

The Evolution of Stalking

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Abstract We propose that stalking tactics have been shaped by evolutionary processes to help solve mating problems. These include: (1) acquiring new mates, (2) guarding existing mates to prevent defection, (3) fending off mate poachers, (4) poaching someone else's mate, (5) interfering with intrasexual competitors, (6) reacquiring ex-mates, (7) sexual exploitation and predation, and (8) guarding kin from sexual exploitation. We hypothesize several, gender-differentiated design features of psychological adaptations, including sensitivity to adaptive problems for which stalking was an ancestral solution and cognitive biases that function to motivate and perpetuate stalking behaviors. Although often abhorrent, cost-inflicting, and illegal, stalking sometimes enables successful adaptive solutions to problems of mating and within-gender competition faced by both men and women.

Keywords Stalking · Mating · Gender · Evolution

Introduction

Stalking has become increasingly recognized as an important phenomenon that requires explanation and intervention. Research on stalking has been informed by range of theoretical perspectives drawn from the law, sociology, criminology, and psychology (Cupach and Spitzberg 2004;

Davis et al. 2002; Ravensburg and Miller 2003; Spitzberg and Cupach 2003, 2007; White et al. 2000). In this article, we propose a new theoretical conceptualization of the origins of stalking anchored in modern evolutionary psychology (Buss 2005). Our theory represents a departure from prior theories of stalking in its central premise—that humans have evolved adaptations for stalking that functioned historically to solve important problems central to mating and within-gender competition. Because stalking inflicts costs on victims, we propose that humans have evolved “anti-stalking defenses” designed to counter the strategies of stalkers and to minimize the costs they inflict. We explore the ways in which our evolutionary theory of stalking provides insights into its origins, its gender-differentiated patterning, the circumstances in which it is most likely to occur, and possible guidance for reducing the incidence of its illegal forms (see Jones and Goldsmith 2005, for analogous arguments in the context of reducing child abuse and other forms of criminal activity).

There is wide disagreement about how stalking should be defined (Kinkade et al. 2005; Spitzberg and Cupach 2007). A range of terms has been used to describe stalking and stalking-related phenomena, including obsessive relational intrusion (Cupach and Spitzberg 1998), unwanted pursuit behaviors (Langhinrichsen-Rohling et al. 2000), pre-stalking (Emerson et al. 1998), courtship persistence (Williams et al. 2006), and criminal stalking (Spitzberg and Cupach 2007). We prefer “stalking” over alternative terms for conceptual reasons linked to its hypothesized evolutionary origins (outlined below), and because our conceptualization subsumes behaviors represented by all of the above concepts, rendering stalking the most inclusive and appropriate term available. The evolutionary conceptualization of stalking presented in this paper is, in some ways, distinct from legal definitions as well.

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Although the induction of fear in stalking victims is typically included in legal definitions, for example, our definition does not require fear induction—indeed, some victims of functional stalking are entirely unaware that they are being stalked.

An Evolutionary Theory of Stalking

A central premise of our theory is that stalking evolved as one strategy among an armament of strategies for solving historically recurrent problems of mating and within-gender competition (Duntley and Buss 2002). To take one example of an adaptive problem from our theory, we propose that stalking is selectively used by some spurned lovers as one tactic to regain sexual access or long-term romantic access to a previous partner after a breakup. This stalking tactic may or may not succeed in its intended outcome in any given instance. But if it sometimes succeeds, or more accurately if it has sometimes succeeded over the millions of instances in which it was attempted over deep time, then selection would favor an adaptation to stalk former mates because it resulted in an on-average increment in reproductive gain. Because selection operates on tiny but recurrent fitness gains, a mere 1% reproductive fitness advantage iterated over few thousand generations would be sufficient to shape a psychology of stalking.

