

Evolutionary Psychology

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Ranald D. Hansen

Editors

The Evolution of Violence

 Springer

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Editors

The Evolution of Violence

Foreword by Steven Pinker

 Springer

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Foreword

In the century and a half of politically motivated opposition to Darwinism, no issue has energized the evolution-phobic as much as violence. It has always been easy to interpret Darwin's "struggle for survival" as a *violent* struggle, and Darwin himself wrote that "from the war of nature . . . the most exalted object which we are capable of conceiving, namely, the production of the higher animals, directly follows." The movement called "social Darwinism" that emerged in Darwin's time was interpreted as justifying violent struggle as the engine of civilizational progress, and 1960s-era ethology, such as Konrad Lorenz's *On Aggression* and Lionel Tiger and Robin Fox's *Men in Groups*, were interpreted as positing a primal thirst for aggression in men that had to be periodically slaked. Napoleon Chagnon's famous studies of the Yanomamö, which showed that aggressive men had more wives and offspring, reinforced the idea that natural selection implies selection for violence. Small wonder, that peace-loving progressives have often railed against the application of evolution to human affairs. It would seem to imply that aggression is inevitable, so attempts to reduce war, rape, and domestic violence are futile—or even undesirable, since violence is necessary to produce "the most exalted object which we are capable of conceiving."

But this construction of the link between evolution and aggression, however prevalent among academics and pundits, gets almost every aspect of the history and science backwards. Darwin himself was what we would today call a progressive, not only abhorring the violent coercion that he saw around him but also explaining how societies, over time, increase their levels of harmony: "As man advances in civilization, and small tribes are united into larger communities, the simplest reason would tell each individual that he ought to extend his social instincts and sympathies to all the members of the same nation, though personally unknown to him. This point being once reached, there is only an artificial barrier to prevent his sympathies extending to the men of all nations and races". As for so-called Social Darwinism, it was the brainchild of Herbert Spencer, and not Darwin, and in any case Spencer was a *laissez-faire* libertarian who had no sympathy for imperial conquest or other violent adventures. The glorification of violent struggle as an impeller of human progress was far more popular among romantic poets and revolutionary acti-

vists for much of the nineteenth and twentieth centuries than it ever has been among scientists.

Indeed, the very logic of natural selection militates against an indiscriminate instinct for aggression, a lust for blood, a death instinct, or a hydraulic pressure for violence that must be periodically discharged. Any tendency toward violence must have evolved in a world in which every other member of the species was evolving the same tendency. Any move toward harming a fellow human instantly gives the target an overriding goal of harming you before you harm him, and even if you prevail by killing him, you will have given his kin the goal of killing you in revenge. Initiating serious aggression in a symmetrical standoff is something a Darwinian creature must consider very, very carefully and motives for violence are apt to be complex and regulated by many countervailing mechanisms. These mechanisms include a panoply of switches and knobs that allow violence to be inhibited and controlled. Not only does an evolutionary analysis of violence fail to imply that high rates of war and violence are inevitable; it shows precisely how they can be reduced.

And reduced they have been. It was a classic evolutionary study of violence—Martin Daly and Margo Wilson’s 1988 book *Homicide*—that alerted me to a pair of astonishing facts: the foraging societies in which we evolved were far more dangerous than today’s state societies, and within those societies, rates of homicide have plunged over the centuries by a factor of thirty or more. These phenomena eventually led me to write a book on historical declines of violence and their evolutionary psychological roots, *The Better Angels of Our Nature*. In it I proposed that evolution gave us a number of distinct motives for violence, including rage, predation, exploitation, revenge, and dominance—and also a number of motives that can inhibit violence, including self-control, empathy, reason, and social and moral norms. None of them are homeostatic urges, like hunger or the need to sleep; all are responsive to inputs from the social and physical environment. Whether violence actually breaks out depends on which subsystems have the upper hand, a balance that can change with historical changes in societies.

While writing the book I was struck by how indispensable evolutionary insight was to the attempt to the understanding of violence and its prevention. Not only would it have been crippling for me to consider changing rates of violence without an appreciation of the roots of violence and nonviolence in human nature, but also, far more than its own practitioners may realize, evolutionary thinking has taken hold of an increasing number of criminologists, historians, and international relations scholars. In particular, I was inspired and edified by the work of many of the contributors to this volume, and wish I had the time and space to incorporate the work of the others. This collection represents the scientific and intellectual richness of the contemporary understanding of violence from an evolutionary perspective, and amply demonstrates why an understanding of the biological roots of violence (and nonviolence) is indispensable to our species’ attempt to reduce it.

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Preface

In April 2012, we invited dozens of scholars from around the USA to join us at Oakland University in Rochester, Michigan for a day-long interdisciplinary conference on “The Evolution of Violence.” This conference followed a visit and lecture the day before by Steven Pinker on his recent book, *The Better Angels of Our Nature*. We invited as panelists some of the leading violence scholars from many different disciplines, including psychology, criminology, biology, anthropology, archeology, law, philosophy, and medicine. Each of these scholars had conducted and published significant and substantial work addressing violence from an evolutionary perspective. This volume showcases the groundbreaking empirical and theoretical work from several of these panelists and other distinguished conference guests.

