

Aggression: Gender Differences in

Female aggression traditionally has received little attention in the research literature and has been regarded with a certain degree of skepticism by the public and professionals alike. In the past three decades, however, the precipitants and purpose of female aggression and the profiles of girls and women who commit aggressive, violent, and criminal acts have increasingly attracted the attention of researchers, criminal justice, mental health professionals, advocates, and policy makers. The field is beginning to flourish with a small number of longitudinal and large-scale examinations of sex differences and similarities in antisocial behavior and aggression [1–5].

In addition, the importance of examining female aggression separately from male aggression and using that data to inform policies and practice is increasing, and now appears to be well-recognized in developed nations worldwide [6]. This relatively abrupt turnaround reflects increasing numbers of girls and women being charged, arrested, and incarcerated for violent crimes. In addition, research demonstrates that in certain contexts (e.g., romantic relationships and parent–child relationships) and in highly specific populations and settings (e.g., inpatient psychiatric patients) the gender gap in the perpetration of aggressive actions is largely reduced or entirely absent. These circumstances require scholars and practitioners to evaluate the extent to which our understanding of female aggression reflects substantiated research findings *versus* unsubstantiated generalizations and stereotypes.

This article operationalizes aggression and violence (*see also* **Aggression**) and reports the prevalence and incidence of aggression among females; documents sex differences and similarities in aggressive and violent behavior; critically examines the assertion that risk and protective factors are sex-specific, briefly explores clinical implications for prevention and intervention, and closes with reflections on gaps in knowledge and directions for future research.

Prevalence and Incidence of Aggression among Females

There is virtually universal agreement that males are more aggressive than females. Across age categories, regardless of the data source (i.e., self-report, family/collateral reports, official records, and victimization surveys), males outnumber females in the perpetration of physical and sexual aggression, violence, and crime. However, methodological advances (e.g., data collection strategies and sources) to studying aggression and more inclusive definitions of aggression have revealed comparable rates across the two genders for some types of aggression and/or in discrete settings and populations. Given the importance of developmental milestones in understanding human behavior, in terms of diagnostic categories (e.g., diagnostic and statistical manual of mental disorders (DSM-IV)-TR, [7]) and with regard to prevention and intervention in the criminal justice system, we present the prevalence and incidence of aggression among females separately for female youth and adult women.

Operationalizing Aggression

Although there remains little agreement in the literature regarding how best to operationalize aggressive and violent actions, increasing clarity has been achieved as a result of important studies such as the MacArthur violence risk assessment study [4]. Building on prior definitions [8] and psychometrically advanced measures (Conflict Tactics Scale, [9]), the MacArthur study operationalized “physical aggression” as laying one’s hands on another with the intention to cause physical harm. In contrast, “violence” was defined as actions that result in injury, sexual assaults, or verbal threats of physical aggression with a weapon in hand [4]. “Relational aggression” refers to interpersonal interactions and verbal exchanges intended to harm others through social exclusion and public humiliation [10]. Finally, “verbal aggression” includes threats, ridiculing, name-calling, and shouting. Although imperfect, with these definitions in mind, we can explore the question: how common is female aggression?

Female Youth

Boys perpetrate approximately three times as many violent acts as girls. Girls are also less likely to report

carrying a weapon and tend to engage in violent acts at a lower frequency than their male counterparts [3, 11, 12]. Nonetheless, multiple sources of data consistently show increased rates of violence among girls. In the United States, between 1988 and 1998, person-related offenses increased at more than twice the rate among adolescent females (157%) than among adolescent males (71%; [13]) and between 1993 and 2002, arrests for aggravated assault decreased 29% for boys but increased 7% for girls. Canadian statistics show comparable trends: between 1988 and 1998, the violent crime rate more than doubled for girls (+127%) compared to a smaller increase for boys (+65%; [14]). Furthermore, between 1996 and 2002, when a small decrease was noted in the rate of violent crime committed by boys, a modest increase was observed for girls [15].

Outside North America, the picture is much the same: in the United Kingdom, between 1981 and 1999, there was a 23% decrease in juvenile male offenders and an 8% increase in female offenders, although in 1999 males still outnumbered females by 3:1–4:1 [16]. Similar trends are evident in epidemiological studies. According to the US Surgeon General's report [17], between 1993 and 1998, the gap between adolescent girls' and boys' self-reported engagement in violent acts shrunk by approximately 50%. Turning to relational aggression, research shows that girls engage in at least equal or higher levels of relational aggression than do boys [18].

Relational aggression can be reliably detected as early as preschool and children who engage in it are more likely to suffer rejection from their peers and are more likely to affiliate with deviant peers who also engage in relational aggression [19, 20]. Rates of relational aggression increase during elementary school for girls but not boys [21], possibly reflecting sex differences in the complexity and psychological relevance of relational contexts. The fact that social aggression can have social "payoffs" for some girls has garnered support from recent studies. For example, Cillessen and Mayeux [22] found that young adolescents who were relationally aggressive to others held high social prominence, although they were not well-liked by their peers. This was particularly true for girls. Girls also experience relational aggression as more distressing and harmful than do boys [20].

