

## <ct>Gender Differences in Violence and Aggression

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<ab>Perhaps the most ubiquitous finding across multiple research disciplines regarding aggression and violence is that of consistent gender differences, with the male of the species exhibiting greater levels of these behaviors than the female. In this chapter, evidence relating to gender differences in violence and aggression within our own species is reviewed. Similarities displayed between men and women in terms of their age profile and underlying etiology are briefly outlined before documenting recent research highlighting gender differences across multiple measures and types of aggression. Two of the most comprehensively documented perspectives purporting to explain these differences (sexual selection theory and social role theory) are then compared. Finally, gender differences in aggression and violence are explored in relation to potential psychological mediators such as risk taking and fear in order to explain why males and females may differ in relation to this species-universal behavior.

<k>aggression; gender; violence

<pf>Aggression is a complex, multidimensional behavior “taken to be innate and learned, universal and culturally prescribed, a pervasive trait and a contextualized response, functional and dysfunctional, behavioral and cognitive and a phenomenon not to be measured and modelled or experienced and described” (Campbell, 2005, p. 68). Aggression and violence are by no means simple to study; conceptualizations and measurements alone are often varied and confusing. There is, however, a ubiquitous finding across an extensive multidisciplinary literature on the subject: consistent differences between men and women across almost all manifestations of aggressive and violent behaviors. It is this constancy of gender differences that this chapter aims to address by drawing upon literature from across the social sciences.

### <a>Gender, Aggression, and Violence

<pf>Before examining differences between men and women, it is useful to start with their similarities. Aggression, violence, and criminality rates between the sexes are strongly correlated across geographical regions, nation-states, and historical eras (Bortitch & Hagan, 1990; Campbell, Muncer, & Bibel, 2001; Hanawalt, 1979; Steffensmeier & Striefel, 1991); as men aggress more, so too do women. This relationship holds across age groups, with rates of aggression, violence, and crime increasing through adolescence, peaking in the mid-to-late twenties, and declining across the lifespan (Campbell, 1995; Steffensmeier & Striefel, 1991).

As the sexes are inextricably linked in their use of aggression, it seems logical to conclude that they share common underlying causal factors. Research indeed demonstrates this to be true. Male and female aggression is sensitive to many environmental factors including social class, sex ratios, low academic achievement, familial stress, and high mortality rates (Copping, 2014; Huesmann, Eron, Lefkowitz, & Walder, 1984; Steffensmeier & Haynie, 2000). This list is not exhaustive. Also, psychological mechanisms believed to be associated with aggression, violence, and crime often manifest weak to absent correlations when gender is considered. Gender differences in aggression decline with increasing levels of provocation, while the experience of emotions such as anger, or traits such as self-esteem,

show no discernible gender differences (Archer, 2004b; Archer & Mehdikhani, 2003; Campbell, 1999, 2006; Else-Quest, Hyde, Goldsmith, & Van Hulle, 2006).

Now to this chapter's central theme: gender differences in aggression and violence. For parsimony's sake (due to the volume of material), this chapter focuses on physical and violent aggression only. Men are consistently more aggressive and violent than women on almost every known measure (Archer, 2004a). This effect appears universally across age groups, time periods, cultures, and geographical regions (Archer, 2004a; Baillargeon et al., 2007; Campbell et al., 2001; Del Giudice, 2009; Morales-Vives & Vigil-Colet, 2010). A series of meta-analyses confirms these effects (Archer, 2004; Bettencourt & Miller, 1996; Eagly & Steffen, 1986). Homicide perpetration is overwhelmingly male biased (Daly & Wilson, 1990), and violence-induced hospital visits are significantly higher for men (Shepherd, 1990). Psychologically, men and women differ dramatically in their beliefs and justifications about aggression: Men tend to favor instrumental attitudes (as taking control or as a means to an end) and women tend to view aggression as emerging from a loss of control (Driscoll, Zinkivskay, Evans, & Campbell, 2006; Tapper & Boulton, 2004). Men more often carry and offend with weapons (Archer, 2004a), and they show a stronger bias toward identifying weapon-related stimuli (Sulikowski & Burke, 2014). These gender differences exist in forms of violent crime (US Department of Justice, n.d) and emerge regardless of measurement types: self-report, peer report, or observational (Archer, 2009). Men even report higher frequencies of aggression and violence while dreaming than women, while aggressors in bad dreams and nightmares are predominantly men (Schredl, 2009). Finally, pathologies characterized by heightened aggressive tendencies are male biased in prevalence (American Psychiatric Association, 2000; Frank, 2000; Moffitt, Caspi, Rutter, & Silva, 2001). Evidence suggesting that men are more aggressive is thus overwhelming.