Steve Pinker provides a thoughtful Foreward to the volume, setting the stage for the remaining chapters. Next, evolutionary psychologists David Buss and Joshua Duntley summarize some of their own and others research on intimate partner violence, guided by an evolutionary psychological perspective. A key contribution of this work is that there may be functional design in the atrocities men inflict on their intimate partners, to control women’s sexual behavior. In the next chapter, anthropologist Lawrence Keeley updates his classic book, *War Before Civilization* and provides insightful commentary on the changing state of the field of anthropology, which now includes thoughtful analyses of our warring evolutionary past, despite persistent efforts by others to maintain the fiction of the “noble, peaceful savage”. Literary scholar Joe Carroll presents an overview of the new field called “Darwinian literary analysis”, which he helped to create. In a stunningly original contribution, Carroll applies an evolutionary lens to violence in literatures of the past and present, showcasing the value of Darwin’s insights for securing a richer appreciation of core themes and characters in literature.

Legal scholar David Herring shines a brilliant evolutionary light on the law, with special consideration of child welfare laws. Herring is among a vanguard of lawyers at the forefront of a new field of legal scholarship, “Darwinian legal analysis.” Next, archeologist Steven LeBlanc trains a keen eye on what the archeological record tells us about our ancestral history of war, updating the groundbreaking analysis from his book, *Constant Battles*. In short, the archeological record clearly indicates that human history has been a series of constant battles. We are a warring

species, and the bones tell the tale in no uncertain terms. Evolutionary psychologists Carlos Navarrete and Melissa McDonald offer a clear and powerful summary of the value of applying Darwin's theory of sexual selection to the psychology of intergroup conflict, including violence and war. For a number of years, criminologist Kevin Beaver et al. have led the application of evolutionary principles to crime, and more recently they have been among just a handful of daring scholars attempting an integration of evolutionary psychology with behavioral genetics and criminology. The results of these efforts—as this chapter showcases—have pushed each of these fields into new intellectual territory and opened doors to exciting new interdisciplinary work.

Sibling conflict is ubiquitous among humans and extraordinarily common across many species. This conflict sometimes takes a deadly turn, with one sibling killing another. Evolutionary psychologists Catherine Salmon and Jessica Hehman offer a thoughtful evolutionary psychological analysis of this conflict and, in the process, provide a clear and compelling summary of historical and recent empirical and theoretical work in this interdisciplinary field. In the next chapter, David Bjorklund and Patricia Hawley make a strong case for the heuristic value of an evolutionary developmental perspective, especially as this perspective can shed light on the causes and consequences of human violence. Social psychologists Robin Vallacher and Christopher Brooks, in turn, make an equally compelling case for the empirical and theoretical harvest that might be won by careful integration of evolutionary psychology with dynamical systems theory. In the closing chapter, psychologists Catherine Cross and Anne Campbell provide a masterful summary of recent work—including some of their own brilliant contributions—addressing violence and aggression in women.

The Evolution of Violence showcases the intense intellectual value of an interdisciplinary approach to human psychology and behavior. Guided by Darwin's insights, the contributions to this volume provide a staggeringly compelling case for an evolutionary analysis of violence.

Rochester, MI, USA

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Chapter 1

Intimate Partner Violence in Evolutionary Perspective

David M. Buss and Joshua D. Duntley

Humans possess a range of tactics to influence other humans to obtain reproductively relevant resources (Buss et al. 1987). Within intimate relationships, these include benefit-bestowing tactics, such as pleasure induction, monetary reward, and reciprocity (Buss 1992). They also include exploitative tactics by which people extort resources through deception, manipulation, coercion, intimidation, or violence (Buss and Duntley 2008). Specific cost-inflicting tactics in intimate relationships include yelling, making demeaning comments, emotional or psychological abuse, threats of monetary withdrawal, threats of desertion, threats of bodily harm, threats of sexual violence, rape, nonsexual physical violence, threats of murder, and actual murder (Buss 1992; Frieze 2005).

Humans, unlike our closest primate relative the chimpanzee, form long-term intimate mateships that last years or decades. From an evolutionary perspective, long-term mating offers a number of benefits to both women and men (Buss 2012). Benefits women can accrue include: (1) physical protection for themselves against aggressive men; (2) physical protection of their children; (3) a recurrent supply of provisions, including food and resource-rich habitats, which in traditional societies increase the odds of their children's survival (Hill and Hurtado 1996); and (4) help with the socialization, training, and influence of their children, which historically translated into fitness-relevant benefits ranging from increased survival to better mating prospects.

Men, from an evolutionary perspective, also benefit greatly from committing to a long-term mating strategy in at least the following ways: (1) increasing their ability to attract a desirable mate; (2) increasing their paternity certainty by prolonged proximity and sexual access; (3) increasing the survival of their children; (4) increasing the reproductive success of their children through paternal investment; and

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(5) increasing status and coalitional allies through their wife's extended kin (Buss 2012; Buss and Schmitt 1993). In short, our species is marked by a transition to long-term mating with biparental care, which could not have evolved if the fitness benefits did not outweigh the fitness costs for both men and women.

