditions, their results may substantially underestimate the importance of

cohesion in the primary circumstances in which it really matters.

As the technology of war develops, cohesion becomes more critical but also more difficult to achieve. In Napoleon’s day, soldiers acted under the close watch of their superiors, standing shoulder to shoulder with their comrades and drawing strength from their presence (Henderson, 1985, p. 107). Today, however, direct control of troops has become more difficult and soldiers operate more independently. Urban warfare, such as that conducted in Iraq, negates some of the technological edge of modern armies and requires dispersal into small groups, magnifying the importance of the individual soldier and his small group. Indeed, according to Scales (2005), “the isolation inherent in urban fighting... requires a degree of small-unit cohesion never before seen in the American military” (p. 16).

If men and women are socially interchangeable, then inclusion of women in combat groups should not change this fundamental dynamic. There is strong reason to believe, however, that inclusion of women in groups of men actually does alter group dynamics and quite likely in the direction of reduced cohesion and therefore lesser combat effectiveness.

Sexual Integration and Cohesion

Studies of performance of sexually integrated non-combat units suggest that inclusion of women in combat units may disrupt unit cohesion. Rosen et al. (1996), for example, found a significant negative correlation between cohesion and the percentage of women in a group of junior enlisted personnel, although a subsequent study disclosed no such relationship (Rosen & Martin, 1997). A review of five separate studies—three on deployments (in the Persian Gulf, Somalia, and Haiti) and two garrison studies—found in four of the five studies that the more women in the unit, the lower the cohesion (Rosen et al., 1999). In the deployment studies, the negative impact of women correlated with the extent of physical danger, being most pronounced in Somalia, where the risk of coming under fire was greatest; only moderate in the Persian Gulf, where the risk was somewhat less; and neutral to mildly positive in Haiti, where the risk was virtually nil.

The dynamics of cohesion differ between the field and garrison, calling into question the generalizability of many of the military cohesion studies to integration of combat units. Increased time in the field tends to be positively correlated with “group hypermasculinity”—defined as “expressions

of extreme, exaggerated, or stereotypic masculine attributes and behaviors”—in both all-male groups and mixed-sex groups (Rosen, Knudson, & Fancher, 2003, p. 326). In mixed-sex groups, field duty time is associated with decreased acceptance of women, probably because the field environment tends “to emphasize ‘warrior’ values of toughness, independence, and aggression” (p. 343). In male-only groups, hypermasculinity is associated with both increased vertical and horizontal cohesion and readiness. Rosen and colleagues have concluded that military effectiveness is positively associated with a culture of hypermasculinity and that “ungendered professionalism,” which has positive effects in the garrison environment, “may be difficult to maintain in the field where a warrior culture is likely to develop, a culture that may be necessary for the successful accomplishment of the mission” (p. 345).

Substantial numbers of military men (and women) share the view that inclusion of women impairs cohesion (Presidential Commission, 1992, pp. 29, 66). Even in the Air Force, the service with the most women, a third of male pilots expressed the view that women should not fly in combat, their primary concerns being that women would destroy unit cohesion, that they are more emotional and less aggressive than men, and that they are a distraction to male aircrew members (Voge & King, 1997). A survey at the Air Force Academy almost three decades after its sexual integration found that 40% of cadets, both male and female, believed that physical and psychological differences between the sexes mean that women will never be completely accepted in the military, and 20% of male cadets believed that women should not be at the Academy at all (Gray, Smith, & Luedtke, 2004).

If women tend to decrease the cohesion of combat groups, it is important to understand the mechanism by which this occurs. One major contributor seems to be that it is difficult for men to trust women in dangerous circumstances.

Cohesion and Trust

Trust is central to cohesive combat units (Ingraham & Manning, 1981), as it is to all sorts of relationships. Cottrell, Neuberg, and Li (2007) found that across group types, “trustworthiness” is of paramount value, more important, in fact, than cooperativeness. Interpersonal trust, they suggest, “may be foundational to the development and maintenance of all close relationships” (p. 227). Application of the theory of reciprocal altruism to warfare suggests that “the cohesion of war-making

coalitions composed of distantly or unrelated kin will be based on the perceived likelihood or trust that support in conflicts will be reciprocated in the future” (Patton, 2000, p. 421).

Assessment of the value of peers focuses on both the capacity to provide desirable resources and the likelihood that they will make those resources available (Vigil, 2007). Thus, combat compatriots must have trust in both their comrades’ willingness and their ability to satisfy their obligations. The earnest assurance “I’ve got your back” is a cheap signal that is worth little in the absence of the courage, toughness, and skill to deliver on the promise. Conversely, all the courage and strength in the world are worth little to a soldier’s comrades if he lacks the disposition to risk death in support of them. Trust among soldiers “is characterized by the willingness to put oneself at risk because of confidence that the other person will do what is expected of him or her” (Ruark, Orvis, Horn, & Langkamer, 2009, p. 1925). Thus, the concern of military men about sexual integration involves both aspects of trust, as many are concerned that a woman will not have the physical wherewithal to support the mission or her comrades, while others are concerned that a woman would be insufficiently aggressive and thus fail to provide the support that a man would (Browne, 2007a).

The need for trust increases with danger, as individuals become increasingly interdependent. This tendency may explain the increasing strength of the same-sex preference among boys as their groups roam farther from home (Maccoby, 1998), as well as male soldiers’ preference for male comrades. A soldier’s trust in his commander and comrades has been described as “the most important factor for security” (Noy, 1991, p. 518). The especially negative attitudes to sexual integration expressed by soldiers in combat specialties is explainable by this tendency (Browne, 2007a, pp. 148–149), as may be the cool reception of women in dangerous civilian occupations, such as in police work and firefighting (Browne, 2007a, pp. 284–285).

Assessment of trustworthiness involves more than passive evaluation. Hazing of new members is common in groups facing danger, and an individual’s reaction to hazing affects the extent to which he is accepted by the group (Josefowitz & Gadon, 1989). Women, even military women, are less likely to view hazing as a permissible method of encouraging group cohesion (Pershing, 2006) and, consistent with a pattern that begins in childhood, are more likely to complain to authority figures. This reaction

is typically perceived as disloyal to the group and interferes with the development of trust.