From this simplified example, it should be clear that we are not arguing that stalking is an invariantly used tactic of spurned mates or that all spurned mates become stalkers. Stalking is one among a suite of post-breakup tactics (see Perilloux and Buss 2008 for a study and discussion of post-breakup tactics). Some spurned mates, for example, use an alternative tactic of seeking a replacement mate. We are not arguing that stalking, when used in this context, invariably succeeds in regaining a lost mate. It often fails. To use an analogy, although there is much evidence that humans have adaptations for stalking large game for sustenance, studies of hunter-gather cultures reveal that not all individuals engage in large game hunting (some fish and some gather fruits, honey, or tubers), and among those who do hunt, the majority come back empty-handed on any given day (Hill and Hurtado 1996; Tooby and DeVore 1987). Analogously, stalking is a context-specific tactic used only by some individuals and with varying degrees of effectiveness at achieving its functional outcome. For some, it may represent a last-ditch desperation tactic when other avenues for solving the problem of mating are perceived to be closed off. Finally, we are not arguing that stalkers are aware of the evolutionary logic or functional outcomes for which stalking strategies were favored by selection. Like most psychological adaptations, those for stalking operate largely out of conscious awareness.

It is clear that stalkers usually inflict costs on their victims (Dennison 2007; Dutton and Winstead 2006a, b; Langhinrichsen-Rohling 2006; Pathé 2002; Pathé and Mullen 1997; Sheridan and Grant 2007; Spitzberg 2002; Spitzberg and Cupach 2007; Williams and Frieze 2005). Over evolutionary history, these costs would have had profound implications for the evolution of cognitive adaptations that produce stalking. The recurrent costs of being a victim of stalking would have created selection pressure for the evolution of counter-adaptations—psychological mechanisms that produce behavior to prevent others from stalking, stanch its costs, or lead to its cessation. These anti-stalking adaptations would have benefited victims by decreasing the costs of stalking, but simultaneously would have hurt stalkers by making stalking less effective. Once anti-stalking defenses evolved, they would have created new selection pressure on stalking adaptations, leading to new strategies designed to circumvent anti-stalking measures. With the evolution of refined or new adaptations for stalking, there would have been new selection pressure for the evolution of refinements in anti-stalking adaptations. As depicted in Fig. 1, this trans-generational battle between stalking adaptations and anti-stalking adaptations would have created a perpetual, antagonistic coevolutionary arms race over human evolutionary history—an arms race analogous to that between

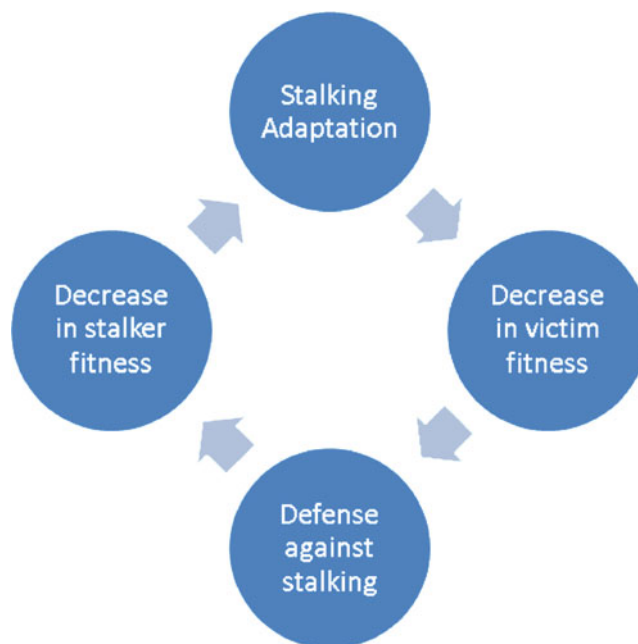


Fig. 1 The coevolution of cognitive adaptations that produce stalking and cognitive defenses against stalking. Cognitive adaptations that produce stalking behaviors decrease victims' fitness, selecting for the evolution of counter adaptations in victims. The counter-adaptations decrease the fitness of stalkers, generating novel selection pressure for the evolution of counter-counter adaptations in stalkers.

predators and prey. Coevolutionary arms races have been shown to be responsible for rapid evolutionary changes and elaborate coevolved design features (Phillips et al. 2004).