In order to reap the benefits inherent in long-term mateships, people must engage in actions that ensure that the potential benefits of long-term committed mating are indeed received. Without ensuring access to those benefits, the costs of long-term mating (e.g., in time devoted to courtship; in forgone mating opportunities) would have precluded the evolution of long-term mating to begin with. Indeed, the heavy costs of long-term committed mating may explain why it is so rare. Monogamy characterizes only 3–5% of mammalian species (Kleiman 1977).

Given the tremendous benefits both sexes reap from long-term mateships, it may seem counterintuitive or bizarre that violence sometimes pervades intimate relationships. Each year, more than half a million women in the USA report to law enforcement violent attacks by current or former romantic partners (Peters et al. 2002). Annually, rates of violent victimization of women range from 14 to 16%. Lifetime prevalence of women being battered by an intimate or an ex-intimate is estimated to be roughly 27% in Canada and 30% in the USA, and some studies put the figure as high as 34% (Frieze et al. 1980; McHugh and Frieze 2006). Rates of marital rape, one of several forms of intimate violence, are also disturbingly high (Russell 1982). A recent review estimated that between 10% and 14% of all married women had experienced rape at the hands of their intimate partner (Martin et al. 2007). Other reviews that include cross-cultural data estimate the marital rape rate to range even higher, from 10 to 26% (Kaighobadi et al. 2009). These statistics do not include psychological and emotional abuse, which is likely to be even more common. Many men clearly attempt to exert reproductive control over their intimate partners, often through violent means. Why are the rates of intimate partner violence so high?

To answer this puzzling question, we first introduce sexual conflict theory as a broad framework for understanding conflicts that occur between men and women in the mating arena. Then, we outline an evolutionary perspective on intimate partner violence. We then turn to key adaptive problems women and men face in intimate mateships, and present extant evidence bearing on the hypothesis that different forms of violence are evolved tactics used for solving these problems. Discussion focuses on the context dependence of intimate partner violence, psychological processes by which violence may attain its effectiveness, and coevolved defenses in victims. We highlight the utility of an evolutionary psychological lens for providing both heuristic value and novel insights into intimate partner violence.

The Evolution of Sexual Conflict in Mating

Throughout much of the history of thinking about the psychology of intimate couples, the dominant assumption has been that harmony is, or should be, the norm, and that major deviations from harmony reflect dysfunctional relationships. Entire

research programs and therapeutic offerings are devoted to fixing “dysfunctional” intimate relationships. Interestingly, the field of evolutionary biology long held the same assumptions for species that formed long-term mateships. Mating was assumed to be fundamentally a cooperative harmonious endeavor, in which a male and female paired up for the mutual goal of bearing and rearing offspring (Parker 1979).

Within evolutionary biology, a sea change in thinking occurred with the development of sexual conflict theory, which forecasts predictable forms of conflict in the mating arena (Parker 1979, 2006). Although a full explication of the theory is beyond the scope of this article, the core of the theory has profound bearing on intimate partner violence. In a nutshell, sexual conflict occurs whenever “there is a conflict between the evolutionary interests of individuals of the two sexes” (Parker 2006, p. 235). When there exist different fitness optima for men and women in a particular domain, evolution by selection will tend to fashion adaptations in each sex to influence or manipulate the other to be closer to its own optimum. These refer to conflicts between individual males and individual females. Notions of “males as a group” in conflict with “females as a group” are logically incoherent from an evolutionary perspective (Buss 1996). Although men often strive to control and monopolize women’s sexuality, men are in competition primarily with other men and women with other women (Daly and Wilson 1992).

Sexual conflicts caused by recurrent differences between women and men in fitness optima set into motion coevolutionary arms races between the sexes, analogous to arms races that occur between predators and prey. Selection favors offenses in one sex to influence the other to be close to its optimum. Coevolved selection pressure, in turn, favors victim defenses in the other sex to counteract offenses that maneuver it away from its own optimum. These coevolved defenses, in turn, favor the evolution of coevolved offenses in the other that circumvent, nullify, or mitigate those defenses. Sexual conflict, in short, can produce perpetual coevolutionary arms races, unless natural constraints limit further coevolution.

