

Original Paper

Female Aggression: Evolution's Not So Secret Weapon

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Abstract

In the present article, we examine the relatively recent and substantial increase in physical aggression among adolescent females. We review what is known about the prevalence and specific characteristics of aggression among adolescent females, and then propose a novel way of understanding this behavior. Existing evidence from multiple academic disciplines is reviewed and integrated to propose a new framework for considering the underpinnings of physical aggression in females. Most examinations of physical aggression in females have focused on non-human animal models of maternal aggression. In spite of this, the growing prevalence of physical aggression among adolescent females continues to be poorly understood. We endeavor to integrate multiple viewpoints on female aggression and posit a conceptualization of female aggression among adolescents that reflects an immature, socially inexperienced, precursor to functional maternal aggression.

Keywords

Physical Aggression, Female, Adolescence, Evolution

1. Introduction

In nearly all evolutionary depictions of human evolution, physical aggression has been ubiquitously associated with the male of our species. This characterization is likely the result of the greater frequency and intensity of physical aggression among men being well documented in the empirical literature, in conjunction with the fact that exceptions to this narrative have been dismissed or ignored (Campbell, 2013; Campbell, 1995; Frodi, Macaulay, & Thome, 1977). Until recently, the literature on human aggression supported stereotypical views of women and girls as consistently devoid of physical aggression. Over the years empirical studies have consistently reported far higher levels of aggression in males of all ages compared to their female counterparts, even as personal and observational accounts of severe bullying and antagonism among females mounted (see Block, 1983; Parke & Slaby, 1983; Berkowitz, 1993 for reviews; Pipher, 1994). Contemporary ethnographic studies have revealed a

particularly vicious style of physical aggression between adolescent girls, paradoxically suggesting that the intensity of their fights may actually be greater than that of boys'. This stands at odds with the mainstream understanding of physical aggression between women as being less frequent and/or intense than physical aggression between men. While rigorous investigation is required to empirically validate these increasingly consistent observations, researchers must also confront the dissonance between what is observed in the real world and that which can be explained using existing theoretical frameworks. Maternal aggression, which serves to prevent harm to offspring, is one form of physical aggression among females, that has received empirical examination (see Denson et al., 2018 for a review). As such, which is known about maternal aggression may provide an excellent lens through which to examine physical aggression among adolescent girls. The present discussion seeks to integrate relevant insights from biological, social, moral and evolutionary psychology to explore and better understand the intensity of physical aggression among adolescent girls. Following this interdisciplinary exploration, we suggest that physical aggression among adolescent females may be, at least in part, a behavioral precursor to maternal aggression.

2. Female Aggression: What Is known

"Girls are worse" is the most common phrase to emerge from qualitative interviews with high school students, teachers, counselors, administrators, youth workers and police officers about physical aggression (Ness, 2004; Bright, 2005; Lynch, 2014; Baines & Adler, 1996; Waldron, 2011). While many report boys' fights as more common, they unfailingly characterize girls' fights as more vicious and consistently describe them as lacking emotional and behavioral restraint. Practitioners who work with physically aggressive adolescent females underscore a high potential for danger, noting that inflicting or sustaining serious injury is unlikely to curb the tenacity with which one girl attacks another. As one girl described, "I get so hyped up, I black out. I don't care who gets hurt then. I don't even remember what happens afterwards" (Ness, 2004). Ness (2004) found that without exception, police officers find it much harder to break up girls' fights and strongly prefer stepping between two boys: "Girls just won't let it go," one sergeant explains, "You tell them you're gonna take them in and they get in your face and curse you out. You give a boy a chance to walk and he does." Not only are girls' fights regularly reported to be "wilder" than those among boys but also more enduring. Whereas boys' fights often resolve as quickly as they flare up and seldom ruin relationships, fights among girls appear amidst episodes relational aggression (see Crick & Grotpeter, 1995 for a review) that involve gossip or rumor-spreading and have a lasting impact on social alliances, in some cases evolving into a "war" between friend groups (Waldron, 2011; Talbott et al., 2002; Levy, 2012; Ness, 2004). Furthermore, they rarely express remorse or feel guilt for hurting another girl, as reported by youth workers, school employees and girls themselves. Typically, adolescent girls feel justified in their actions and often invoke the notion of self-defense, even in situations where the perceived threat (e.g., a facial expression interpreted as a personal slight or insult) is often imperceptible to an observer (Ness, 2004; Esposito &