Adaptations that produce stalking strategies and anti-stalking defenses are hypothesized to have evolved in both genders. For contexts in which the function or effectiveness of stalking was similar for men and women, we hypothesize that the psychological design features, such as those that motivate stalking behaviors, were also similar. For example, both men and women faced the problem of mates defecting in the ancestral past. Stalking strategies could have been beneficial to both men and women to try to bring a lost mate back into the relationship. For contexts in which the function or effectiveness of stalking differed for men and women, we hypothesize that psychological design features, such as those that motivate stalking behaviors, also differed. For example, men were more likely than women to use sexually coercive strategies in the ancestral past. Only men are hypothesized to have motivational mechanisms to use stalking as an information-gathering technique about the routines and relationships of members of the opposite gender to facilitate later sexually exploitative or coercive strategies.

Similar logic can be applied to the evolved nature of anti-stalking defenses. For contexts in which men and women faced the same forms, frequencies, and costs resulting from being stalked over evolutionary history, their evolved defenses against stalking should be similar. Where women and men faced different forms, frequencies, or costs of stalking, our theory predicts gender-differentiated anti-stalking defenses. Because women more than men have historically suffered from higher frequencies sexual victimization and experienced greater costs from sexual coercion, for example, our theory predicts that women will have anti-stalking defenses to prevent sexual coercion that differ from those of men.

The costs incurred as a result of being stalked do not end with victims of stalking. They extend to the victims' genetic relatives. Hamilton (1964) pointed out that an individual's genetic fitness is the product of the individual's own reproductive success plus the effects of an individual's actions on the reproductive success of his or her genetic kin, weighted by degree of genetic relatedness. As a result, the fitness costs incurred by victims of stalking are also partially incurred by their genetic relatives. We hypothesize that this would have created selection pressure for the evolution of anti-stalking defenses in the genetic kin of victims of stalking in addition to those possessed by the victims themselves. For a list of hypothesized anti-stalking defenses, see Table 1.

Men and women have evolved moderately dimorphic bodies. Men, for example, are 12% taller and possess twice the upper body strength of women on average. Women and

Table 1 Hypothesized anti-stalking defenses.

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- Avoiding social contexts in which there is a high probability of encountering one's stalker or others likely to adopt stalking
 - Women's avoidance of risky social settings especially during ovulation when most vulnerable to having mate choice bypassed through sexual coercion (Chavanne and Gallup 1998)
 - Women's greater selectivity in short-term mating contexts (Buss 2003a, b)
 - The formation of social alliances for protection (Smuts 1992)
 - Women's selection of physically formidable, socially dominant mates (Wilson and Mesnick 1997)
 - Concealing information from others likely to trigger their adoption of stalking strategies
 - Psychological pain while being stalked to motivate response and mark contexts in memory so they can be more easily recognized and avoided in the future
 - Focused attention on scenario building to consider possible strategies to end the stalking
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men also differ psychologically, such as in their proclivity to take certain kinds of risks (Wilson and Daly 1985) or to use physical aggression as a means of resource acquisition (Archer 2009; Buss and Duntley 2008). It is not a large leap to hypothesize that selection has also favored the use of physical violence and credible threats of physical violence to facilitate a strategy of stalking in men more than in women.