In the mating domain, one useful scheme for partitioning sexual conflict is a temporal one—conflict before mating has taken place, conflict during the course of a mateship, and conflict in the aftermath of a breakup (Buss, under review). Sexual conflict, for example, can occur on the “mating market” over whether or not sexual intercourse will occur or in the amount of time and investment required before sexual intercourse will occur. *Deception* and *sexual persistence* are two common tactics men use in the “battleground” of pre-mating sexual conflict (Buss 1989a; Haselton et al. 2005). Deflecting sexual attention, imposing longer time delays, and requiring additional signals of commitment are common tactics women use in the “battleground” of pre-mating sexual conflict. Sexual conflict also occurs after a mateship has formed. “Battlegrounds” include frequency of sexual intercourse, expenditures of pooled economic resources, effort devoted to one set of kin versus the other, amount of parental investment each allocates, and mating effort diverted to others outside the primary mateship. Even after a couple breaks up, sexual conflict can continue (Duntley and Buss in press). A former mate, for example, might persist in unwanted sexual advances or attempt to reestablish the mateship. Stalking is a common phenomenon—some studies estimate that as many as 49% of individuals

have been stalked (Bjorklund et al. 2010), although lower estimates are given by studies that use stricter legal definitions of criminal stalking (Tjaden and Thoennes 1998). Stalking by former intimate partners appears to be a sexual conflict tactic used by the jilted partner either to interfere with a former partner's attempts to re-mate with someone else or to regain some form of access to the reproductively relevant resources of the former mate, or both (Duntley and Buss in press).

The key point is that sexual conflict theory provides a powerful framework for understanding that regions of conflict are common and predictable. Rather than being seen as dysfunctional, sexual conflict is expected, recurrent, and widespread in the initiation, duration, and aftermath of mating relationships. This perspective, of course, does not imply that sexual conflict and the cost-inflicting tactics used by men and women in these "battlegrounds" should be condoned or excused. On the contrary, this evolutionary perspective highlights the domains of danger most urgently in need of potential intervention and amelioration.

Human mating and sexual reproduction, of course, are also partly a cooperative venture, and sexual conflict must be understood within this context (Cronin 2006). It becomes especially cooperative when it is characterized by strict monogamy, with no likelihood of infidelity or defection, no children by former mates, and no kin in proximity for differential resource allocation (Alexander 1979; Daly and Wilson 1988). Whenever there is deviation from strict monogamy, some likelihood of infidelity, some prospect of relationship dissolution, extant children by former mates, and kin in proximity, however, the "battlegrounds" for sexual conflict become multiple and pervasive.

An Evolutionary Perspective on Intimate Partner Violence

Daly and Wilson (1996, 1998) have been at the forefront in examining intimate partner control and violence through the lens of evolutionary psychology. According to their position, males have evolved adaptations summarized by the phrase "male sexual proprietariness," particularly in response to adaptive problems of a woman's sexual infidelity or losing her to a rival. Male sexual proprietariness is not proposed to be invariantly expressed in men's behavior. Rather, it becomes activated by various cues indicating that the man is confronting the relevant adaptive problems: "any variable that has been a statistical predictor of variations in the risk of loss of reproductive and productive control of his wife" (Wilson and Daly 1998, p. 201). Moreover, there are costs to husbands of using violence, such as potential retribution from the wife's kin or loss of the mating relationship itself, which provide contextual variables that can inhibit men's use of violence to control their wives.

The functions of intimate partner violence center on limiting female autonomy and retaining control over her sexual and nonsexual resources: "The link between male sexual proprietariness and violent inclinations has presumably been selected for because violence and threat work to deter sexual rivals and limit female autonomy" (Wilson and Daly 1996). From an evolutionary perspective, warding off

mate poachers and limiting a woman's potential sexual contact with other men historically would have increased a man's paternity probability, which would have translated into increased reproductive success.

Evolved functional violence toward mates is hypothesized to be context dependent. One context is the cost–benefit calculus linked with alternative means of solving each of the relevant adaptive problems. Tactics to solve the diversion of mating resources to others outside the mateship range widely from vigilance to violence (Buss 1988; Buss and Shackelford 1997; Daly et al. 1982; de Miguel and Buss in press; Goetz et al. 2008; Shackelford et al. 2005). Many, probably most, problems of resource diversion are solved through nonviolent means. Continuous resource provisioning by a man, for example, can increase the likelihood that his wife will remain sexually faithful (Buss 2000). Providing sexual inducements, a tactic of mate retention used in intimate relationships, can sometimes ensure the ongoing commitment of a partner. Coercive strategies, such as threats of defection, threats of violence, and aggression, are hypothesized to be merely components of the diverse tactical arsenal that men have evolved or exapted to maintain access to a partner's reproductively relevant resources. These coercive tactics, of course, are also used to obtain resources from non-intimate others (Buss and Duntley 2006).

The key point is that most social adaptive problems can be solved with an array of tactics, only some of which involve violence. In order to examine the circumstances in which violence is used in intimate relationships, we must outline in greater specificity the adaptive problems toward which violence is often directed. In principle, adaptive problems within intimate relationships center on (1) the loss of access to key resources inherent in the intimate relationship, (2) threatening events that increase the likelihood of the loss of those resources, or (3) a failure of the mate to confer those benefits.