Furthermore, gender differences appear early in human development, observable from 12 months of age (Baillargeon et al., 2007; Bjorklund & Pellegrini, 2000; Lutchmaya, Baron-Cohen, & Raggatt, 2002). The magnitude of these differences does not tend to increase until the late teens, when male aggression begins to peak (Archer, 2004a; Nivette, Eisner, Malti, & Ribeaud, 2014). Gender differences remain throughout adulthood but decline in magnitude with increasing age (Morales-Vives & Vigil-Colet, 2010). Similar patterns are evident in dreams regarding aggression (Schredl, 2009). Gender differences in social representations of aggression also emerge from approximately age 8 (Archer & Parker, 1994; Tapper & Boulton, 2004). Thus, whatever causes these gender differences begins early in development and is maintained across the lifespan.

The data evidencing gender differences in aggression are extensive and largely uncontroversial. Their origin, however, is quite the reverse. The pattern of similarities and differences between men and women is suggestive not of separate, gender-specific mechanisms regulating aggression but of a threshold difference in a shared underlying mechanism. To properly understand gender differences, however, we must first ask two questions. First, why should men and women differ in their propensity to aggress? And, second, what proximal psychological mechanism facilitates this difference? The rest of the chapter is dedicated to answering these questions.

<a>Perspectives on Gender Differences in Aggression

<pf>Theories from many disciplines have purported to explain gender differences in aggressive and violent behaviors, and it is beyond the scope of this chapter to examine them all. Instead, two of the most widely cited explanations are considered: gender differences in aggression as a product of sexual selection and gender differences in aggression as a result of social roles. Each will be considered in turn.

### <b>Sexual Selection, Aggression, and Violence

<pf>Sexual selection theory demonstrates how gender differences can emerge and be maintained within a species. Contrary to critics of evolutionary disciplines, behavioral traits resulting from sexual selection do not imply determinism; evolved, genetic mechanisms do not necessitate predetermined behavior protocols (Lickliter & Honeycutt, 2003). Our evolved architecture is equipped to deal flexibly with environmental change, which often results from the presence of others. We are all capable of aggression. The question is why we aggress. Evolutionary theory focuses on the adaptive relevance of behavior (as opposed to aggression as a pathology) and asks what long-term evolutionary problem(s) aggressive propensities evolved to solve. Only by overcoming these adaptive problems was the species able to continue to survive and reproduce. Thus, aggression must in some way promote reproductive success. The basic principle underlying evolutionary explanations is one of simple economics. If the behavior evolved, it must have served some survival-based function and must have benefits or rewards attached to it. However, aggression or violence is not used to solve all problem(s). Alternative strategies (negotiation, deception, alliances, etc.) allow us to survive in the social world. If the behavior is not beneficial all of the time, there must be associated costs that could emerge as a result of its use, thus requiring alternatives.

What are the costs and benefits? Aggression facilitates many things: acquiring vital survival resources, securing a mate, defending against attackers, and removing other threats from the reproductive rat-race. Costs, however, can be high, including loss of resources or status, social ostracism, injury, and even death. Individuals must therefore carefully consider the advantages and disadvantages of aggressive acts. This does not necessitate conscious decision making, although it may appear so in some circumstances. Our evolved architecture is sophisticated enough to manage this analysis without actual explicit, conscious representation.