Gender Differences Relevant to Stalking

Men and women face different adaptive problems of mating in some domains. For example, men can invest as little as a few hours or a few minutes to produce the same child that requires 9 months of investment from women. Because women's minimum obligatory investment in reproduction is greater, the costs of a poor mate choice are greater for women than for men (Trivers 1972). As a result, women tend to be choosier when selecting mates in short-term mating contexts where the discrepancy in parental investment between the genders is great. There is also conflict between the genders about the timing of sexual activity, or indeed whether sex occurs at all with a particular partner. Because sex is less costly for men than for women, men tend to desire sex earlier in romantic relationships, and with less investment, than do women (Werner-Wilson 1998). Men also desire a greater number of sexual partners than do women (Schmitt et al. 2001) and are more inclined to short-term, uncommitted sex (Buss 2003a). The differences in men's and women's sexual desires are a clear source of evolutionarily recurrent conflict between the sexes (Buss 1989, 2000; Buss and Shackelford 1997b), and as we will see, central to understanding the evolution of stalking.

Women are biologically limited in the number of offspring they can bear in their lifetime. Once a woman is pregnant, additional sex partners will not lead her to have additional offspring. For men, however, short-term sex with multiple partners can lead to additional offspring. Men's rate of reproduction is limited primarily by the number of females they can impregnate. Given an equal gender ratio in the mating pool, men who impregnate more than one woman simultaneously or who have more than one long-term partner at any time effectively deprive other men of mates. Mate competition among men over mating opportunities with women is central to understanding some forms of male stalking.

Human polygynous mating systems, in which some males may have more than one mate at a time, lead to greater reproductive success for the polygynous men and zero reproductive success for their mateless competitors. Over evolutionary time, the greater reproductive variance among men selected for more extreme and risky male strategies to acquire and retain mates. Daly and Wilson (1988) argue that gender differences in the use of risky strategies, such as violence and homicide, are an outcome of this unique selection pressure on men. Over evolutionary time, men who failed to take risks would have been at a disadvantage in competition for mates and, therefore, less likely to leave descendants (Daly and Wilson 1988; Kruger and Nesse 2004; Wilson and Daly 1985).

For these reasons, our theory predicts that women will be more likely than men to avoid high-risk stalking strategies, and some evidence supports this view. Tjaden and Thoennes (1998), for example, found that men were four times more likely than women to engage in illegal (and hence highly risky) forms of stalking. Conversely, both women and men engage in milder forms of unwanted pursuit following a romantic breakup. Langhinrichsen-Rohling et al. (2000), for example, found that both women and men who were romantically spurned engaged in roughly equal numbers of "low-level" forms of unwanted pursuit behaviors (e.g., asking friends about the ex-partner; making an unwanted phone call to an ex-partner). The number of times couples break up and get back together is a predictor of these milder forms of post-breakup stalking, which suggests that unwanted pursuit behaviors sometimes work for the goal of reuniting with a previous partner, at least temporarily (Davis et al. 2000). This provides at least a hint that the milder forms of stalking can be functional for women as well as for men.

The same logic predicts that women will be more likely to have evolved anti-stalking defenses to solve the problem of the more intense high-risk stalking strategies that men pursue. For the milder forms of unwanted pursuit, we predict that both men and women should have evolved anti-stalking defenses, at least when the costs to the victims of these lower-level forms of stalking are equal for the genders.

A final biological difference between men and women relevant to the evolution of stalking stems from the fact that fertilization occurs internally within women. As a result, women are always 100% certain that the offspring they bear are genetically related to them. Men, however, are always less than 100% certain of their paternity (Buss 2003a, b; Symons 1981). Men's paternity uncertainty has been proposed to be the primary selective impetus for the finding that men's jealousy, more than women's jealousy, centers on the sexual aspects of a partner's infidelity (Buss and Haselton 2005; Buss et al. 1992; Edlund and Sagarin 2009).

The recurrently different contexts of human mating faced by men and women are hypothesized to have contributed to gender-specific patterns of stalking. Women's greater investment in reproduction, men's greater fitness benefits from mating with multiple, different partners, and the resultant higher levels of competition between men for sexual access to women are hypothesized to have selected for taking greater risks and more frequent use of risky mating strategies among men, including stalking.