Adaptive Problems Toward Which Partner Violence is Directed

We now turn to the multiple adaptive problems faced during the course of mateships and in the aftermath of breakups. These provide higher-resolution conceptual lenses for predicting the specific circumstances conducive to intimate partner violence. In this article, we focus primarily on violence perpetrated by men, since men, more than women, are more likely to use extreme forms of violence, such as sexual coercion, sexual assault, choking, strangling, and other forms of severe assault (Archer 2002; Tanha et al. 2010). Nonetheless, many studies, including meta-analyses of multiple studies, reveal that women also perpetrate violence toward partners, including pushing, shoving, scratching, kicking, biting, and punching (Archer 2002; Carney et al. 2007; Tanha et al. 2010). Hence, a comprehensive theory of partner violence must include women-initiated and bidirectional partner violence (Frieze 2005).

Mate Poachers. Mate poaching turns out to be a surprisingly common mating strategy (Schmitt and Buss 2001; Schmitt et al. 2004). In American samples, for

example, 93% of men and 86% of women reported having attempted to lure someone out of an existing relationship for a long-term mateship (Schmitt and Buss 2001). Similarly, 87% of men and 75% of women report having attempted to poach for short-term mating goals. Although rates of reported mate poaching vary from culture to culture, the vast majority of individuals have experienced mate poaching—as a mate poacher, as the recipient of mate poaching attempts, or as the “victim” whose mate someone attempted to lure for a short-term liaison or a long-term mateship (Schmitt et al. 2004). Mate poachers pose an adaptive problem. They threaten to usurp the mating resources previously accessed by another. This may help explain how “love triangles” are especially vulnerable to extreme forms of violence, including murder (Shackelford et al. 2003).

As predicted by evolutionary psychological hypotheses, men are particularly threatened by potential mate poachers who have superior job prospects, financial resources, and physical strength (Buss et al. 2000). Women are particularly threatened by potential rivals who surpass them on facial or bodily attractiveness. These gender differences in levels of distress about rivals have been documented, to a limited extent, across cultures—in Korea, the Netherlands, and the USA (Buss et al. 2000).

When violence is used, it is often directed at the mate poacher rather than at the mate (Wilson and Daly 1998). Nonetheless, men sometimes direct violence toward their intimate partners when faced with the threat of mate poachers. Battered women, compared with non-battered women, endorse the following items much more frequently about their intimate partner: “He is jealous and doesn’t want you to talk to other men”; “He tries to limit your contact with family and friends”; and “He insists on knowing who are you with and where you are at all times” (Wilson and Daly 1996, p. 3). In short, men who use violence often do so to deter their partners from consorting with other men or to limit their opportunities for contact with potential mate poachers.

Sexual infidelity. Another recurrent problem that afflicts long-term mateships is sexual infidelity (Buss 2000; Daly et al. 1982; Symons 1979). From an evolutionary perspective, sexual infidelity by a woman puts her primary mate at risk of investing in another man’s genetic children. The cuckolded man risks channeling his valuable resources into a child in the mistaken belief that the child is his own. The loss is compounded by a rival’s gain, since the cuckolded partner’s resources can be diverted to supporting the child of the interloper, thereby contributing to the fitness of the rival. Although women do not suffer from “maternity uncertainty,” since women always have a 100% certain genetic relationship with their children due to internal female fertilization, women too can suffer costs from their partner’s infidelity. At a minimum, time and energy spent in sexual congress with another woman is time and energy not devoted to the original woman and her children. Since men tend to channel resources to women with whom they have sex, a man’s sexual infidelity can inflict resource loss on his long-term mate. Finally, if either the man or the woman becomes emotionally involved with an affair partner, which occurs with perhaps 70% of women and 35% of men (Glass and Wright 1985, 1992), either sex risks the defection of the partner to an intrasexual rival.

Men use an array of tactics in an attempt to solve the problem of a partner's sexual infidelity, and violence is one tactic in that array. Indeed, the detection or suspicion of infidelity is one of the key predictors of intimate partner violence (Daly et al. 1982). In one study, battered women were interviewed and then divided into two groups (Shields and Hanneke 1983). One group had been both raped and beaten by their husbands. The second group had been beaten, but not raped. These two groups were then compared to a control group of non-victimized women. The women were asked whether they had "ever had sex" with a man other than their husband while living with their husband. Ten percent of the non-victimized women reported having had an affair; 23% of the battered women reported having an affair; and 47% of women who were both battered and raped reported committing adultery.

These findings, if taken at face value, suggest that female sexual infidelity may dramatically increase a woman's risk of being battered. Causality, of course, cannot be determined from this study. It is possible, for example, that men who batter or who batter and rape their wives drive them into the arms of other men. Furthermore, even if female sexual infidelity is identified as part of the causal chain leading to male partner violence, this in no way justifies or excuses what are clearly abhorrent, repugnant, and illegal actions by the husbands. Nonetheless, these findings support the evolutionary hypothesis that sexual infidelity, which from an evolutionary perspective jeopardizes a man's paternity certainty and risks the allocation of resources to a rival's child, is a key adaptive problem for which intimate partner physical abuse has evolved, or been co-opted from already existing adaptations, as one potential solution.