There is reason to believe that men's lack of trust in female comrades has evolutionary roots. The decision whether to trust a potential combat comrade—or a comrade in other dangerous cooperative enterprises, such as big-game hunting—is a consequential one that would have recurred over evolutionary time. Just as indicators of prowess as a warrior and hunter—dominance, strength, and courage—are attractive to women seeking mates (Buss, 1994, pp. 38–40; Farthing, 2007), they would also be attractive to men seeking coalition partners (Sugiyama, 2005, p. 305). Men who were as willing to stand shoulder to shoulder in battle or on the hunt with weak and cowardly men—or with women—as they were with strong and brave men would probably have found themselves at a substantial disadvantage.

Haselton and Funder (2006) have suggested that “an evolved propensity for accurate personality judgment” would likely have arisen for traits important to survival and reproduction (p. 31). Even many nonhuman species exhibit specific biases in partner preferences. According to Dugatkin and Sih (1995, p. 273), “we expect partner choice to be more likely to occur in situations where the identity of one's partner has a great effect on fitness.” Indeed, they show that in a number of fish species, for example, individuals prefer to associate with others who have shown themselves trustworthy in foraging or anti-predator behavior, a pattern also observed in chimpanzees (Melis, Hare, & Tomasello, 2006).

In formation of the bonds of cohesion in our evolutionary past, males and females were not interchangeable. Most females would be pregnant, nursing, or caring for children most of the time and therefore would be unable to participate effectively in big-game hunting or warfare (Tiger, 1969, pp. 44–45). Those who did would risk the loss of their offspring, born or unborn (Campbell, 1999). Moreover, men who permitted women to join their ventures would also be at a disadvantage, because women would be less valuable contributors and their presence could disrupt the cooperative nature of the enterprise by engendering competition among the men for sexual access to the women.

The cause of men's trust or lack thereof may not be consciously accessible to them. Trust decisions are “fast, shallow, and context-sensitive” (Messick and Kramer, 2001, p. 98); that is, they are not the product of systematic processing but instead derive from rules of thumb of which we are largely

unaware. Thus, men would be expected to make judgments, even if at a less than conscious level, about whom to trust in combat based on the extent to which the potential comrade displays attributes associated with effective warriors in the past, just as men make similarly intuitive assessments of potential mates without making conscious judgments about fertility. In assessing trustworthiness, whether consciously or not, men are likely to be particularly attentive to attributes of potential comrades that pose a threat to the combat unit, including their membership in groups that are perceived as posing such threats, such as women, for whom well-known stereotypes involve weakness and timidity.

Negative feelings about the prospect of female combat comrades do not necessarily reflect generalized hostility toward women. Cottrell and Neuberg (2005) have shown that rather than being an undifferentiated negative attitude toward a group, prejudice is a more nuanced phenomenon. The negative emotion that a particular group elicits turns on the nature of the perceived threat. They suggest that people who are highly dependent upon their groups (as combat soldiers are) are “especially attuned to potential threats to reciprocity,” and their vigilance “must be accompanied by psychological responses that function to minimize—or even eliminate—recognized threats and their detrimental effects” (p. 771). These results are consistent with the fact that men may simultaneously have positive views of women in noncombat military positions and strongly negative views about their service in combat, as it is in the latter case that women may pose the greatest risk to the group's well-being. Perhaps significantly, female soldiers are even less likely than male soldiers to want to work with women (Rosen et al., 1996; Sion, 2001).

The uncertainty involved in making judgments about whom to trust—decisions that are more intuitive than cognitive—means that these judgments are prone to error, and, according to error management theory (Haselton & Buss, 2000), these errors are not likely to be random. The decision of whom to trust in coalitions organized to mete out violence is one that is fraught with serious fitness consequences. Moreover, it is a judgment that likely carries with it asymmetric costs of error. Declining to trust a potential comrade who in fact would have performed well would probably tend, on average, to be less costly than trusting a comrade who performs poorly. One would suppose, then, that the default position is not to trust potential combat comrades. That is one of the central reasons that units train

together—to develop trust—and an initial disposition to distrust is probably the primary reason that it takes time and experience for new members of units to gain the trust of their comrades.

Attributes of Individuals Whom Men Identify as Effective Soldiers

As would be predicted, combat soldiers do have strong preferences concerning their comrades, and they do not trust other soldiers, even male ones, indiscriminately. It seems that soldiers somehow pick up on signals from other men indicating their combat capability even if they have not witnessed their combat performance. Immediately after combat in Korea ended in 1953, about 300 men were classified as either “fighters” or “nonfighters” by their peers, judgments that were validated through independent verifications of the combat incidents that served as the basis for the classification (Berkun & Meeland, 1958). These men were placed in groups of 15 to 18 men each, such that no group member knew any other member of his group. Those designated “fighters” and “nonfighters” were mixed together, but nobody knew about these designations or the purpose of the study. Each group then lived together for a week of psychological testing. At the end of that week, they were asked to identify the two men they would most and least like to have next to them in combat or leading them in combat. Fighters overwhelmingly chose other fighters as most suitable, both as combat comrades and leaders, and nonfighters chose fighters as the most suitable combat leaders. Fighters and nonfighters alike identified nonfighters as least suitable as comrades and leaders. The researchers concluded, “Obviously some observable manifestation correlated with fighter status served as the basis for these judgments” (p. 148).

More masculine men are judged by their peers to be more effective fighters than less masculine men. A study of combat performance in the Korean War found that the five main factors distinguishing good fighters were, in decreasing order of importance, leadership, masculinity, intelligence, sense of humor, and emotional stability (Egbert et al., 1957, as cited in Binkin, 1993, p. 39). The attributes of effective fighters ranged from calmness under fire to “the highest kind of daring and bravery,” while the attributes of ineffective fighters included firing at imaginary objects, failing to fire, and running away under fire (Egbert, 1954).

Supporting the existence of a male preference for comrades who would have been effective hunters or

fighters is the finding that even civilian men have a preference for same-sex friends who are physical risk takers (Farthing, 2005), as both hunting and warfare often reward the bold (although not necessarily the “overly bold” or reckless) and penalize the timid. Both men and women have a preference for same-sex friends who are willing to take “heroic” physical risks—such as rescuing someone endangered by fire—although men’s preference for such friends is much higher than women’s. Even with respect to “nonheroic” risks—such as dangerous sports—men have a preference for risk takers, in contrast to women’s preference for same-sex friends who avoid such risks. These tendencies are consistent with the finding of Lewis et al. (2011, p. 554) that “friend selection in male-male dyads—even in modern conditions—revolved around characteristics that would have facilitated hunting and warfare in ancestral environments.”