Adult Women

Official criminal data and incarceration rates confirm that within the general population, men are considerably more aggressive than women and come into conflict with the law with much greater frequency. In North America, men vastly outnumber women in correctional settings. Early in 2006, there were 408 women federally incarcerated in Canada [23] compared with 12 263 men. Although the actual number of women admitted to federal institutions increased from 238 to 276 between 2004–2005 and 2005–2006, women constitute a very small proportion (5.8% in 2005–2006) of all federal admissions. The gender disparity in incarceration is most apparent for violent offenses (homicides, sexual offenses, and other violent crimes (men = 96.5%; women = 3.5%).

In the United Kingdom, the total prison population is comprised of 6.1% women, 17% of whom were incarcerated for violent offenses [24]. In the United States, a country with one of the highest incarceration rates in the world, females comprised just 7% of the total prison population in 2005 [25]. In other words, males were 14 times more likely than females to be incarcerated, relative to the general population. The gender breakdown for violent offenders, in particular, is slightly higher in the United States relative to Canada and the United Kingdom (4.4% female, 95.6% male). Thus, the picture that emerges from a consideration of official criminal justice data sources clearly demonstrates a vast disparity in criminal offending by gender of perpetrator, that is even greater for when one considers violent offenses.

We find that although women are markedly under-represented in criminal courts and criminal justice settings, female aggression is *not* uncommon. That is, the gender disparity in aggressive behavior noted in the general population does not appear to be evident among individuals with mental illness [2] nor when one examines aggression that occurs within romantic and familial relationships [26, 27]. Among civil psychiatric patients [28] and forensic psychiatric patients (Nicholls, Brink, Greaves, Lussier, and Verdun-Jones, in press) women match, and sometimes exceed, men in the prevalence and incidence of aggression. Similarly, it has long been recognized that women perpetrate as much as 50% of aggression within familial and intimate relationships (i.e., child abuse, elder abuse, and partner abuse) [29, 30].

Is Female Aggression Increasing?

Between 1980 and 2001 the proportion of females incarcerated in the United States nearly doubled (4–7%, respectively) [31]. The US Department of Justice, Bureau of Justice Statistics reported that the number of women under the jurisdiction of State or Federal prison authorities increased 4.5% from year end 2005, reaching 112 498, and the number of men rose 2.7%, totaling 1 458 363 [32]. The increase in female contact with the US criminal justice system is particularly remarkable given that the number of serious violent offenses committed by persons ages 12–17 declined 61% from 1993 to 2005, while those committed by persons older than 17 fell 58% (see [32]). In Canada, the rate of “serious violent crime” committed by adult women increased from 25 to 46 per 100 000 between 1986 and 2005 [6]. Similarly, as noted above, the rate has more than doubled among female youth since 1986, growing from 60 per 100 000 to 132 by 2005 [6].

Despite claims that female offending is rapidly escalating, any increase should be understood in relation to the low base rate of violent crime among women. It is also noteworthy that the rate at which female youth have been charged with serious violent crimes has been on a slow downward trend since 2001. Comparisons between females and males for the same offenses and over the same period of time provide a clearer picture of trends. Between 1986 and 2005, with the exception of a few downturns over the years, the rate at which women were charged with assault level 1 (simple assault) more than doubled (44–93 per 100 000 population). In comparison, the rates among male adults have shifted downward since the early 1990s. Between 1991 and 2005, the charge rate for male adults for serious violent crime dropped 30% (412–290 per 100 000). From 1993 to 2005, the charge rate for assault level one for male adults fell 25% (from 606 to 455 per 100 000 population). These data confirm the narrowing gap between adult females and males charged with violent crime: in 1986, nine men were charged with a violent offence for every one woman charged. In 2005, this ratio had decreased substantially from five to one. These statistics raise two important questions: what accounts for decreasing male aggression and what contributes to female aggression increasing in both the United States [32] and Canada [6] despite the fact that the rate of violent crime is dropping?

It is clear from the accumulation of knowledge to date that the “myth of female passivity” [33] is not borne out of the extant empirical data. Knowledge of these base rates is essential, particularly for informing violence risk assessments and public funding decisions; for instance, but an appreciation of the nature of female aggression, what motivates females to aggress against others, and the consequences of those actions is likely to drive treatment and intervention policy, research, and clinical efforts.

Exploring the Topography of Female Aggression: Sex Differences and Similarities in Aggressive and Violent Behavior

Recent research shows a slow but progressive trend in developing research objectives and methodologies to better understand the contexts, functions, targets, and implications of women’s aggression. Moving beyond the question of how often females are aggressive relative to males, research now compares and contrasts the topography in which male and female aggression occurs [34]. An appreciation of the contexts in which aggression occurs and the purposes it serves for females helps us understand, prevent, and reduce the risk of female aggression.