In the ancestral past, men and women also differed in the greatest threats to their long-term romantic relationships. A partner's sexual infidelity was more costly for men who could be tricked into investing their limited resources in another man's child rather than their own. A partner's emotional infidelity was more costly for women who could suffer a decrease or loss of their male partner's investment that could be critical for the women's survival and that of their dependent children. Gender differences in the costs of threats to long-term romantic relationships are hypothesized to have selected for more stalking perpetrated by men in response to contexts of sexual infidelity and more stalking perpetrated by women in contexts of emotional infidelity.

Hypothesized Stalking Adaptations

Differential reproductive success as a consequence of differences in design defines the process of evolutionary selection. We propose that stalking can be beneficial by contributing to the solution of recurrent ancestral problems affecting reproductive success. Because mating is central to reproductive success, we theorize that stalking evolved as one among a menu of strategies designed to solve ancestrally recurrent problems relevant to human mating. These adaptive problems include attracting mates, retaining mates, regaining lost mates, as well as obtaining and controlling resources that mates find attractive. We hypothesize that humans have evolved multiple stalking adaptations, corresponding to the distinct adaptive problems that stalking strategies are capable of solving. These different stalking adaptations, of course, share some design features and hence are not entirely different, but each must have at least one distinct design feature, corresponding to the

specific adaptive problem it evolved to solve, in order to be considered a distinct stalking adaptation (see Confer et al. 2010, for a more extensive discussion of this general conceptual issue).

This conception of stalking differs from most other theories of stalking in several ways. First, our conception of stalking focuses on the function for the stalker of patterned, often cost-inflicting behaviors directed toward a particular individual. Previous definitions have focused almost exclusively on specific stalking behaviors and victim interpretations of them (although see Meloy and Fisher 2005, for a discussion of stalkers' drives). We propose that stalkers' motives provide a window to the evolved psychological design underlying stalking, although our theory does not assume that stalkers are necessarily consciously aware of their functional motives.

Second, there is no requirement in our conception of stalking that victims experience fear of physical or psychological harm, which is the case for other definitions (Pathé 2002; Pathé and Mullen 1997; Spitzberg 2002; Tjaden and Thoennes 1998). Indeed, some stalking occurs surreptitiously without the victim's awareness of being stalked, so requiring victim fear to be an essential component of stalking would exclude some important forms of stalking. Our conception of stalking recognizes a broad range of costs incurred by the victims of stalking, ranging from the opportunity costs associated with the time spent rejecting persistent advances, to the health costs of being a victim of violence. Specifically, we hypothesize that the repeated infliction of low-level costs over extended periods of time can cumulate to a substantial cost. Even an act as seemingly innocuous as sending unwanted flowers to someone's workplace twice a week can temporarily distract the person's attention from other goals, strategically interfering with the person's ability to attract a different mate. Such overt acts of stalking simultaneously focus the attention of the recipient on the sender. Subsequent viewing of the flowers will serve as a persistent reminder of the person who sent them.

Third, we hypothesize that some design features of stalking may have been exapted from hunting adaptations and warfare adaptations, both of which entail stalking behaviors as key tactics (e.g., Chagnon 1983; Hill and Hurtado 1996). These include the use of *stealth*, *persistent pursuit*, *the element of surprise*, and sometimes the *use of weapons*. Indeed, one of the primary evolved functions of traditional warfare was securing access to additional mates (Buss 2005; Tooby and Cosmides 1988; van der Dennen 1995). To the degree that stalking was a key tactic in traditional small-group warfare, this provides another conceptual link between stalking and mating.

The range of phenomena included in our examination of stalking behaviors are united in terms of evolved form and

function—the repeated infliction of costs (form) to manipulate the behavior of others in ways that historically would have increased success in mating and within-gender competition (function).