The long-standing link between warfare and masculinity appears to have hormonal correlates. Gimbel and Booth (1996) found, long after the Vietnam War, a positive correlation between testosterone levels and extent of combat exposure among Vietnam veterans. They found that testosterone had a positive effect on assignment to the combat arms, and that among those in the combat arms, it had a positive effect on the extent of combat exposure they experienced. These findings suggest that Army assignment policies somehow tended to select more masculine soldiers for combat duty.

Leadership

Beyond the question of women as combat comrades is the question of women combat leaders. Women leading men in combat (or in any other dangerous endeavor) would have been unusual in our evolutionary past, and it is unlikely that male and female psychologies have evolved in ways that make the vertical cohesion between female leader and male follower any more likely—and perhaps even less likely—than the horizontal cohesion that occurs within groups of soldiers. Men’s desire for a “man of steel” as a leader (Henderson, 1985, p. 114) would have been adaptive in a time when most combat was face to face and at close range, and it probably remains so today. Men have never faced any adaptive pressure to follow women into battle, so it would not be surprising if male psychology is not designed to make that an easy behavior to evoke.

There is, in fact, good reason to believe that in at least some contexts women may not evoke

followership behavior (in either men or women) to the same extent that men do (Eagly, Karau, & Makhijani, 1995; Eagly, Makhijani, & Klonsky, 1992; Rice, Bender, & Vitters, 1980). Even in early childhood, girls find it difficult to influence boys, and frustration with that lack of influence may be a major contributor to the tendency of boys and girls to separate into single-sex groups (Maccoby, 1990). In the civilian sector, women supervisors are usually trusted less by both men and women, and men and women often prefer male supervisors to female supervisors, with women's preference for a male supervisor often being stronger than men's (Jeanquart-Barone & Sekaran, 1994; Eagly & Karau, 2002), although the magnitude of the preference for a male boss has diminished somewhat over the last few decades (Eagly, 2007). Both male and female subordinates have a more negative reaction to the imposition of discipline by female superiors than by male superiors (Atwater, Carey, & Waldman, 2001).

Studies of leadership emergence and preferences have found substantial sex differences, especially in areas that would be relevant to combat leadership. Men tend to emerge more frequently in initially leaderless groups when leadership is defined by contribution to the group's task, while women tended to emerge more frequently as "social leaders," although the preference for male task leadership is reduced to the extent that the task is considered "feminine" (Eagly & Karau, 1991). Even though military groups tend to be the diametric opposite of leaderless given the clearly understood hierarchy of formal rank, leadership can emerge in combat independent of rank when the designated leader is weak (Stouffer et al., 1949, p. 117). Leadership preferences are condition dependent, with there being a strong preference for male leaders under conditions of intergroup competition (Van Vugt & Spisak, 2008).

Men and women also often exhibit different leadership styles, a fact that also has implications for combat leadership. Men are more likely to adopt an autocratic or directive style and women to adopt a democratic or participatory style (Eagly & Johnson, 1990). Yet, in combat groups, democratic leadership may destroy group solidarity (Shils, 1951). Although women's tendency to adopt a democratic leadership style is weakened in settings that are highly male dominated, Eagly and Johnson (1990) found that women who adopt an authoritarian style of leadership tend to be devalued as leaders. Although the bulk of studies evaluating the effectiveness of

leaders have found men and women to be equivalent in their effectiveness, military studies (which have been limited to noncombat activities) "deviated strongly from all other classes of studies" (Eagly et al., 1995, p. 135). These peacetime studies, it should be noted, almost certainly understate the size of sex differences related to combat-leadership effectiveness.

Both men and women in military training associate male cadets more with leader-like qualities, such as leadership, self-confidence, dedication, and physical fitness (Boldry, Wood, & Kashy, 2001). Even men who hold—or at least profess—egalitarian views, often display visible signs of negative feelings toward female leaders (Rice et al., 1980). Although experience with being led by female commanders might be supposed to reduce men's sexual stereotyping of military leadership, in fact the opposite seems to occur. A study at the Air Force Academy found that male cadets' seniority and experience with women increased, rather than decreased, masculine stereotyping (Boyce & Herd, 2003). Peer perceptions of women's lack of military leadership potential have led the service academies to eliminate peer ratings of leadership—despite the fact that peers are often better judges of leadership ability than superiors (Watson, 1978, pp. 160–161)—because women consistently received lower ratings than men (Mitchell, 1998, p. 63; Rice, Yoder, Adams, Priest, & Prince, 1984). Because combat leaders must evoke followership under conditions that may result in the death of the follower, the stakes of leadership effectiveness are at their peak, and less than full confidence in the leader can have fatal consequences.

Men's Distrust of Female Comrades May Be Resistant to Change

If the proximate triggers that lead to trust among comrades and in leaders are ones that are associated with men and masculinity, it may be difficult to overcome the hurdle of initial distrust of female comrades. That is, if men's aversion to women in combat units reflects an evolved biological predisposition rather than merely being a product of social learning, it may be more resistant to modification than proponents of integration have assumed. This would likely be true even if the reasons that selection favored the aversion have disappeared. That is, even if it were true that changes in the nature of warfare have made women equally competent comrades and even if women displayed the same leadership behaviors as men, the factors that trigger trust are ones that evolved over the course of evolutionary

history, not necessarily ones that are predictive of competence today.

Decision-making processes are designed to be attentive to the kinds of information that were available in the environment in which the mind evolved (Haselton & Funder, 2006). In considering men's resistance to female comrades, an analogy to mate preferences may be instructive. We have no difficulty understanding that a man's sexual attraction to a beautiful 25-year-old known to be infertile is likely to be substantially greater than to a 45-year-old who, with the assistance of modern medicine, possesses the fertility of a 25-year-old notwithstanding her age-appropriate appearance. It is not actual fertility that is the proximate trigger of sexual attraction, but rather possession of visible attributes that have been markers of fertility over evolutionary time. Similarly, good grades at a military academy or impressive performance on a paper-and-pencil personality test—even if they were truly valid predictors of combat capability—are likely to carry far less weight with potential comrades than the indicia of masculinity that have been important over our evolutionary history, such as courage, dominance, and physical capacity. So, even if there is a logical reason for men to trust women, women may not embody the proximal triggers of that trust, meaning that they may not be trusted despite their fitness for combat.