Edwards, 2018; Waldron, 2011) “I do it to them or they do it to me, so why should I feel bad?” (Ness, 2004). Two things are undeniably clear to those who work closely with adolescent girls: 1) physical aggression is already a significant part of the day-to-day lives of many, and 2) under certain conditions, girls’ fights may be more dangerous than those of boys. Why, then, has no work emerged that empirically investigates these ideas? And perhaps more importantly, how do behavioral neuroscientists approach studying the complex and multi-faceted phenomenon related to physical aggression among female adolescents?

Nicki Crick’s groundbreaking work may offer a relevant model for how to approach some of these questions, as her team was the first to empirically invalidate the traditional perception of females as rarely aggressive. In 1995, Crick and Grotpeter posited an alternative explanation for the gender gap, suggesting it was inadvertently manufactured by previous studies that failed to identify and assess the forms of aggression most common to girls. Indeed, they demonstrated that while boys are more likely to inflict harm on peers by physical or verbal aggression—the “overt” forms aggression overrepresented in the literature—girls are more likely to focus on aggression within a relational context. Crick’s construct of relational aggression includes behaviors intended to damage interpersonal relationships or feelings of inclusion by peers, such as spreading rumors, purposefully excluding others and threatening to end a friendship. These behaviors are hostile, hurtful, emotionally distressing and are often motivated by anger (Crick & Grotpeter, 1995; Crick, 1996). The construct’s introduction was a critical innovation because it equipped the field with the first tool developed using female participants, enabling empirical work on the most common forms of female aggression. Crick and colleagues did not, however, revise existing approaches for studying physical aggression. Ethnographic evidence continues to reveal a gap between public perception and extant literature on female aggression; and in spite of this, female subjects continue to be excluded from this portion of the empirical literature (Denson et al., 2018; Been, Gibbons, & Meisel, 2019) and, there is a clear need for additional work. Although aggression among females has been almost entirely unexplored in humans, there is one form of female aggression that is well-known in the natural world for both its ferocity and relentless efficacy. For the purpose of the present discourse what is currently understood about maternal aggression may provide a valuable framework for extending Crick’s seminal work provides essential insights for understanding physical aggression in females.

Throughout the animal kingdom, maternal aggression has served to protect the lives of offspring. It is a defensive, reactive pattern of behavior set off by perceived threats. This means that maternal aggression must not only *function* in the face of intense fear and stress but also be *incited* by situations in which the perceived risks are high (Avram & Cymerblit-Sabba, 2017; Maestripieri, 1992; Numan, 2017). This is particularly notable given that perceived danger typically deters aggression in females. Research has shown that not only are females likely to perceive higher risks than males in the same objective situation, but the same perceived risks are more likely to inhibit aggressive behavior in females (Campbell, 2004). From an evolutionary perspective, it is advantageous for women to pay more

attention to safety and survival than men: “natural selection has favored females who avoid danger because of the higher evolutionary fitness costs of risking their lives,” (Campbell, 2004). Whereas the evolutionary fitness of men generally depends on access to mates, women’s fitness relies on their ability to keep offspring alive and well throughout the juvenile period (Campbell, 1995; Campbell et al., 1998; Archer, 2009; Campbell, 2004; Buss & Shackelford, 1997; Rosvall, 2011). However, as others have noted, because situations in which offspring are mortally threatened may pose a greater risk to long-term genetic potential than the loss of an individual mother’s life, maternal aggression enables mothers to override the physical and social risks that are thought to prevent physical females from engaging in physical aggression in most circumstances (Brain, 1999; Harris, 1999; Fox, 1999; Maestripieri & Carroll, 1999).