Form and Function

Topographical similarities in aggressive acts may serve to mask gender differences, thereby obscuring the underlying motivations and mechanisms involved in females’ use of aggression and exaggerating similarities in the potential risk posed to victims. Trends have been evidenced in research, which reveal both gendered and nongendered forms and functions of aggression. Emerging findings continue to indicate similarities (e.g., perpetration of any assaultive act, instigation, and injury incurred, [35]; nature and location, Nicholls *et al.*, under review), in addition to a substantial amount of divergence (e.g., use of very severe forms of violence, [35]), between male and female aggression.

Form – What is the Nature of Female Aggression?.

Self-report surveys and victimization reports generally confirm what we see in the official criminal justice and corrections databases reviewed above;

violent crimes remain disproportionately low in women and, that is particularly true of certain forms of interpersonal offending. Data from the United States indicates that, as reported by victims, females account for only 1 out of 7 violent offenders. Further, 1 in 50 offenders committing a violent sex offense (including rape and sexual assault) were women; one in 14 robbers were women; 1 in 9 aggravated assault perpetrators were women; as were approximately 1 in 6 offenders who committed a simple assault [32]. Corresponding Canadian figures for those convicted in 2003–2004 indicate that women accounted for approximately 1 in 99 sexual offenders, 1 in 12 robbers, 1 in 6 offenders committing a major assault, and 1 in 7 who committed a common assault [6]. Charges for murder or manslaughter are rare, regardless of gender (in 1991, 48 charges were laid against women, and 486 against men).

Overall, women's violent criminal charges are primarily for common assault [6]. Fewer are brought about by the commission of robbery, and sexual forms of aggression by women are an exceedingly rare occurrence [36], a pattern that is similar in both Canada and the United States [37, 38]. As with sexual offenders, females engaging in stalking behaviors are relatively rare as compared to their male counterparts (accounting for 15–20% of those who perpetrate stalking offenses, with one in five ultimately attacking the victim; [39]), their occurrence may be a function of stalking as a variant of domestic violence (see [40]). It is important to note that when women are aggressive their assaults occupy the entire continuum of aggression. To clarify, women commit both minor (e.g., verbal aggression) and severe forms of aggression (e.g., kicking, beating, choking, and using weapons), particularly within intimate relationships and against family members (see [41, 42]). In fact, when there is reciprocal aggression (i.e., both partners are abusive) or when only one partner is abusive it is most likely to be the woman who uses severe aggression (see [41, 42]; see [26, 29] for reviews).

Setting and Targets – Where Does Female Aggression Occur and Who Do Females Aggress Against? As compared with men's aggressive acts, women's expressions of aggression are more likely to occur in the private (e.g., the perpetrator's home) *versus* the public (e.g., bars) domain; a finding that holds in data gathered from psychiatric patient samples [35, 43] and is highly consistent with

the disproportionate amount of women's aggression that involves domestic violence, child abuse, and elder abuse. Similar to data from other sources on female aggression, female-perpetrated homicide data suggests that women are less likely than males to aggress against strangers (3% of victims killed by women *vs.* 14% killed by men) or casual acquaintances (13% *vs.* 21%, respectively) than men. The relational aspect of female aggression, however, is perhaps most evident across forms of aggression involving abuse of others who are intimate (or perceived intimate).

Differences across gender are readily apparent when considering perpetrator-victim relationship in instances of homicide. In 1994, Statistics Canada reported that 71% of Canadian women charged with homicide were related "domestically" to their victim, whereas this was true among only 24% of their male counterparts. Indeed, in general, the most common target of women's aggressive acts is the current or previous spouse or common-law partner (30%). Further, in the context of domestic violence, women often report themselves to be either the primary [44] or sole aggressor against their nonviolent partners [42, 45]. Another frequent target is the woman's child (28% of violent convictions in the United States [6]; 10.4% of females convicted of murder in Canada killed their child/stepchild, [46]). Between 1976 and 1997 in the United States, parents and stepparents killed nearly 11 000 children. Mothers and stepmothers perpetrated about half those child killings [46].

According to the Canadian Centre for Justice Statistics, females (3%) and males (15%) are both unlikely to have more than one victim of a homicide [6]. Child maltreatment studies have long identified mothers perpetrating abuse to a comparable extent as fathers [41, 47]. Sexual abuse as a form of women's aggression has only recently been examined as perpetrated against adults [48] and in its more prevalent form, against children [49] (for a review see [36]). Consistent with other forms of female aggression, it is also the case that women more often than men sexually offend against those to whom they provide care (their own offspring or other related children, children they baby-sit or educate [50]).

Function – What Motivates Female Aggression? An appreciation of why women use aggression and to what extent women's aggression has similar or

unique roots to men's aggression is an essential means of developing theoretical explanations and informing prevention and intervention strategies. Felson [51] asserted that there are principally three reasons that people perpetrate aggression: (i) to obtain compliance or control the target; (ii) to attain retribution or justice; and (iii) to promote or defend their self-image.^a A fourth motive, self-defense is a predominant theme in much of the debate about women's involvement in intimate abuse. In a comprehensive review of the literature, Graham-Kevan [52] found that, in the context of intimate relationships, there are no consistent sex differences in the use of controlling behaviors. Even in samples selected for high rates of physical aggression, she noted that women sometimes use controlling behaviors with similar frequency men. A consideration of the empirical data suggests that men and women do not differ in their desire to control their partners though they may use different methods to achieve control (for reviews, see [52, 53]).