Men's disinclination to trust female comrades may be easily reinforced by a small amount of adverse experience but not easily extinguished by a lot of good experience. "Biologically prepared" emotions are not only easier to acquire but also harder to extinguish, as experience with biologically prepared fears has shown (Öhman & Mineka, 2001). Sworn statements from a hundred health inspectors that a taco stand's food is wholesome may not be sufficient to outweigh the negative experience of food poisoning from one bad taco.

In sum, men seem to be psychologically predisposed not to welcome women into combat groups, and the expectation that they will accommodate may be overly optimistic. Military training, which already presents so many challenges, may face the ultimate challenge if it attempts to undo this tendency, which seemingly has origins deep within men.

Conclusion

Sexual integration of combat forces presents obstacles that may not be obvious to those steeped in the SSSM view of human psychology. The

assumption that military discipline will overcome all impediments to inclusion of women in combat units may be naive. The US military has been plagued by a succession of sex scandals, for example, even when women were not included in most, or any, combat units (Browne, 2007b). The assumption that integration will succeed because "combatants follow orders" (Shields, Curry, & Nichols, 1990, p. 24) neglects the fact that although the military can compel or forbid certain behaviors, it is far more limited in its ability to coerce changes in feelings of its personnel. As one Marine Corps officer has noted, "units cannot be ordered to 'be cohesive'" (McBreen, 2002, p. 11). Similarly, the military cannot force men to trust women or ignore the physical and psychological differences between the sexes.

Even if it is accepted that women may undermine combat effectiveness, it does not necessarily follow that they should be excluded from combat. Some argue that excluding women from combat on the rationale that they would weaken the military inappropriately elevates the common good of national defense over individual rights (Addis, 1994, pp. 3–4; Peach, 1996, p. 165). That is an argument that science cannot resolve, as it revolves around contestable values. What science can do, however, is provide insights about difficulties that particular policies may create and, potentially, help guide decision makers in their formulation and implementation of policies, whatever they might be.

Future Directions

A number of issues covered in this chapter could be illuminated with better data:

- Laboratory studies of such traits as risk taking, aggression, and fear tend to reveal smaller sex differences than revealed by real-world observations of actual behavior. Ethical constraints on treatment of research subjects obviously preclude too much realism, but it appears that laboratory measures have far to go in capturing phenomena of real-world interest.
- Although combat soldiers seem to have definite preferences concerning desirable comrades and are moved to trust some comrades more than others, there is relatively little data on the subject, and much of it dates back to the Korean War or before. The large pool of experienced combat soldiers created by the wars in Iraq and Afghanistan provides an opportunity for further study.

- Better data on the effect of cohesion on military performance are needed. Most existing research is aimed at measuring whether cohesion enhances performance outside of the combat arena. Yet, if the function of cohesion is not to act as a global performance enhancer, but rather to enable performance under severe combat stress, the current literature on cohesion does not measure the cohesion–performance relationship where it really matters.

- Although women in the US military are not assigned to ground combat positions, they have recently been exposed to combat, providing an experience base from which some conclusions might be reached. Unfortunately, however, the military has been relatively steadfast in not releasing—and in many cases not even collecting—data that might reflect on women’s performance (Browne, 2007a, pp. 216–217, 220–222). Despite the fact that large numbers of female military personnel in Iraq were shipped home because of pregnancy, for example, the Army has announced that it was “not tracking” that data (Browne, 2007a, p. 245). If systematic and objective data on women’s performance in combat situations exist, they might shed light on the effects of women’s integration into combat units.

References

- Addis, E. (1994). Women and the economic consequences of being a soldier. In E. Addis, V. E. Russo, & L. Sebesta (Eds.), *Women soldiers: Images and realities* (pp. 3–27). New York: St. Martin’s Press.
- Addis, E., Russo, V. E., & Sebesta, L. (1994). Introduction. In E. Addis, V. E. Russo, & L. Sebesta (Eds.), *Women soldiers: Images and realities* (pp. xi–xxiv). New York: St. Martin’s Press.
- Archer, J. (2004). Sex differences in aggression in real-world settings: A meta-analytic review. *Review of General Psychology*, 8, 291–266.
- Archer, J. (2009). Does sexual selection explain human sex differences in aggression? *Behavioral and Brain Sciences*, 32, 249–311.
- Aristotle. (2000). *Politics* (B. Jowett, Trans.). New York: Dover.
- Atwater, L. E., Carey, J. A., & Waldman, D. A. (2001). Gender and discipline in the workplace: Wait until your father gets home. *Journal of Management*, 27, 537–561.
- Baron-Cohen, S., & Wheelwright, S. (2004). The empathy quotient: An investigation of adults with Asperger Syndrome or high functioning autism, and normal sex differences. *Journal of Autism and Developmental Disorders*, 34, 163–175.
- Becker, S. W., & Eagly, A. H. (2004). The heroism of women and men. *American Psychologist*, 59, 163–178.
- Benenson, J. F., & Alavi, K. (2004). Sex differences in children’s investment in same-sex peers. *Evolution and Human Behavior*, 25, 258–266.
- Benenson, J. F., Antonellis, T. J., Cotton, B. J., Noddin, K. E., & Campbell, K. A. (2008). Sex differences in children’s formation of exclusionary alliances under scarce resource conditions. *Animal Behaviour*, 76, 497–505.
- Benenson, J. F., Apostoleris, N. H., & Parnass, J. (1997). Age and sex differences in dyadic and group interaction. *Developmental Psychology*, 33, 538–543.
- Benenson, J. F., Hodgson, L., Heath, S., & Welch, P. J. (2008). Human sexual differences in the use of social ostracism as a competitive tactic. *International Journal of Primatology*, 29, 1019–1035.
- Benenson, J. F., Markovits, H., Fitzgerald, C., Geoffroy, D., Flemming, J., Kahlenberg, S. M., & Wrangham, R. W. (2009). Males’ greater tolerance of same-sex peers. *Psychological Science*, 20, 184–190.
- Benenson, J. F., & Schinazi, J. (2004). Sex differences in reactions to outperforming same-sex friends. *British Journal of Developmental Psychology*, 22, 317–333.
- Berkun, M., & Meeland, T. (1958). Sociometric effects of race and of combat performance. *Sociometry*, 21, 145–149.
- Binkin, M. (1993). *Who will fight the next war: The changing face of the American military*. Washington, DC: Brookings Institution.
- Boldry, J., Wood, W., & Kashy, D. A. (2001). Gender stereotypes and the evaluation of men and women in military training. *Journal of Social Issues*, 57, 689–705.
- Boulton, M. J. (1993). Aggressive fighting in British middle school children. *Educational Studies*, 19, 19–39.
- Boulton, M. J. (1996). A comparison of 8- and 11-year-old girls’ and boys’ participation in specific types of rough-and-tumble play and aggressive fighting: Implications for functional hypotheses. *Aggressive Behavior*, 22, 271–287.
- Boyce, L. A., & Herd, A. M. (2003). The relationship between gender role stereotypes and requisite military leadership characteristics. *Sex Roles*, 49, 365–378.
- Brailey, K., Vasterling, J. J., Proctor, S. P., Constans, J. I., & Friedman, M. J. (2007). PTSD symptoms, life events, and unit cohesion in U.S. soldiers: Baseline findings from the Neurocognition Deployment Health Study. *Journal of Traumatic Stress*, 20, 495–503.
- Brightman, R. (1996). The sexual division of foraging labor: Biology, taboo, and gender politics. *Comparative Studies in Society and History*, 38, 687–729.
- Browne, K. (2002). *Biology at work: Rethinking sexual equality*. New Brunswick, NJ: Rutgers University Press.
- Browne, K. (2007a). *Co-ed combat: The new evidence that women shouldn’t fight the nation’s wars*. New York: Sentinel.
- Browne, K. (2007b). Military sex scandals from Tailhook to the present: The cure can be worse than the disease. *Duke Journal of Gender Law and Policy*, 14, 749–789.
- Bureau of Labor Statistics. (2003). *Fatal occupational injuries by worker characteristics and event of exposure, all United States, 2002*. Retrieved December 2011, from <http://www.bls.gov/iif/oshwc/cfoi/cfb0161.pdf>
- Buss, A. H., & Portnoy, N. W. (1967). Pain tolerance and group identification. *Journal of Personality and Social Psychology*, 6, 106–108.
- Buss, D. M. (1994). *The evolution of desire: Strategies of human mating*. New York: Basic Books.
- Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk-taking: A meta-analysis. *Psychological Bulletin*, 125, 367–383.
- Campbell, A. (1999). Staying alive: Evolution, culture, and women’s intrasexual aggression. *Behavioral and Brain Sciences*, 22, 203–252.