While there remains much to be learned about maternal aggression, especially in humans, the extant literature continues to emphasize the neurophysiologic importance of oxytocin. Perhaps most notably, oxytocin has been shown to play an important, and somewhat paradoxical, regulatory role with regard to maternal aggression. Oxytocin’s well-known anxiolytic effects are known to promote social attachment, emotional memory, and affiliative behavior, all of which have undoubtedly benefited the survival of the human race (Bosch, 2005; Trainor, Sisk, & Nelson, 2009; Esch & Stefano, 2011; Numan, 2017). Interestingly, more recent work suggests that oxytocin’s anxiolytic properties may, in some contexts, increase humans’ propensity for physical aggression by reducing fear and inhibition (DeWall et al., 2014; Trainor, Sisk, & Nelson, 2009). These seemingly contradictory effects are especially prominent among people who have been shown to exhibit, and more often find themselves in situations involving defensive aggression, highlighting the importance of individual differences and contextual factors (Bartz, Zaki, Bolger, & Oschner, 2011; Bartz et al., 2011; De Dreu et al., 2010; Levy et al., 2016). Taken together, this work adds critical insights the nuanced function of oxytocin, in that there are conditions under which oxytocin *increases* physical aggression in some women. Oxytocin accomplishes this by acting on the brain’s Corticotrophin-Releasing Hormone (CRH) circuits, reducing fear and anxiety and in doing so lowers perceptions of danger that typically inhibit physically aggressive behaviors among many women (Bosch, 2005; Trainor, Sisk, & Nelson, 2009; Esch & Stefano, 2011; Numan, 2017). Maternal aggression is unique in that it requires not only the aggressive but also the prosocial properties of oxytocin to work together to produce a natural superpower, the most lethal form of aggression known to the animal kingdom. The especially intense ethnographic accounts of female-on-female aggression in adolescence similarly defy expectations based on generalized observations of female aggression—and it is hard to believe that this is merely coincidence.

Once a female enters puberty and has the capacity to bear children, logic would suggest that she would also have the capacity for maternal aggression in order to protect any potential children. This is not the only purpose of female aggression, nor is it fully descriptive of the female threat response. But thus far, the literature has sidestepped the fact that human females are biologically predisposed to protect their offspring against possible threat, and the circuitry that enables aggression in life-or-death scenarios

provokes an “at any cost” approach (Avram & Cymerblit-Sabba, 2017; Maestripieri, 1992; Numan, 2017). Depending on one’s temperament and environment, the neurophysiological circuitry supporting maternal aggression may never get activated. However, when this circuitry is activated, the behavioral response is strikingly similar to the kind of intense physical aggression on served during adolescent girls’ fights: completely uninhibited and divorced from the behavioral standards that typically govern boys’ fights. Ethnographic reports of the vicious and relentless nature of physical aggression among adolescent girls clearly call for models of female aggression that better account for the specific interaction of biological, temperamental, environmental and socio-cultural factors in the developing female.

3. Conclusion

Physical aggression in adolescent females is overdue for thorough empirical study, and it is crucial that researchers consider the pubertal emergence of myriad factors that, over developmental time, enable maternal aggression. It is our hypothesis that it is these underpinnings may best contextualize the intensity and ferocity of ethnographically documented physical aggression among adolescent females. While the complexity of female aggression may be intimidating, this hardly justifies chronic empirical neglect, especially as growing arrest trends among adolescent girls (Puzzanchera, 2020; Zahn et al., 2008) contribute to the widespread public perception that they have become more violent (Letendre, 2007; Lynch, 2014; Bright, 2005; Graves, 2007; Rosvall, 2011; Garbarino, 2007; Prothrow-Stith & Spivak, 2006). We can only hope that future research will approach this topic with the tenacity of an adolescent female.

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