Both men and women experience jealousy, frustration, and disappointment in relationships; thus, efforts to save face are not unique to men and it is not surprising that women are motivated to use aggression for retribution just as are men. Empirical work in the area details both similar and divergent motivations cited by domestically aggressive women themselves. Women often report using aggression against their partners for purposes that are similar to those of men who perpetrate partner violence, that is, a desire to control or punish their partners, to get their attention, as a response to partner emotional abuse, and to express anger [54]. Yet a number of other studies do cite women's additional motivations of self-defense or retaliation [55, 56], which some feminist scholars argue are not common motivations among males but in fact are frequently cited by men and women [57, 58]. For instance, Follingstad *et al.* [54] found that women were significantly more likely to report using physical force in retaliation for emotional hurt (55.9% vs. 25.0%; $\chi^2 = 13.11$, $p < 0.0001$) and men were more likely to report using physical force in response to being hit first (29.2% vs. 13.6%; $\chi^2 = 5.61$, $p < 0.05$) whereas men were more likely to report jealousy (41.7%) as a motivator than women (8.5%) ($\chi^2 = 29.62$, $p < 0.0001$).

It is also noteworthy that there was no difference in the likelihood that men and women used aggression to "punish the person for wrong behavior"

(12.5 vs. 16.9%). Contrary to widely held conceptions [59], the notion that women are aggressive against partners primarily in self-defense has not withstood empirical scrutiny [54]. Briefly, women are known to initiate physical assaults, aggress against nonabusive partners, and as few as 10–20% of women report using physical aggression to defend themselves (for a discussion, see [26]). In fact, the varied motivational influences reported to account for female aggression against intimate partners and stalking victims tend to relate to dysfunctional expressions of anger, loneliness, and frustration; and to that of power and anger, very similar to their male counterparts [60, 61]. In the particular case of female stalkers, rage at abandonment and perceived betrayal are most often driven by the desire to establish intimacy with their targets [39].

Among Canadian female homicide offenders, the most common motives cited were escalation of an argument (39%) and frustration (22%) [6]. In only 11% of the cases did women cite revenge, jealousy, or resolving accounts as their motive, compared to 27% cited by male homicide offenders [6]. Laboratory research has also offered considerable insight into female aggression, demonstrating the circumstances under which females aggress [33, 62] and challenging traditional conceptions of females. Briefly, studies suggest that many of the same contexts and circumstances that promote male aggression are also found to increase the likelihood that females will aggress (e.g., emotional arousal, rumination).

Summary. In sum, women are unlikely to commit certain forms of aggression (e.g., robbery, sexual assault, and physical attacks against strangers) but they are equally represented among perpetrators of physical violence in North American family homes and there is increasing evidence that this finding is consistent in other developed nations [42]. Overall, the general trends concerning the form (i.e., interpersonal/familial based), location (i.e., outside the public domain), and target (e.g., family members) of female aggression are likely contributors to underreporting, lower arrest rates for females perpetrating violence, and a persistent perception of lower severity. It is important to note here that both men and women view female aggression as less severe than that perpetrated by males. Although it is essential not to lose sight of the fact that women suffer more harm as a result of domestic violence, it may be the expectation of less harm and injury that is fueling increasing rates of

female aggression, and thus allows females to justify and minimize the impact of their aggressive behaviors. Moreover, we need to always be mindful of the implications of female aggression (and male aggression) for child witnesses to partner abuse and direct child abuse [63, 64].

Outcomes and Implications – How Serious Is Female Aggression?

Aggression is known to have deleterious implications for victims and witnesses that include physical, psychological, emotional, and financial harm (e.g., physical injuries, fear, shame, and posttraumatic stress disorder). Now that there is considerable agreement that the frequency of aggression in women may be on par with men in certain populations (e.g., hospitalized mentally ill patients) or contexts (i.e., within romantic and familial relationships), the debate has shifted to a consideration of whether the consequences of female aggression are on par with the consequences suffered as a result of male aggression. Most scholars agree that female aggression is at least somewhat less likely to result in injury than male aggression. As we have done throughout the manuscript, we focus here on family violence and inpatient aggression, because those are areas of our expertise and there is an abundance of data on the topic. Finally, we end this section by comparing and contrasting the severity of male and female offending as demonstrated by criminal justice statistics on injuries and weapon use.

Several studies have found that, compared to men, women sustain more severe injuries as a result of partner abuse [58, 65]. In a meta-analysis of domestic violence research, Archer [66] reported that women were more likely than men to be injured by a partner and men were more likely than women to inflict an injury. Perhaps given physical differences in size and strength it seems to reason that men would be more likely to injure their targets; however, women often even the playing field with weapons or attack their partners when they are defenseless (e.g., sleeping; [26]). On the basis of their review of the literature, Noller and Robillard [67] concluded that several studies show that women commit a larger share of severe violence. Nonetheless, some studies find sex differences in the reaction of victims confronted with male *versus* female perpetrators [68]: some male victims of female aggression reportedly find the abuse “humorous”^b whereas female victims of

male aggression do not report such a response [69]. Ultimately, however, it is essential to evaluate harm on a case-by-case basis; it is the extent of exposure to trauma, not gender that predicts the long-term emotional implications of aggression [70, 71].