- Campbell, A., & Muncer, S. (1994). Sex differences in aggression: Social representation and social roles. *British Journal of Social Psychology, 33*, 233–240.
- Caputo, P. (1977). *A rumor of war*. New York: Henry Holt.
- Chagnon, N. A. (1988). Life histories, blood revenge, and warfare in a tribal population. *Science, 239*, 985–992.
- Connolly, B., & Anderson, R. (1987). *First contact: New Guinea's highlanders encounter the outside world*. New York: Viking.
- Cottrell, C. A., & Neuberg, S. L. (2005). Different emotional reactions to different groups: A sociofunctional threat-based approach to "prejudice." *Journal of Personality and Social Psychology, 88*, 770–789.
- Cottrell, C. A., Neuberg, S. L., & Li, N. P. (2007). What do people desire in others? A sociofunctional perspective on the importance of different valued characteristics. *Journal of Personality and Social Psychology, 92*, 208–231.
- D'Andrade, R. G. (1966). Sex differences and cultural institutions. In E. E. Maccoby (Ed.), *The development of sex differences* (pp. 174–204). Stanford, CA: Stanford University Press.
- De Groot, G. J. (1995). Women warriors. *Contemporary Review, 266*, 257–260.
- Del Giudice, M. (2009). On the real magnitude of psychological sex differences. *Evolutionary Psychology, 7*, 264–279.
- Dollard, J. (1944). *Fear in battle*. New York: AMS Press.
- Dugatkin, L. A., & Sih, A. (1995). Behavioral ecology and the study of partner choice. *Ethology, 99*, 265–277.
- Eagly, A. H. (2007). Female leadership advantage and disadvantage: Resolving the contradictions. *Psychology of Women Quarterly, 31*, 1–12.
- Eagly, A. H., & Johnson, B. T. (1990). Gender and leadership style: A meta-analysis. *Psychological Bulletin, 108*, 233–256.
- Eagly, A. H., & Karau, S. J. (1991). Gender and the emergence of leaders: A meta-analysis. *Journal of Personality and Social Psychology, 60*, 685–710.
- Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. *Psychological Review, 109*, 573–598.
- Eagly, A. H., Karau, S. J., & Makhijani, M. G. (1995). Gender and the effectiveness of leaders: A meta-analysis. *Psychological Bulletin, 117*, 125–145.
- Eagly, A. H., Makhijani, M. G., & Klonsky, B. G. (1992). Gender and the evaluation of leaders: A meta-analysis. *Psychological Bulletin, 111*, 3–22.
- Egbert, R. L. (1954, October). Profile of a fighter. *Infantry School Quarterly*, pp. 46–51.
- Egbert, R. L., Meeland, T., Cline, V. B., Forgy, E. W., Spickler, W. S., & Brown, C. (1957). *Fighter I: An analysis of combat fighters and non fighters*. Technical Report 44. Presidio of Monterey, CA: U.S. Army Leadership Human Research Unit.
- Eibl-Eibesfeldt, I. (1979). *The biology of peace and war: Men, animals, and aggression*. New York: Viking Press.
- Evans, J. (1986). Gender differences in children's games: A look at the team selection process. *CAHPER Journal, 52*(5), 4–9.
- Farthing, G. W. (2005). Attitudes toward heroic and nonheroic physical risk takers as mates and as friends. *Evolution and Human Behavior, 26*, 171–185.
- Farthing, G. W. (2007). Neither daredevils nor wimps: Attitudes toward physical risk takers as mates. *Evolutionary Psychology, 5*, 754–777.
- Fessler, D. M. T., Pillsworth, E. G., & Flamson, T. J. (2004). Angry men and disgusted women: An evolutionary approach to the influence of emotions on risk-taking. *Organizational Behavior and Human Decision Processes, 95*, 107–123.
- Fisher, H. (1999). *The first sex: The natural talents of women and how they are changing the world*. New York: Random House.
- Fox, J. A., & Zawitz, M. W. (2006). *Homicide trends in the United States*. Washington, DC: US Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.
- Gabriel, S., & Gardner, W. L. (1999). Are there "his" and "hers" types of interdependence? The implications of gender differences in collective versus relational interdependence for affect, behavior, and cognition. *Journal of Personality and Social Psychology, 77*, 642–655.
- Gal, R., & Gabriel, R. A. (1982). Battlefield heroism in the Israeli Defense Force. *International Social Science Review, 57*, 232–235.
- Geary, D. C., Byrd-Craven, J., Hoard, M. K., Vigil, J., & Numtee, C. (2003). Evolution and development of boys' social behavior. *Developmental Review, 23*, 444–470.
- Geary, D. M., & Flinn, M. V. (2002). Sex differences in behavioral and hormonal response to social threat: Commentary on Taylor et al. (2000). *Psychological Review, 109*, 745–750.
- Gimbel, C., & Booth, A. (1996). Who fought in Vietnam? *Social Forces, 74*, 1137–1157.
- Goodacre, D. M., III. (1953). Group characteristics of good and poor performing combat units. *Sociometry, 16*, 168–179.
- Gray, D., Smith, H., & Luedtke, C. (2004). *Fall 2004 Cadet Climate Survey*. Colorado Springs, CO: US Air Force Academy. Retrieved December 2011, from <http://www.usafa.edu/superintendent/pa/Fall2004CadetClimateSurvey12-oct-04.pdf>
- Gray, J. G. (1959). *The warriors: Reflections of men in battle*. New York: Harper & Row.
- Griffith, J. (2007). Further considerations concerning the cohesion-performance relation in military settings. *Armed Forces & Society, 34*, 138–147.
- Gullone, E., & King, N. J. (1997). Three-year follow-up of normal fear in children and adolescents aged 7 to 18 years. *British Journal of Developmental Psychology, 15*, 97–111.
- Gurian, M. (1999). *A fine young man: What parents, mentors, and educators can do to shape adolescent boys into exceptional men*. New York: Putnam.
- Harrell, M. C., & Miller, L. L. (1997). *New opportunities for military women: Effects upon readiness, cohesion, and morale*. Santa Monica, CA: RAND.
- Haselton, M. G., & Buss, D. M. (2000). Error management theory: A new perspective on biases in cross-sex mind reading. *Journal of Personality and Social Psychology, 78*, 81–91.
- Haselton, M. G., & Funder, D. C. (2006). The evolution of accuracy and bias in social judgment. In M. Schaller, J. A. Simpson, & D. T. Kenrick (Eds.), *Evolution and social psychology* (pp. 15–37). New York: Psychology Press.
- Heinl, R. D., Jr. (1966). *Dictionary of military and naval quotations*. Annapolis, MD: Naval Institute Press.
- Henderson, W. D. (1985). *Cohesion: The human element in combat*. Washington, DC: National Defense University Press.
- Henriksen, R. (2007). Warriors in combat—What makes people actively fight in combat? *Journal of Strategic Studies, 30*, 187–223.
- Hewlett, B. S. (1988). Sexual selection and paternal investment among Aka pygmies. In L. Betzig, M. Bergerhoff Mulder, & P. Turke (Eds.), *Human reproductive behaviour: A Darwinian perspective* (pp. 263–276). Cambridge, England: Cambridge University Press.