Sexual coercion or partner rape appears to be another consequence of men's perceptions or suspicions of a mate's sexual infidelity (Goetz et al. 2008; Russell 1982). One study found that risk of a woman being unfaithful was linked with their male partner's sexual assault of her (Camilleri 2004). Another study found that men's perceptions of partner infidelity were linked with increased risk of using sexual coercion (Goetz and Shackelford 2006). Similar findings have been documented for convicted partner rapists (Camilleri and Quinsey 2009).

One hypothesis advanced to explain these findings is that men have evolved adaptations to combat sperm competition, and that partner sexual coercion is one violent manifestation of sperm competition adaptations (see Goetz et al. 2008 for a review of the arguments and evidence). Another hypothesis is that partner sexual coercion is motivated by the drive to dominate, control, or exert power over women (Brownmiller 1975). Goetz and colleagues (2008) suggest that these hypotheses are not incompatible. Men's drive to control and dominate their female partners may have evolved, in part, to solve the adaptive problem of sperm competition. A third hypothesis is that the apparent causal link between partner infidelity and partner rape is a nonadaptive by-product of some other evolved mechanisms, as yet unspecified. Future research is needed to adjudicate among these competing hypotheses. Sexual infidelity, in short, appears to be a key statistical predictor of multiple forms of intimate partner violence, ranging from verbal abuse to battering to sexual assault.

Pregnancy with another man's child—suspicions of genetic cuckoldry. Sexual infidelity by a woman can sometimes lead to pregnancy. From the perspective of the investing long-term man, this could be disastrous in the currency of relative reproductive success. If carried to term, the man risks investing in the offspring of an intrasexual rival. To compound this cost, he loses the parental investment of his mate, since it would be diverted to the rival's child instead of his own.

We present pregnancy with another man's child as a separate, although clearly closely related, adaptive problem to that of the woman's sexual infidelity. It is distinct because the hypothesized function of violence differs in the two cases. In the case of infidelity or infidelity threat, violence is presumably directed at deterring infidelity or deterring future episodes of infidelity. When a woman becomes pregnant with another man's child, in contrast, the hypothesized function of violence is to terminate the pregnancy, thus eliminating the incipient offspring of an intrasexual rival and freeing up the partner's parental resources (Friedman and Shackelford 1999).

The hypothesis that a man who suspects or believes his intimate partner is pregnant with another man's child will be more likely to inflict violence on her remains just that—a hypothesis. However, there is some supporting evidence for it. Burch and Gallup (2004) found that the frequency of violent acts toward pregnant mates was roughly double that directed toward partners who were not pregnant. Furthermore, they found that sexual jealousy is more likely to characterize men who committed violence on their pregnant partners, providing circumstantial evidence consistent with the hypothesized function. A more direct test compared violent and nonviolent couples, and found that women abused while pregnant were in fact more likely to be carrying the child of a man other than her current mate (Martin et al. 2004; Taillieu and Brownbridge 2010).

Clearly, further empirical work is needed to test the hypothesis that violence contingent on suspicions of nonpaternity, mediated by the psychological mechanism of sexual jealousy, functions to eliminate the offspring of rivals. One prediction, for example, would be that the specific form of violence would be designed to produce the highest probability of aborting the fetus, such as blows to the woman's abdomen. Interestingly, a study in Nicaragua found that half of a sample of pregnant women who were abused had suffered from blows directed at their abdomen (Valldares et al. 2005). Competing "by-product" hypotheses need to be tested as well; perhaps the increase in violence is an incidental by-product of greater psychological and economic stress brought on by an untimely or unwanted pregnancy, rather than by suspicions of cuckoldry per se. The key point is that an evolutionary lens has heuristic value for predicting the circumstances in which intimate partner violence is likely, and even the particular forms it is likely to take.

Resource infidelity. Long-term mating typically involves the pooling of resources. In hunter-gatherer societies, these resources might include meat or honey secured by the man and gathered food provided by the woman. Mated couples also tend to pool their labor, as when both contribute to constructing a shelter or providing protection for their children. In modern societies, mated couples often pool their finances. Either party, however, can use pooled resources for their own goals at the

expense of their partner's goals. Either might divert resources to their own genetic relatives preferentially over the genetic relatives of their partner. Either might use resources to secure additional mating opportunities, as when a husband buys dinners or jewelry for another woman or when a woman expends pooled resources to make herself more sexually attractive to other men.

A concrete example of resource infidelity occurs when an Ache hunter sends a prime piece of meat to his mistress, prior to bringing the main cache of meat back to his wife and family (Hill and Hurtado 1996). Men, in short, can divert resources away from their mate's children and toward extra-pair mating effort. Because opportunities for resource infidelity are ubiquitous, it is not surprising that mating conflict over money is so common (Buss 2003). To our knowledge, resource infidelity per se has not been examined as a circumstance conducive to intimate partner violence. Because resource infidelity is a predictable form of couple conflict, however, an evolutionary lens points to this circumstance as a potential predictor of mating violence.