When evidence of the correspondence between inpatient aggression among male and female psychiatric patients became available, critics argued that the findings failed to address the severity of women’s aggression and the likelihood that women would cause serious injury [35]. Increasingly, however, research is demonstrating that while it is certainly the case that the victim of a male perpetrator faces a greater risk of harm than the victim of a female perpetrator, that discrepancy is small (Nicholls *et al.*, under review). Conversely, in some circumstances female aggression may have more severe consequences than male aggression, at least in part, as a function of the relationship with the victim. For instance, maternal aggression results in severe consequences to children that are unique from the implications of paternal aggression. Maternal aggression may have particularly salient influences because mothers are the primary attachment figure throughout the lifespan and mothers spend more time interacting with their children [64]. It should be noted, however, that there is considerable between-victim variability in this regard, and furthermore, the majority of children from violent homes (35%–45%) do not experience clinically significant outcomes [63]. Finally, there is a likelihood of early parenthood, and a negative implication of maladaptive parenting. These features are not completely unique to females, but are of greater consideration given that most single parent households continue to be headed by women [72].

Criminal justice statistics evaluate the level of injury sustained by victims and the use of weapons as indicators of the seriousness of violent crimes. Statistics show that compared to males, females rarely commit violent crimes, but when they do they are just as likely to injure their victim and to use weapons [6]. Just over half of victims sustained no injury from either female or male perpetrated violence (51 and 54%, respectively), minor injury requiring no professional medical treatment was less frequent (43 and 38%) and a small minority resulted in major injury requiring professional treatment or death (2 and 4%; [6]).

In closing, it is important to be mindful that there

is considerable evidence that the gap between the suffering experienced by male and female victims of aggression has historically been exaggerated because of methodological limitations and political agendas [26, 27, 29, 33, 73] further research in this area is required. The field is still relatively new and emerging methodological sophistication (e.g., prospective longitudinal examinations including mental health and physical injury outcomes) enhances our full understanding of the different consequences of male and female aggression [69].

Understanding Female Aggression

Are Risk Factors for Aggression Sex-Specific?

Considerable discussion in the literature has revolved around the extent to which common or unique risk factors underlie aggression in males and females. Despite sound rationale for the importance of gender-sensitivity, few efforts have been made to study empirically whether the predictors and moderators of aggression are sex-specific. Similarly, in the development of risk assessment instruments and other forensic assessment measures (e.g., psychopathy measures) it has been rare for them to incorporate theoretical evidence of sex differences and similarities in the variables of relevance. In addition to an insufficient amount of research, an examination of the extant literature suggests that the findings to date have been equivocal; thus, we examine (i) the extent to which risk factors operate in a similar way, increasing the likelihood of aggression in both males and females; (ii) the differential influence of the same risk factors as a function of gender (i.e., being more influential in one gender than the other); and (iii) gender-specific risk factors (i.e., increasing risk in males or females, but not in both; having the opposite effect, increasing risk for aggression in one and decreasing risk in the other).

Many Commonalities. Not surprisingly, many of the factors that leave males vulnerable to committing aggressive behavior also increase the risk of aggression among females. There is considerable evidence that static risk factors (i.e., unchangeable variables such as a diagnosed serious mental illness, a history of child abuse, etc.) as well as dynamic risk factors (i.e., changeable predictors that are potentially

influenced by treatment and interventions, such as substance abuse, anger, impulsivity, and poor social support) are relevant across populations and settings (e.g., mentally disordered and nondisordered offenders; correctional inmates, civil psychiatric patients, and forensic psychiatric patients). Thus, it stands to reason that risk factors known to be relevant to male aggression are potentially relevant to female aggression (see [28, 74–76]).

On the rare occasions that scholars have made efforts to develop gender-informed assessment measures from the ground up (e.g., [77]; service planning instrument SPIN) the result has been a remarkable degree of overlap in the variables found in measures previously developed for males. For instance, Blanchette and Taylor [77] examined 176 variables identified as theoretically, empirically, or operationally relevant to security classifications of women in correctional settings. The result was a measure composed of nine variables – all but one of which was common to classification measures developed for men. The authors concluded that despite the attempt to develop a gender-informed measure their results suggest there is little evidence for gender-specific variables; however, they caution that “the order of relevance and weighting of predictive items might differ by gender” (p. 376). Blanchette and Taylor went on to note that evidence of considerable overlap in risk factors for male and female offending is highly consistent with well-established theory [78] and prior research in the field of corrections [79, 80].

Another approach to addressing the question of the extent to which risk factors have a common influence over male and female aggression has been to study the psychometric properties of existing measures constructed based on research with males and test their applicability to populations of females. These efforts have yielded revealing, though generally inconsistent, results. Some studies have found predictive accuracy of existing measures result in similar or better predictive capacity with females [28, 81–84] while other studies have found small or moderate and often insignificant associations with women’s aggression [85–87] (for a review of violence risk assessment with women see [88]).