- Holmes, R. (1985). *Acts of war: The behavior of men in battle*. New York: Free Press.
- Huston, T. L., Ruggiero, M., Conner, R., & Geis, G. (1981). Bystander intervention into crime: A study based on naturally-occurring episodes. *Social Psychology Quarterly*, 44, 14–23.
- Ingraham, L. H., & Manning, F. J. (1981). Cohesion: Who needs it, what is it? *Military Review*, 59(6), 2–12.
- International Sailing Federation (2002, May 8). US sailing to present rescue award at university graduation ceremony. Retrieved January 2012, from <http://www2.sailing.org/default.asp?ID=j/2F9tzC&format=popup>
- Jeanquart-Barone, S., & Sekaran, U. (1994). Effects of supervisor's gender on American women's trust. *Journal of Social Psychology*, 134, 253–255.
- Johnson, R. C. (1996). Attributes of Carnegie medalists performing acts of heroism and of the recipients of those acts. *Ethology and Sociobiology*, 17, 355–362.
- Josefowitz, N., & Gadon, H. (1989, May). Hazing: Uncovering one of the best-kept secrets of the workplace. *Business Horizons*, pp. 22–26.
- Keegan, J. (1993). *A history of warfare*. New York: Alfred Knopf.
- Kellett, A. (1982). *Combat motivation: The behavior of soldiers in battle*. Boston: Kluwer Nijhoff.
- Kier, E. (1998). Homosexuals in the U.S. military: Open integration and combat effectiveness. *International Security*, 23(2), 5–39.
- Kilner, P. (2002). Military leaders' obligation to justify killing in war. *Military Review*, 82(2), 24–31.
- Laufer, A., & Solomon, Z. (2009). Gender differences in PTSD in Israeli youth exposed to terror attacks. *Journal of Interpersonal Violence*, 24, 959–976.
- Lewis, D. M., Conroy-Beam, D., Al-Shawaf, L., Raja, A., DeKay, T., & Buss, D. M. (2011). Friends with benefits: The evolved psychology of same- and opposite-sex friendship. *Evolutionary Psychology*, 9, 543–563.
- Lewis, M., & Clark, W. (1904). *Original journals of the Lewis and Clark expedition* (Vol. 3, R. G. Thwaites, Ed.). New York: Dodd, Mead. (Original work published 1814).
- Lombardo, M. P. (2012). On the evolution of sport. *Evolutionary Psychology*, 10, 1–28.
- Lyons, M. T. (2005). Who are the heroes? Characteristics of people who rescue others. *Journal of Cultural and Evolutionary Psychology*, 3, 245–254.
- Maccoby, E. E. (1990). Gender and relationships: A developmental account. *American Psychologist*, 45, 513–520.
- Maccoby, E. E. (1998). *The two sexes: Growing up apart, coming together*. Cambridge, MA: The Belknap Press of Harvard University.
- MacCoun, R. J., Kier, E., & Belkin, A. (2006). Does social cohesion determine motivation in combat? An old question with an old answer. *Armed Forces & Society*, 32, 1–9.
- Manning, F. J. (1991). Morale, cohesion, and esprit de corps. In R. Gal & A. D. Mangelsdorff (Eds.), *Handbook of military psychology* (pp. 453–470). New York: Wiley.
- Manning, F. J., & Fullerton, T. D. (1988). Health and well-being in highly cohesive units of the U.S. Army. *Journal of Applied Social Psychology*, 18, 503–519.
- Marlowe, D. H. (1979). *Cohesion, anticipated breakdown, and endurance in battle: Consideration for severe and high intensity combat*. Walter Reed Army Institute of Research, Neuropsychiatry Division. Washington, DC: Marlowe, D. H. (1983). The manning of the force and the structure of battle: Part 2—men and women. In R. K. Fullinwider (Ed.), *Conscripts and volunteers: Military requirements, social justice, and the all-volunteer force*. Totowa, NJ: Rowman & Allanheld.
- Marshall, L. (1976). *The !Kung of Nyae Nyae*. Cambridge, MA: Harvard University Press.
- Marshall, S. L. A. (1947). *Men against fire: The problem of battle command in future war*. New York: William Morrow.
- Martin, C. L., & Fabes, R. A. (2001). The stability and consequences of young children's same-sex peer interactions. *Developmental Psychology*, 37, 431–446.
- McBreen, B. B. (2002). *Improving unit cohesion: The first step in improving Marine Corps infantry battalion capabilities*. Commandant of the Marine Corps National Fellowship Program. Retrieved December 2011, from <http://www.2ndbn5thmar.com/coh/mcbreen2002.pdf>
- McConnell, M. (1985). *Into the mouth of the cat: The story of Lance Sijan, hero of Vietnam*. New York: W. W. Norton.
- McLean, C. P., & Anderson E. R. (2009). Brave men and timid women? A review of the gender differences in fear and anxiety. *Clinical Psychology Review*, 29, 496–505.
- Melis, A. P., Hare, B., & Tomasello, M. (2006). Chimpanzees recruit the best collaborators. *Science*, 311, 1297–1300.
- Merriam-Webster. (2005). *Merriam-Webster's collegiate dictionary* (11th ed.). Springfield, MA: Author.
- Messick, D. M., & Kramer, R. M. (2001). Trust as a form of shallow morality. In K. S. Cook (Ed.), *Trust in society* (pp. 89–117). New York: Russell Sage.
- Ministry of Defence (United Kingdom). (2002). *Women in the armed forces*. Report by the Employment of Women in the Armed Forces Steering Group. Retrieved December 2011, from http://www.mod.uk/NR/rdonlyres/A9925990-82C2-420F-AB04-7003768CEC02/0/womenaf_fullreport.pdf
- Mitchell, B. (1998). *Women in the military: Flirting with disaster*. Washington, DC: Regnery.
- Moskos, C. C. (1970). *The American enlisted man: The rank and file in today's military*. New York: Russell Sage Foundation.
- Mullen, B., & Copper, C. (1994). The relation between group cohesiveness and performance: An integration. *Psychological Bulletin*, 115, 210–227.
- Nagy, E., Loveland, K. A., Kopp, M., Orvos, H., Pal, A., & Molnar, P. (2001). Different emergence of fear expressions in infant boys and girls. *Infant Behavior and Development*, 24, 189–194.
- Noy, S. (1991). Combat stress reactions. In R. Gal & A. D. Mangelsdorff (Eds.), *Handbook of military psychology* (pp. 507–530). New York: Wiley.
- Öhman, A., & Mineka, S. (2001). Fears, phobias, and preparedness: Toward an evolved module of fear and fear learning. *Psychological Review*, 108, 483–522.
- Parker, S. T. (1984). Playing for keeps: An evolutionary perspective on human games. In P. K. Smith (Ed.), *Play in animals and humans* (pp. 271–293). London: Blackwell.
- Patton, J. Q. (2000). Reciprocal altruism and warfare: A case from the Ecuadorian Amazon. In L. Cronk, N. Chagnon, & W. Irons (Eds.), *Adaptation and human behavior: An anthropological perspective* (pp. 417–436). Hawthorne, NY: Aldine de Gruyter.
- Peach, L. J. (1996). Gender ideology in the ethics of women in combat. In J. H. Stiehm (Ed.), *It's our military, too!: Women and the U.S. military* (pp.156–194). Philadelphia: Temple University Press.