Resource scarcity. A well-established universal component of women's evolved mate preferences centers on a man's ability and willingness to provide resources (Buss 1989b). Failure to provide such resources during the course of a mateship violates women's initial desires and can consequently lead to marital dissatisfaction and marital conflict. Men who cannot provide resources for the goal of mate retention may be inclined to use cost-inflicting tactics for mate retention (Wilson and Daly 1993). Empirical evidence consistent with this hypothesis comes from studies that find that poverty, or lack of economic resources, is linked with an increase in intimate partner violence—links have been documented in the USA (Flynn and Graham 2010) as well as in Turkey (Balci and Ayranci 2005).

These findings have typically been interpreted as mediated through "stress" (Flynn and Graham 2010). Economic deficits, along with other factors such as alcohol and drug abuse, have been assumed to produce psychological stress, which in turn increases violence toward mates. An evolutionary psychological lens provides a more nuanced understanding, although one that is not incompatible with the "stress" hypothesis. It suggests that male-linked failures to provide the economic resources inherent in women's initial mate selection criteria are the underlying circumstances that trigger sexual conflict within the couple, and hence intimate partner violence. In contrast, resource scarcity caused by a woman's failure to provide economic resources, according to this view, should be less likely to lead to violence. This sex-differentiated prediction, not generated by the more domain-general "stress" hypothesis, remains to be tested.

Mate value discrepancies. Assortative mating is the nonrandom coupling of individuals based on similarity on one or more characteristics. One of the strongest domains of mating assortment is for overall mate value (Buss and Barnes 1986). Although mate value has a technical definition in the evolutionary psychological literature (Symons 1987), at a rough approximation it can be described as an individual's overall level of consensually assessed desirability on the mating market (Buss 2003). Although individuals tend to assort on mate value, with the "8s" mating with other "8s" and the "5s" mating with other "5s," discrepancies sometimes arise.

One source of discrepancies occurs through errors of selection. An individual may have successfully deceived a prospective mate about their resource-holding potential or prior number of sex partners, for example, prior to mating (Haselton et al. 2005). The consequence is that the deceiver is lower in mate value than initially perceived. A second source of discrepancies occurs when a hidden cost does not come to light until after the mateship has been formed. A man might turn out to have children by a former mate. A woman might turn out to be secretly in love with her first romantic partner. Either sex might turn out to have a sexually transmitted disease, extended kin who siphon off resources, or personality dispositions such as emotional instability or aggressiveness that inflict a heavy “relationship load” (Buss 2006). Another source of discrepancies occurs when individuals mate while young, prior to establishing an accurate assessment of their own mate value. A teenage girl, for example, may get taken out of the mating market by an older man before she is able to accurately evaluate her level of desirability on the mating market.

In addition, mate value discrepancies can arise over the temporal course of a mateship. A man or a woman’s career can skyrocket, creating a discrepancy between partners where none previously existed. A permanent injury or serious disease can lower the mate value of one party, opening up a discrepancy where none existed. Because overall mate value has many components, most of which change over time, the odds are low that an initially matched couple will remain perfectly matched in their mate value trajectories over a span of years.

We predict that mate value discrepancies will be one link in the causal chain leading to intimate partner violence, especially when the female emerges as higher in mate value. This prediction is based on the activation of several psychological circuits. First, the higher mate value individual is more likely to be sexually unfaithful (Buss 2000; Buss and Shackelford 1997b). Second, the higher mate value individual is more likely to give cues to relationship defection. Third, if the man is lower in mate value, he will have greater difficulty providing resources to the woman that were inherent in her initial mate selection, which also increases the odds of infidelity or outright defection. All of these variables are hypothesized to be linked to an increased probability of violence toward the mate. Indeed, there is some evidence that those lower in mate value show more controlling and aggressive behavior toward their partners (Graham-Kevan and Archer 2009).

Mate violence can serve at least two related functions in the context of mate value discrepancies. First, it can function to deter a mate from the temptation to stray or defect, as discussed above (Wilson and Daly 1993). Second, it can reduce the women’s perceptions of the magnitude of the mate value discrepancy. There is some evidence that self-esteem tracks a person’s self-perceptions of mate value (Kirkpatrick and Ellis 2001). Being abused verbally, psychologically, physically, or sexually typically lowers an individual’s self-esteem (McHugh and Frieze 2006; Russell 1982). The abused woman might come to feel that she is unattractive and undesirable, and may even be convinced that her abuser is the only potential mate who would have her. As abhorrent as this idea is, mating violence may serve the functions of infidelity deterrence and mate retention by damaging a women’s self-esteem, resulting in a reduction in what she might otherwise perceive as a mate value discrepancy.

Stepchildren. Stepchildren pose multiple adaptive problems for intimate relationships (Daly and Wilson 1988, 1998). From the perspective of the stepparent, a stepchild typically is viewed as a cost, not a benefit, of the mating relationship. Resources from the stepparent get channeled toward the offspring of same-sex rivals. The mate's parental resources also get channeled toward the offspring of same-sex rivals. Furthermore, the presence of a stepchild may delay reproduction. Breastfeeding tends to produce anovulatory cycles (Perez et al. 1971), so a woman who breastfeeds a man's stepchild has reduced odds of becoming newly pregnant. Even if she is not breastfeeding, the woman may be reluctant to have another child while she has a young child heavily dependent on her. Delayed reproduction adds another cost to the presence of stepchildren. Finally, if and when reproduction does occur, those progeny will be half-siblings rather than full siblings with the stepchildren. The decreased genetic relatedness among children residing in the same household can create additional conflicts of interest among them. Children of differing genetic relatedness to the two parents can also create conflict, since one partner might be prone to withhold resources from the stepchild in favor of their own genetic progeny.