How is this related to gender differences? The answer is inherent to sexual selection and lies within the differences in male and female reproduction: one sex chooses a partner while the other competes to be chosen (Darwin, 1871). Females are burdened with long gestation and lactation periods and prolonged investment throughout an offspring's development. The level of female investment in offspring is very high to ensure her reproductive success and thus it is in her best interest to choose a mate who is willing to invest in her offspring or provide some other benefit (such as healthy genes, continued protection from lesser males, etc.). Males do not share this burden and are limited in their reproductive capacity purely by the number of females they can successfully mate with. Once copulation and conception are accomplished, males no longer need to continue investing. Males thus have the capacity to be incredibly successful in siring offspring without the need to directly rear them. These differences in parental investment (Trivers, 1972) mean that, while variances in female reproductive success are typically low, it is higher in males

(Bateman, 1948). Males must compete for access to females, fostering aggression to establish dominance hierarchies, suppressing challengers, and removing threats to reproductive success. For males struggling to access mates, the impetus to aggress increases as failure to mate simply means lineage extinction (Wang, 2002). Because of the pressures to compete with other males to secure females, sexual selection acts upon traits in males that give them the edge to ensure their continued survival. Sexually dimorphic physiques and behaviors then become apparent. Males are larger, stronger, and—pertinent to this topic—more aggressive. Females can thus use these dimorphic features as signals of good genes, making the males valuable reproductive assets. This further exacerbates the effects of sexual selection and continues to select for reproductively advantageous traits (of which aggression is one).

To put this in context, consider the northern elephant seal (*Mirounga angustirostris*). Larger, stronger males monopolize access to females and prevent competitors attempting copulations within their territory. Male–male competition is intense and 75% of all offspring are sired by approximately 5% of available adult males (Le Boeuf & Peterson, 1969; Le Boeuf & Reiter, 1988). Only 10% of males actually survive to reproduce. Cox and Le Boeuf (1977) suggested that females deliberately mate with dominant males by “protesting” against the advances of subordinates, precipitating further male–male conflict and allowing females to effectively choose between partners. Physical size in the elephant seal not only allows males to compete but also acts as a quality signal to females, increasing the likelihood of the largest males reproducing. From this example, we can see that sexual selection actively favors the selection of larger, stronger physiques as it is the only way a male can fend off challengers and make himself desirable as a mate.

Based on these theoretical propositions, sexual selection theory makes specific predictions regarding gender differences. The gender with greater reproductive variances (men; Brown, Laland, & Mulder, 2009) is predicted to be the most aggressive and to show higher rates of same-sex aggression than the gender with lower reproductive variance (women). Daly and Wilson (1988, 1990) illustrate cogently that rates of male–male violence and homicide are massively higher than equivalent female–female rates. As reproductive variances for men are high, we would expect variances in behavior subject to sexual selection to also be higher for men. If aggression is subject to sexual selection, we would thus expect the variances for men in this behavior to be higher than those for women. This appears to be the case (Archer & Mehdi khani, 2003). As aggression reflects competition for resources (including mates), we would expect ecological factors such as resource scarcity, male-biased sex ratios, and dense, youthful populations to foster aggression in men. This claim has already been substantiated in this chapter. If aggressive competition is ultimately serving a reproductive purpose, we would expect levels of male aggression to peak at the zenith of reproductive viability, with the magnitude of male–female differences becoming lower during nonreproductive phases of the life cycle. The developmental patterns of aggressive behavior in human development suggested in the first part of this chapter certainly seem to support this. Finally, gender differences should also be universal across cultures, with variance in aggressive behavior being tied to local ecological factors. To my knowledge, no such society has emerged to contradict this trend. Finally, sizable gender differences should be detectable in the sexually selected trait of aggression, but not in nonsexually selected traits such as anger and self-esteem. As established earlier, research confirms this prediction.

Sexual selection is thus a powerful explanation for recorded patterns of aggression and violence so far as gender differences are concerned.

### <b>Social Roles, Aggression, and Violence

<pf>Drawing evidence from a variety of anthropological, psychological, and sociological sources, social role theory (Eagly, 1987; Eagly, Wood, & Diekmann, 2000) asserts that males are more aggressive because aggression is integral to masculine roles embedded in cultural norms across human societies. Gender differences are maintained because of socially sanctioned divisions of labor between the sexes in society: women traditionally are the stay-at-home caregivers (emphasizing domesticity and compassion) and men the bread-winners (emphasizing competition and control). These divisions become cemented in socially constructed expectations of men and women within society. Men are thus more aggressive because society expects them to be so.