In their longitudinal study of a birth cohort (ages 3–21) Moffitt *et al.* [3] concluded that the same risk factors predict antisocial behavior in both males and females (also see [1]). Although they did *not* find any evidence of “replicable sex-specific risk factors” the

authors did note that family adversity, compromised intelligence, difficult temperament, and hyperactivity had somewhat stronger effects on males than females. They caution, however, that the sex differences are small and “at best, offer only weak support to the hypothesis that males are more vulnerable than females to risk factors for antisocial behavior” [[3], p. 108]. Given these findings it is important to consider to what extent the same risk factors have a unique bearing on the expression of aggression in males *versus* females.

The Differential Influence of Similar Variables.

While there appears to be considerable symmetry in male and female risk markers for violence, evidence also exists for potential differential influences by a number of those shared variables. One particularly noteworthy domain is exposure to elements often present in dysfunctional families of origin. Findings suggest that child abuse and witnessing domestic violence may be more influential in the development of aggression among girls than it is among boys. Differential outcomes are evidenced when the nature of the abuse and the perpetrator gender are taken into consideration as a function of the gender of the victim. For instance, some evidence suggests that childhood maltreatment in the form of sexual abuse may be a risk factor that is especially important in the emergence of girls’ antisocial behavior [89, 90]. Further, experiencing childhood abuse at the hands of ones’ mother has been found to be a powerful predictor of relationship violence [91], as has childhood abuse perpetrated by ones’ father, which appears to explain more of the statistical variance among females than males [64, 92].

There is still reason to expect a greater likelihood of previously victimized women employing violent strategies in their own intimate relationships, as witnessing parental aggression has predicted women’s subsequent use of verbal and physical aggression toward their partner [90]. These findings have been replicated and further refined through more recent research, albeit utilizing a similar sample. Explaining an astounding 51% of the variance in violence, women reported perpetrating more violent acts toward their partners if they had seen their mothers aggress against their fathers [91]. That various gender differences have been evidenced with regard to the impact of witnessing domestic violence, for instance, suggest refinement of the current blanket conceptualization as applied across gender.

Evidence from epidemiological studies [93], population-based research [2, 5, 94] and many patient-based studies (see for citations and brief discussions, [28, 93]) call into question the extent to which the gender gap in aggression witnessed in the general population is reflected among individuals with serious mental illness. Mental disorder, a robust predictor of violence, may have a differential association with the likelihood of aggression among females, although the findings to date are equivocal [93]. Swanson *et al.* [5] assessed the prevalence of self-reported violence over one year in community participants. The authors found that among persons with no mental disorder, violence was much more common among males. The gender difference was substantially reduced among mentally ill individuals. Hodgins [2] reported similar findings through an examination of mental disorder and intellectual disabilities in a Swedish birth cohort. She found that these risk factors had a substantial and differential impact on the risk of crime and violence among females. Specifically, Hodgins [2] reported that women who had a serious mental illness or intellectual handicap were five times more likely to commit a criminal offence than women without those characteristics. Particularly notable for the present discussion, that was twice the increased risk reported for men for the same variables.

When specific aspects of mental disorder have been considered, differences are again evident in the expression of violence; for instance, the presence of positive psychotic symptoms has been found to be more prominently associated with physical violence in women than in men [95], although the reason for these differences remains unspecified. Substance abuse as a contributing factor in violence perpetration is more prevalent, and relates more strongly with physical assault in men than in women [95]. Among homicide perpetrators, 71% of males and 65% of females were reportedly under the influence of drugs and/or alcohol during the commission of the offence [6]. Gender differences in substance use-related aggression are further evident when the type of drug is separated in further analysis [96]. Together, these findings suggest the differential impact of certain clinical and psychosocial factors on subsequent aggression, and emphasize the need to “drill down” past only the first level of factors under investigation.

Socialization and the influence of societal norms and values may have a unique influence on the likelihood of aggression in females as well, protecting females by promoting prosocial behavior, the development of empathy, and an appreciation of caregiving. Conversely, our gender-role socialization of males may actually promote subsequent displays of aggression through rewarding competitiveness and machismo. In general, the influence of protective factors has been overlooked in much of the literature [97, 98] this seems to be no less true of females [82].

Gender-Specific Variables. Reflecting the limited body of evidence to inform this field, it remains unknown to what extent there may be risk variables or protective variables that are unique to the risk of aggression for one gender or the other. For instance, precocious pubertal development and having a mature and/or sexualized physical appearance may present a sex-specific risk for girls entering into aggressive and antisocial behavior [3]. There is also some evidence from the general population and particularly from the sexual offending literature, [36] that antisocial male partners may play an important role in some female aggression. Official criminal statistics offer some support to this hypothesis, demonstrating that women committing violent offenses are more likely to have done so in partnership with a male than are male violent offenders to have committed violent offenses in partnership with a female.