These propensities may explain why stepparents typically invest fewer resources in stepchildren than in genetically related children in currencies such as dollars for college education (Anderson et al. 1999). They may also explain why physical abuse of stepchildren is between 40 and 100 times higher than physical abuse of children residing with both genetic parents (Daly and Wilson 1988, 2008). In addition, they help to explain why being a stepchild is the single largest risk factor for the killing of infants and young children, far exceeding other variables such as poverty and socioeconomic status (Daly and Wilson 1988, 2008).

The genetic parent also faces adaptive problems as a consequence of partnering with someone other than the genetic father or mother of the child. A woman, for example, can be torn between two goals that may be inherently in conflict. One is securing investment for her child. The second is securing a long-term committed mateship. If a woman's child is perceived as interfering with her new mateship, she may be inclined to withhold resources from the child or even side with the new mate in inflicting costs on her child, in order to solidify the mateship. In extreme cases, such as Diane Downs or Susan Smith, the mother may attempt to kill her own children in order to clear the way for a new mateship (Buss 2000).

These extreme cases, of course, do not imply that there are adaptations specifically designed to kill stepchildren. Stepchildren are rarely killed. Most stepparents invest at least some resources in their stepchildren. Such investment, from an evolutionary perspective, is typically considered to be "mating effort" rather than "parental effort" (Daly and Wilson 1988, 1998; Rohwer et al. 1999). That is, the proper function of this form of investment is to secure access to a mate's resources, and not to increase the fitness of the stepchild. Child killing or even mild forms of abuse may not reflect adaptations for inflicting costs, but rather, as Daly and Wilson suggest, failures to engage the normal mechanisms of parental love. Although we do not suggest that women have adaptations to murder their own children in these circumstances, it is not inconceivable that they have adaptations to inflict costs on, or

withdraw resources from, their own children in order to solidify an incipient mateship. Regardless of which specific adaptations or by-products of adaptations explain violence toward stepchildren, the occurrence of such violence is clearly explicable from an evolutionary understanding of the “conflicts of interest” inherent in intimate relationships that involve the presence of stepchildren (Daly and Wilson 1988).

Terminating the mateship. Roughly half of all marriages in America end in divorce. Mateship dissolution typically comes with a large loss of the partner’s reproductively relevant resources. For some, it carries with it a total loss of those resources. Consequently, when the net benefits of keeping a partner outweigh the net benefits of alternative options, we expect adaptations designed to prevent a partner from defecting.

A partner’s defection carries with it not merely the direct loss of the partner’s resources; it can also inflict damage to the social reputation and consequent mate value of the person who is “dumped.” Empirical evidence suggests that the discovery that someone was dumped by their previous partner has a negative impact on people’s desire to pursue a romantic relationship with them (Stanik et al. 2010). Consequently, defection by an intimate partner could potentially jeopardize access to future mates, compounding the costs associated with the loss of the current mate.

Solutions to the adaptive problem of defection, like solutions to many of the adaptive problems we have been discussing, range from elevated vigilance to the escalation of violence (Buss 1988; Buss and Shackelford 1997a). Indeed, those who are jettisoned from long-term romantic relationships employ a variety of coping strategies, including physical threats, stalking, and violence (Perilloux and Buss 2008). Unfortunately, these violent tactics sometimes work. Some battered women remain in violent relationships. Some return to them even after they have sought help at a shelter. In a study of 100 women at a shelter for battered women, 27 returned to their partner after he promised that he would change and refrain from violence (Gayford 1975). An additional 17 returned as a direct result of threats of further violence if she did not return. Another 14 returned because they had no alternative places to go, and 13 returned because of their children. Eight returned because they said they were still in love with the man or felt sorry for him. In short, the majority of battered women ended up returning to live with their abuser.

Intimate partner violence, of course, does not always succeed in getting a partner to remain in a relationship. It can backfire on the abuser, as some women find avenues for escaping from a violent mate. Violence may represent a last-ditch desperate tactic to keep a mate who has already decided to leave, suggesting a hierarchical deployment of tactics of mate retention (Daly and Wilson 1988; Shackelford et al. 2005). Nonetheless, based on existing evidence, we cannot discount the possibility that in some contexts, violence functions to prevent a partner from leaving, giving the abuser some level of temporary or long-term access to the partner’s reproductively valuable resources.

Mate reacquisition and preventing a former partner from remating. As we have seen, violence and the threat of violence can prevent a partner from leaving a mateship, or encourage a woman who has temporarily left to return to that relationship. There may be no sharp dividing line between the adaptive problems of *preventing*

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