- Peniston, B. (2006). *No higher honor: Saving the USS Samuel B. Roberts in the Persian Gulf*. Annapolis, MD: Naval Institute Press.
- Pershing, J. L. (2006). Men and women's experiences with hazing in a male-dominated elite military institution. *Men and Masculinities*, 8, 470–492.
- Pheasant, S. T. (1983). Sex differences in strength: Some observations on their variability. *Applied Ergonomics*, 14, 205–211.
- Plavcan, J. M., & Van Schaik, C. P. (1997). Intrasexual competition and body weight dimorphism in anthropoid primates. *American Journal of Physical Anthropology*, 103, 37–68.
- Pratchett, L. C., Pelcovitz, M. R., & Yehuda, R. (2010). Trauma and violence: Are women the weaker sex? *Psychiatric Clinics of North America*, 33, 465–474.
- Presidential Commission on the Assignment of Women in the Armed Forces. (1992). *Women in combat: Report to the President*. McLean, VA: Brassey's.
- Rice, R. W., Bender, L. R., & Vitters, A. G. (1980). Leader sex, follower attitudes toward women, and leadership effectiveness: A laboratory experiment. *Organizational Behavior and Human Performance*, 25, 46–56.
- Rice, R. W., Yoder, J. D., Adams, J., Priest, R. F., & Prince, H. T. (1984). Leadership ratings for male and female military cadets. *Sex Roles*, 10, 885–901.
- Richardson, F. M. (1978). *Fighting spirit: A study of psychological factors in war*. London: Leo Cooper.
- Riley, J. L., Robinson, M. E., Wise, E. A., Myers, C. D., & Fillingim, R. B. (1998). Sex differences in the perception of noxious experimental stimuli: A meta-analysis. *Pain*, 74, 181–187.
- Ronay, R., & Kim, D.-Y. (2006). Gender differences in explicit and implicit risk attitudes: A socially facilitated phenomenon. *British Journal of Social Psychology*, 45, 397–419.
- Rosen, L. N., Durand, D. B., Bliese, P. D., Halverson, R. R., Rothberg, J. M., & Harrison, N. L. (1996). Cohesion and readiness in gender-integrated combat service support units: The impact of acceptance of women and gender ratio. *Armed Forces & Society*, 22, 537–553.
- Rosen, L. N., Knudson, K. H., & Fancher, P. (2003). Cohesion and the culture of hypermasculinity in U.S. Army units. *Armed Forces & Society*, 29, 325–351.
- Rosen, L. N., & Martin, L. (1997). Sexual harassment, cohesion, and combat readiness in U.S. Army support units. *Armed Forces & Society*, 24, 221–244.
- Rosen, L. N., Wright, K., Marlowe, D., Bartone, P., & Gifford, R. K. (1999). Gender differences in subjective distress attributable to anticipation of combat among U.S. Army soldiers deployed to the Persian Gulf during Operation Desert Storm. *Military Medicine*, 164, 753–757.
- Rostker, B. D. (1993). *Sexual orientation and U.S. military personnel policy: Options and assessment*. Santa Monica, CA: RAND.
- Ruark, G. A., Orvis, K. L., Horn, Z., & Langkamer, K. L. (2009). Trust as defined by U.S. Army soldiers. In *Proceedings of the Human Factors and Ergonomics Society, 53rd Annual Meeting* (pp. 1924–1928). Santa Monica, CA: Human Factors and Ergonomics Society.
- Sandseter, B. H. A., & Kennair, L. E. O. (2011). Children's risky play from an evolutionary perspective: The anti-phobic effects of thrilling experiences. *Evolutionary Psychology*, 9, 257–284.
- Scales, R. H. (2005). Urban warfare: A soldier's view. *Military Review*, 85(1), 9–18.
- Scharnberg, K. (2005, March 22). Stresses of battle hit female GIs hard: VA study hopes to find treatment for disorder. *Chicago Tribune*, p. C1.
- Schechter, E. (2004, January 29). Anything boys can do. *Jerusalem Post*, p. 29.
- Seeley, E. A., Gardner, W. L., Pennington, G., & Gabriel, S. (2003). Circle of friends or members of a group? Sex differences in relational and collective attachment to groups. *Group Processes and Intergroup Relations*, 6, 251–263.
- Shields, P. M., Curry, L., & Nichols, J. (1990). Women pilots in combat: Attitudes of male and female pilots. *Minerva Quarterly*, 8, 21–35.
- Shils, E. A. (1951). The study of the primary group. In D. Lerner & H. D. Lasswell (Eds.), *The policy sciences* (pp. 44–69). Stanford, CA: Stanford University Press.
- Shils, E. A., & Janowitz, M. (1948). Cohesion and disintegration in the Wehrmacht in World War II. *Public Opinion Quarterly*, 12, 280–315.
- Siebold, G. L. (1999). The evolution of the measurement of cohesion. *Military Psychology*, 11(1), 5–26.
- Singer, T., Seymour, B., O'Doherty, J. P., Stephan, K. E., Dolan, R. J., & Frith, C. D. (2006). Empathic neural responses are modulated by the perceived fairness of others. *Nature*, 439(7075), 466–469.
- Sion, L. (2001). "The weakest link": Women in two Dutch peacekeeping units. *Minerva: Quarterly Report on Women and the Military*, 19(3/4), 3–26.
- Smith, W. R., & Torstenson, M. (1997). Gender differences in risk perception and neutralizing fear of crime: Toward resolving the paradoxes. *British Journal of Criminology*, 37, 608–634.
- Solaro, E. (2006). *Women in the line of fire: What you should know about women in the military*. Emeryville, CA: Seal Press.
- Stouffer, S. A., Lumsdaine, A. A., Lumsdaine, M. H., Williams, R. M., Jr., Smith, M. B., Janis, I. L., ... Cottrell, L. S., Jr. (1949). *The American soldier: Combat and its aftermath* (Vol. 2). Princeton, NJ: Princeton University Press.
- Sugiyama, L. S. (2005). Physical attractiveness in adaptationist perspective. In D. M. Buss (Ed.), *The handbook of evolutionary psychology* (pp. 292–343). Hoboken, NJ: Wiley.
- Thomas, J. R., & French, K. E. (1985). Gender differences across age in motor performance: A meta-analysis. *Psychological Bulletin*, 98, 260–282.
- Tiger, L. (1969). *Men in groups*. New York: Random House.
- Turney-High, H. H. (1971). *Primitive war: Its practice and concepts* (2d ed.). Columbia: University of South Carolina Press.
- US Department of Justice. (2003). *Census of state and federal correctional facilities, 2000*. Washington, DC: Office of Justice Programs, Bureau of Justice Statistics.
- United States Lifesaving Association. (n.d.). *USLA Heroic Acts in Aquatic Lifesaving*. Retrieved January 2012, from <http://www.usla.org/?page=HEROIC>
- Vanden Brook, T. (2006, August 1). Army makes way for older soldiers. *USA Today*, p. 1A.
- Van Vugt, M., De Cremer, D., & Janssen, D. P. (2007). Gender differences in cooperation and competition: The male-warrior hypothesis. *Psychological Science*, 18, 19–23.
- Van Vugt, M., & Park, J. H. (2010). The tribal instinct hypothesis: Evolution and the social psychology of intergroup relations. In S. Stürmer & M. Snyder (Eds.), *The psychology of prosocial behavior: Group processes, intergroup relations, and helping* (pp. 13–32). Malden, MA: Wiley-Blackwell.