Logan's [36] review of the sexual offending literature reminds us that women do commit serious offenses independently of males and a small but robust proportion of women's involvement in aggression may reflect the influence of antisocial men (the reverse is likely also true). Though the impact of antisocial peers and negative relationships is hardly unique to females, the role of antisocial male partners, (perhaps particularly older men) may be a unique predictor of adolescent girls' involvement in aggression. There is some evidence for this in the expression of antisocial and aggressive behaviors emerging later in girls, typically in adolescence, around the time that same-sex socialization gives way to increasing mixed gender socialization and sexuality. Moreover, criminologists have suggested that being in a romantic relationship with a woman generally inhibits antisocial behaviors in males [99]. Not surprisingly, though, antisocial males and females selectively mate (assortative mating), likely escalating the risk of aggression

in both partners, as well as the risk of an intergenerational transmission of aggression to offspring.

In what appears to be the most comprehensive examination of empirical data on the etiology of physical violence by male and female dating partners, Medeiros and Straus [57] asserted that most of what has been written about the causes and motives for women's aggression has been based on writers' assumptions, in the absence of empirical evidence. Based on their extensive review of the literature Medeiros and Straus [57] found four types of studies they categorized by the type of data reported: (i) seven studies evaluated 25 variables and the statistical relationships between motive and gender; 72% of the relationships analyzed demonstrated no significant gender difference. (ii) The second type of study compared violent men and women on 56 characteristics (e.g., educational attainment, measures of anger, etc.) and demonstrated that in 73% of comparisons no significant difference was found. (iii) The third category also examined violent men and women but did not test significance; therefore, they categorized gender differences that were 20% or more as a gender difference. According to that threshold, they concluded that 43% of variables were similar for men and women (28 variables in six studies). (iv) Finally, the fourth category included studies that examined risk factors for partner assault separately for men and women but did not test for significant differences.

In 23 studies, reporting results in relation to 147 risk factors, 60% of variables showed the same relationships for men and women, 39% showed the direction of the relationship to the risk factor was the same for men and women but was significant in one but not the other, and 1% of variables showed opposite relationships in men and women (one positive and significant, the other negative and significant). The authors interpreted these findings to mean that of the risk factors considered there was a similar etiological pattern for men and women for 60% of the risk factors examined, or that 99% of the studies showed the effect of the variable was in the same direction for men and women [57].

Much work remains to parse out the underlying mechanisms by which female aggression emerges. These disparate findings highlight the need for gender-sensitivity when considering female aggression. Although further study is necessary, the research to date seems to suggest that many of the same

clinical, psychosocial, and environmental risk factors pertain to males and females, however, there is some evidence that the clinical and psychosocial factors that are associated with increased risk for aggression have a different impact on males and females [3, 95]. As Crick [100] speculated, nonnormative forms of aggression (i.e., overt aggression and physical violence) may reflect maladjustment more than gender normative forms of aggression (i.e., relational aggression and verbal aggression). The as yet unresolved question remains whether gender-specific models of aggression are necessary to explain female, as separate from male, perpetrated aggression. Further methodologically sound exploration into disparities and overlap concerning the roots of female aggression may definitively direct us to adopting extant male models, or alternatively, to considering female aggression as a separate phenomenon.

The Developmental Trajectory

Until recently, research on aggression and violence in childhood and adolescence was based on the assumption that aggressive behavior increased from childhood to adolescence, often as a result of exposure to various risk factors. New work on developmental trajectories reveals a different picture: first, aggressive acts such as hitting and biting are *sometimes* present in over 40% of two-year old boys and almost 35% of girls, and are *frequently* present in 5% of boys and 1% of girls [101]. After age 2, aggressive behavior tapers off quickly, and by age 11 only 10–15% of boys and girls *sometimes* engage in aggressive acts and fewer than 5% do so *frequently* [102]. From age 6 to 16, further desistance is noted for the vast majority of children; however, 4% of boys continue to be aggressive [103]. While girls also show drops in physical aggression with age, girls but not boys increase their use of relational aggression during primary school [21]. Together these findings show that most children learn to inhibit aggression very early in childhood, however a small proportion of boys and girls are not taught or do not learn how to desist, and girls in general begin to use greater amounts of relational aggression.

The failure to desist in childhood aggression, and to acquire new aggressive behavior early in childhood, is a clear marker for future pathology. Approximately 95% of boys who show severe aggressive behavior early in development (i.e., prior to age 10)

continue to show antisocial and aggressive behavior into adolescence and adulthood, thereby lending credence to the distinction between early-onset life-course persistent (LCP) *versus* adolescent limited (AL) conduct disorder [104–106]. Moffitt *et al.* [3] asserted that the LCP *versus* AL taxonomy applies equally well to males and females, however the rate of early-onset *versus* adolescent-onset cases is extremely low among females. For example, only 6 of the approximately 450 females (1.3%) from the Dunedin Longitudinal Study were identified as life-course offenders, whereas 78 (17%) were identified as adolescent-onset. Consistent with this finding, the gender gap in rates of conduct disorder is greater in childhood than in adolescence (for reviews see [3, 107, 108]).