As such, societies stratify in a manner that maintains these divisions through the socialization of children in the same tradition: Beliefs regarding gender roles reinforcing the labor division within each successive generation. Socialization processes that perpetuate these roles are thus the proximal mechanism(s) that foster the gender differences we see in aggressive, violent, and criminal behaviors. Socialization of children (which societies expend considerable effort in doing in preparation for adult roles) happens incrementally across development from multiple environmental sources including parents, siblings, and teachers (who, between them, help to foster gender-typical activity); entrenched cultural values (such as gender stereotyping); and, in more recent human history, the influence of the media (Leaper & Friedman, 2007). Entrenchment of these ideals, coupled with the emergence of gender-specific roles (such as male soldiers and female nurses), accentuates the requirement for men to maintain higher levels of aggression than women to the degree that it is accepted as normative.

Is there evidence that social roles are prominent in maintaining gender differences in aggression? Perhaps the clearest experimental example comes from Lightdale and Prentice (1994). Under experimental conditions, these researchers used a process of deindividuation to remove the prevailing effects of social roles and expectations for a group of participants in a computer game setting. Under normal conditions, the usual gender differences in aggression were found. However, in deindividuated conditions (where participants are anonymous to the experimenter and other participants), differences disappeared. More recent work has demonstrated similar effects (Evers, Fischer, Rodriguez Mosquera, & Manstead, 2005). This provides strong evidence for an effect of social expectation on behavior. If labor divisions are crucial, cultures prizing greater equality between the sexes would be predicted to show reduced differences across aggressive behaviors and vice versa. This indeed appears to be the case (Eagly & Wood, 1999; Nivette et al., 2014; Twenge, 1997a, 1997b); gender inequalities are a source of variation in the magnitude of gender differences cross-culturally. Some evidence suggests that social representations of aggression may also be linked to social roles. Campbell and Muncer (1994) demonstrated that female soldiers held stronger instrumental views whereas male nurses tended to be more expressive, highlighting that gender-specific job roles may influence aggression and beliefs surrounding its use. Where societies require shifts in gender roles, behaviors of women can change, demonstrating flexibility in gender

differences (Eagly & Wood, 2009). For instance, examples of where women have ably fought in combat operations alongside male counterparts (an almost complete rejection of normative gender roles in society) due to a paucity of men (see Alpern, 1998; Bernal, 2000) demonstrate that women can be equally as proficient in combat as men when society allows it.

While advancing different specific predictions regarding gender differences, sexual selection theory and social role theory are far from diametrically opposed. As comprehensive as the sexual selection account of aggression is, social role theorists have raised some pertinent issues. Later enhancements of social role theory incorporate many evolutionary elements (Eagly & Wood, 2002, 2009; Wood & Eagly, 2012). Their enhanced biosocial model asserts that the interaction between the physical and social environment and the constraints placed upon humans by their reproductive physiology has been recurrent enough to facilitate the embedded divisions of labor apparent today (downplaying the role of sexual selection and direct linkages to reproductive success). They claim that the extended juvenile period allows for extensive socialization to reinforce social roles and that, during development, socialization and gene expression interact to influence later biological and behavioral outcomes (Wood & Eagly, 2012).

Finally, the biosocial model incorporates recent work regarding the effects of hormones, particularly testosterone, cortisol, and oxytocin. While a comprehensive analysis of the effects of these hormones is beyond the scope of this chapter, the relevance of testosterone to aggression is worthy of mention. Testosterone is consistently linked to competitive behaviors (Archer, 2006). For instance, men's testosterone levels increase in anticipation of competitive sports. Wood and Eagly point out that the same effect is observable in women (although reduced in magnitude). Similarly, competition-induced testosterone increases make it likely that further competition will be engaged in (Carr, McCormick, & Hariri, 2011). This feedback mechanism may thus increase circulating testosterone in men over time. Wood and Eagly suggest a similar role for hormones that encourage nurturing behavior (such as oxytocin); thus, hormone levels associated with gender-differentiated behavior may be a result of "the sexes' training in certain social roles as they respond to the gender role expectations within their society" (Wood & Eagly, 2012, p. 87) and not intrinsic biological differences. Furthermore, in their study, Nivette et al. (2014) demonstrated that, while biological sex was one of the biggest predictors of aggression, social roles still played a small but significant role, supporting the views of others that sexual selection and social role theory are not necessarily mutually exclusive (Bailey, Oxford, & Geary, 2009).