- Van Vugt, M., & Spisak, B. R. (2008). Sex differences in the emergence of leadership during competitions within and between groups. *Psychological Science, 19*, 854–858.
- Vigil, J. M. (2007). Asymmetries in the friendship preferences and social styles of men and women. *Human Nature, 18*, 143–161.
- Voge, V. M., & King, R. E. (1997). Women in combat: Concerns of U.S. Air Force and U.S. Army rated male and female aircrew. *Military Medicine, 162*, 79–81.
- Watson, P. (1978). *War on the mind: The military uses and abuses of psychology*. New York: Basic Books.
- Wilson, M., & Daly, M. (1985). Competitiveness, risk taking, and violence: The young male syndrome. *Ethology and Sociobiology, 6*, 59–73.
- Winegard, B., & Deaner, R. O. (2010). The evolutionary psychology of Red Sox nation: Sport fandom as a by-product of coalitional psychology. *Evolutionary Psychology, 8*, 432–446.
- Xenophon. (1947). *Anabasis: March up country*. (W. H. D. Rouse, Trans.). Ann Arbor: University of Michigan Press.
- Yuki, M., & Yokota, K. (2009). The primal warrior: Outgroup threat priming enhances intergroup discrimination in men but not women. *Journal of Experimental Social Psychology, 45*, 271–274.
- Zivotofsky, A. Z., & Koslowsky, M. (2005). Gender differences in coping with the major external stress of the Washington, D.C. sniper. *Stress and Health, 21*, 27–31.