The fact that adolescent-onset aggression is more common in girls than is childhood-onset has led some to question the validity of this distinction in girls [104, 109]. Silverthorn and Frick [109] proposed that the delayed-onset pattern in girls is comparable to the early-onset pattern in boys in terms of risk markers, stability, and persistence to adulthood. They present findings that show adolescent-onset girls resemble early-onset boys on a range of risk factors [109], and they are more likely to suffer from a multitude of mental health problems in adulthood, including substance dependence, poor physical health, involvement in abusive relationships, antisocial personality disorder, and social welfare dependence [3, 109–111]. However, Moffitt and Caspi [112] proposed that the same model applies to the development of antisocial behavior in girls and boys, and that the delayed onset in girls simply reflects the slower rate of accumulated risk factors for girls. In particular, the higher prevalence of neurocognitive and temperamental risk markers in boys than girls exerts a significant impact on early development and results in boys reaching a threshold of risk for antisocial behavior more quickly than do girls [112]. Yet, whether or not risk factors operate similarly for girls and boys is unclear. Moffitt and Caspi [112] assume a linear and additive model of risk; however, consideration of other models is warranted. Some risk factors may have gender-specific impacts, or may interact with other risk factors in a gender-specific way [113]. There is simply too little research to conclude that the risk models developed primarily on boys are accurate in predicting onset and developmental course in girls.

Conclusions: Implications, Gaps in Knowledge, and Future Directions

Female aggression remains a topic fraught with controversy and heated debate. Despite widespread consensus of large gender disparities in the amount and consequence of aggression committed by males *versus* females, we recommend exercising caution in the wholesale acceptance of “well-established” knowledge for which there is little or equivocal empirical evidence. Aggression is complex [114] and no one variable, including gender is a sufficient explanation for why one person is aggressive and another is not [115]. The lens through which society has traditionally examined female aggression has been colored largely by our knowledge of women’s engagement in criminal violence that comes to the attention of the criminal justice system. As we have reviewed here, the picture that emerges from a consideration of arrest and incarceration data clearly confirms a vast disparity in violent criminal offending by males *versus* females.

For this reason, it is not surprising that research calling into question the accuracy of our comfortable classification of females as gentle, nurturing, empathic, caregivers is often received both by the research community and the general population with disbelief and caution and at other times with outrage (see [73]). People who study female aggression have been ostracized and vilified, their efforts to solicit funding and to communicate their research findings have been blocked [73, 116]. Similarly, advocates who work to provide support to victims of female aggression have encountered severe criticism and empty pockets [117]. Readers should be cognizant that sex differences have been exaggerated in the literature as a result of ideology and stereotypes and assumptions have been maintained often due to a lack of empirical evidence to contradict our socially sanctioned assumptions about females [33]. In fact, the extent to which this wisdom holds depends very much on the population and setting, as well as the type of aggression being examined.

As we have suggested, gaining a more thorough understanding of aggression requires a consideration of the multiple manifestations it takes, discriminating between verbal and physical assaults, physical aggression and severe violence, for instance. The extant literature offers compelling evidence that violent females are vastly outnumbered by violent males

in the general population but that women contribute to nearly half of the aggression that occurs in inpatient psychiatric settings, intimate and familial relationships; though, they remain somewhat less likely than males to commit harm that results in injury.

Violence by females has not been recognized as a public health concern, there is little public education along those lines, funding for research has been purposely directed away from examining the issue (Straus) and the study of relevant variables has been intentionally blocked (e.g., psychopathy, [118]; for a discussion see [84, 119]). As we have demonstrated here, avoiding the difficult questions is not an effective means of achieving increased health and safety. While male aggression is on the decline, female aggression is increasing and that aggression is now known to have widespread, lasting, and substantial implications for victims, perhaps most importantly, children. To move ahead, to effectively reduce aggression in society (i.e., not only among females because female aggression has implications for male aggression and the intergenerational transmission of violence) we must be willing to challenge our most firmly held beliefs about gender, patriarchy, and sexism.

As Murray Straus, one of the pioneers in this field has admonished, we have to ask ourselves if we are more committed to maintaining our political perspectives or are we committed to reducing aggression? While always remaining cognizant of many important gender differences, an increasing recognition that female aggression is not uncommon means that we can now turn our attention away from attempting to credit or discredit research showing gender equity and begin to uncover what contributes to, or conversely prevents, female aggression [29] and why it might be that in certain settings and populations female aggression is uniquely common. Continued contributions to the female aggression knowledge base carry the potential for directly informing development of proactive aggression prevention programs, as well as clinical treatment options to curtail further expressions of violence amongst those most at risk.

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End Notes

^aThere are other potential motives of which readers should be mindful, but they are beyond the scope of this article (e.g., excitement, [51]).

^bWhile this finding may offer important insight into gender differences with respect to the fear experienced by female *versus* male victims of intimate partner abuse several related issues require further study and careful consideration. For instance, it is unknown to what degree reporting reflects male socialization and sex-role expectations (e.g., we do not teach male children to fear their female peers). Further, although men may report less fear than women that offers little evidence that they are actually at less risk. As we noted above, when women commit violent offenses generally and when they are violent to their partners, specifically, there is relatively little difference in the risk of injury to the victim.

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