### <b>Interim Summary

<pf>The debate between social role and sexual selection theory continues and is unlikely to be resolved in the near future. For excellent summaries and commentaries on the debate, readers should consult Archer (2009) and Stewart-Williams and Thomas (2013). While an all-encompassing theory of gender differences has yet to emerge, continual honing of current theories edges us ever closer to elucidating causal explanations of differences in violence and aggression. However, sexual selection theory perhaps remains the most comprehensive theory thus far and links cogently with the following section, which examines more proximal determinants of aggression and violence: risk taking and fear.

## <a>Risky Males and Fearful Females?

<pf>Sexual selection theory highlights the potential male necessity to aggress to serve reproductive goals, allowing us to predict gender differences in same-sex competition. What about motivational factors surrounding aggression? Reproductive failure results in lineage extinction—becoming an evolutionary dead end. Not aggressing in the face of extinction is often too great a chance to take. Similarly, aggressing carries potential costs. When unconsciously calculating future activity, organisms essentially consider the risks entailed via action: does the risk of potential cost outweigh the benefit of potential success or vice versa?

Risk taking has thus been identified as a key psychological mechanism in maintaining the magnitude of the gender difference. For men, threats of lineage extinction mean the costs of not competing increase and begin to outweigh the social or physical costs to the self. For some men, particularly if resources are scarce or female availability is low, the only way to secure mating opportunities is to challenge other men. Male–male violence in such environments thus escalates. Daly and Wilson (1988) simulated this effect, demonstrating that more dangerous tactics are considered for use as the value of potential rewards increases. They predicted that young males of reproductive age will be the most aggressive segment of the population. Young men not only compete against older, more experienced, and better resourced males; they do so with fewer resources themselves, their relative youth providing fewer opportunities to accrue resources themselves. This prediction fits the trend between age, gender, and aggression alluded to earlier, with the peak of aggressive activity being in the early to late twenties. This is commonly labeled “young male syndrome” (Wilson & Daly, 1985).

The above explanation implies that gender differences are driven only by male risk taking and implies a benign role for female activity. However, evolutionary psychologists recognize that this is not the case (Campbell, 1999). Recall the earlier discussion of significant obligatory female investment in offspring. Research in fact demonstrates that the majority of childcare across societies is performed by mothers and that, while the loss of a father often has little impact on offspring survival, the loss of a mother can be devastating, often fatal (Sear & Mace, 2008). For women, the most successful reproductive strategy is to keep their children alive.

The conclusions to be drawn from the topic of risk should be quite clear, as Campbell (1999) suggested. Females should be motivated to avoid risks. If a woman becomes injured or worse, the potential fitness consequences are large and could lead to lineage extinction. As female–female competition is much less significant in finding a partner than male–male competition (recall that female reproductive variances are low), the need for aggression in females is reduced in magnitude (although not nonexistent—see Campbell, 2013, for a review). Females naturally require resources and so resource scarcity is as much a factor in same-sex female aggression as it is in male–male aggression (Campbell et al., 2001). However, the level of female aggression still remains much lower than that of males. But the danger of injury exerts strong selection pressures on promoting female harm avoidance. Risk taking for males has high potential rewards; risk taking for females has high potential costs. Wilson and Daly’s (1985) “young male syndrome” combined with Campbell’s complementary hypothesis regarding high female costs demonstrates that the level of risk to

both men and women is paramount to the gender differences exhibited in aggression, violence, and crime. Research seems to corroborate the links between gender, risk, and aggression. Men score much higher on measures of risk taking and sensation seeking than women across almost all measurement type (Byrnes, Miller, & Schafer, 1999; Cross, Copping, & Campbell, 2011), with the magnitude of this difference increasing in line with potential costs (Byrnes et al., 1999). Men and women differ significantly in rating the same situations and behaviors as dangerous, with women estimating situations to be more dangerous than do men (Bettencourt & Miller, 2006; Eagly & Steffen, 1986). Correlations between risk taking and aggression are also well established in the literature, with greater risk takers and sensation seekers reporting higher frequencies of aggressive behaviors (Wilson & Scarpa, 2010). The links between risk and aggression are thus compelling.

Sensitivity to risk appears to be a candidate for a shared mechanism that regulates aggression. What holds us back from taking risks? Fear. Fear of loss, ostracism, injury, even death. Evidence suggests that gender differences in aggression may ultimately arise from underlying gender differences in fear-based inhibition (Campbell, 2013). Risk taking and sensation seeking, which can broadly be seen as the opposite of fear, show strong male biases. A female bias in fear would suggest that this powerful negative emotion maintains the magnitude of the gender difference in aggression and violence. This is the crux of Campbell's argument (Campbell, 1999, 2006). Cross-culturally, there are consistent gender differences in levels of fear, with women showing higher levels than men (Côté, Tremblay, Nagin, Zoccolillo, & Vitaro, 2002; Else-Quest et al., 2006) while reporting experiencing it more intensely (Brebner, 2003; Fischer & Manstead, 2000). Girls also appear to express fear developmentally earlier than boys (Nagy et al., 2001). Psychometric measures with items associated with fear and anxiety show gender differences in the female direction (Cross et al., 2011). Finally, research shows that fear more strongly suppresses aggression in women than in men (Verona & Kilmer, 2007).

Campbell (2006, 2013) also reviews considerable neuropsychological evidence to support the assertion that fear is the underlying mediator of gender differences in aggression and that the amygdala (a subcortical structure in the temporal lobe) and the orbitofrontal cortex (in particular) may play key roles in managing fear-based responses. Evidence shows wider and longer activation patterns of the limbic system (which includes the amygdala) in women in response to threatening stimuli (Williams et al., 2005). Similar gender differences are found in these regions in response to angry, threatening faces (McClure et al., 2004). Activation of the orbitofrontal cortex in women is greater than that in men in response to negatively emotive facial stimuli (Stevens & Hamann, 2012). As negative relationships between the orbitofrontal cortex and the amygdala in aggressive individuals are often reported (Coccaro, McCloskey, Fitzgerald, & Phan, 2007), this appears to imply that females show greater restraint and more effectively regulate negative emotions. The relationship between these cortical regions and neurochemicals such as testosterone and oxytocin (touched upon earlier) is also interesting. Testosterone in the amygdala generally produces more male-typical reactions of increased anger activation and physiological reductions in fear (see Campbell, 2013). Increased oxytocin, which is often associated with nurturing and bonding behavior, while reducing fear responses in men also appears to increase sensitivity to fear in women (Lischke et al., 2012). While it is impossible to cover the full scope of this

mechanism in this chapter, the combination of psychological and neuropsychological evidence provides an evolutionarily adaptive explanation and a potential biological mechanism that comprehensively details how and why gender differences emerge and are maintained in aggression and violence.

## <a>Conclusions

<pf>An evolutionarily maintained threshold for experiencing fear is a potential mediator in explaining gender differences in aggression, violence, and crime while also complementing the extensive literature on gender differences in risk-taking behaviors. Understanding aggression from an evolutionarily adaptive perspective provides a functional purpose for the behavior and, with it, the gender difference. Aggression is not necessarily pathological; it is one of an array of responses humans can implement to ensure they achieve their ultimate evolutionary goals. While methodological constraints regarding current neuropsychological techniques restrict the ability to directly examine aggression in action, further work in this field will undoubtedly be fruitful in identifying the underlying neural mechanisms responsible for proliferating this behavior and the gender differences inherent in it.

Paramount to a full understanding of aggression and violence is an understanding of gender differences in these same behaviors. This broad review scratches the surface of the substantive body of evidence that has accumulated over the years on the subject. Readers are reminded of the deliberate focus on direct and physical aggression, violence, and crime. Gender differences across other aggression subtypes are equally as compelling and, to some extent, can be tied to the same theoretical ideas discussed here. Gender differences must also be appreciated in clinical intervention strategies or social policy reforms if any measure of success is to be warranted (Ellis et al., 2012). While this review has broadly focused on the evolutionary origins of the behavior, one must remember that the key determinant of aggression, independent of gender, is the local environment. Reducing aggressive tendencies generally requires tackling factors that increase them in men and women alike: impoverishment, lack of opportunity, and social and gender inequalities (Campbell, 2006; Ellis et al., 2012; Wood & Eagly, 2012).

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