How Stalking Works

We argue that stalking tactics take two primary forms, those that are *overt* by design and noticed by the victim, and those that are *covert* and meant to be hidden from the victim. We propose that overt forms of stalking behaviors set up a negative reinforcement contingency for their victims. The costs that stalkers inflict in the form of behaviors such as repeated phone calls, letters, instant messages, threats, unwanted gifts, and following victims create situations that victims find aversive. We hypothesize that it is usually clear to the victims of overt stalking what their stalkers desire, whether a sexual liaison, a romantic relationship, the prevention of relationship defection, or the deterrence of a same gender competitor. If it were not clear, stalking would lose much of its evolved functionality. Although victims most commonly report that their stalkers want to control them (e.g., Tjaden and Thoennes 1998), we propose that more probing research may find support for our hypothesis. When victims give in to stalkers' demands or are no longer a competitive threat, the cost-inflicting, aversive behaviors may end, at least for a while. This is likely to be only a temporary cessation (Sinclair and Frieze 2005). Temporarily ending or decreasing the severity of overt stalking negatively reinforces victims to continue to give in to their stalkers' demands. Simultaneously, victims who capitulate in response to the costs inflicted by stalkers and do what their stalkers desire positively reinforce the use of stalking tactics, making stalking more likely to occur in the future.

We hypothesize that covert stalking functions to gather information about the routines and relationships of a person. Information gleaned from covert stalking is often used subsequently to facilitate the success of goals such as courting a mate, guarding a mate, sexual assault, theft of resources, interfering with a rival's social status, or a violent attack. The information obtained from secretly following, spying on, and investigating others can give the covert stalker an advantage in choosing, planning, and implementing strategies to achieve these goals.

A large magnitude of investment in overt stalking is hypothesized to represent an evolved honest signal to the victim of a stalker's strength of motivation and resources. In the animal behavior literature, signals are physiological structures and behaviors that evolved because they change the behavior of receivers in ways that benefit the signaler (Caryl 1979). Researchers have made a compelling case that organisms evolved to recognize honest signals and

ignore dishonest signals. Honest signals are typically more costly to produce (Dawkins and Krebs 1978; Krebs and Dawkins 1984; Maynard Smith 1994) For example, Zahavi (1975) argues that a peacock's tail represents an honest signal of its health and vitality. Only the healthiest, most vigorous peacocks are successful at avoiding predators, finding food and shelter, and competing for mates with a burdensome elaborate ornament attached to their bodies. Less healthy peacocks cannot fake large, elaborately ornamented tail plumage. Peahens have evolved to prefer to mate with males that have the most elaborate ornamentation, including the largest number of eye spots (Gadagkar 2003).

Among humans in contexts where the function of stalking is to acquire a mate, stalking behaviors may give victims a signal of how committed stalkers are to starting a relationship, how much they can and are willing to invest in the relationship, and the lengths to which they can and are willing to go to achieve their goals. Stalkers who invest the most in this context are hypothesized to sometimes be successful in changing how their victims perceive them—from unwanted suitors to potential mates capable of embodying their victim's desires. In cases of covert stalking, the amount of time, energy, and resources invested are hypothesized to be predictors of the probability of enacting a subsequent overt stalking strategy.

A number of factors contribute to the effectiveness of stalking behaviors. First, stalkers' repetitive pattern of behavior has the effect of consuming substantial portions of their victim's time—time that could be devoted to solving other problems. This loss of time can represent a significant opportunity cost to the victims of stalking, making them less likely to be successful in other domains of their lives, such as attracting mates, retaining current mates, managing other social relationships, and obtaining resources.

Second, stalking focuses the attention of victims on their stalkers and the nature of their conflict with them. This creates a kind of cognitive opportunity cost, hijacking victims' attention and memory away from other issues relevant to their own goals and depriving victims of time that could be devoted to considering alternatives to giving in to stalkers' demands.

Third, because stalking decreases the amount of time and thought victims can devote to other social relationships, it can have the effect of socially isolating victims. In contexts of human mating, this isolation may lead victims to perceive that a relationship with their stalker is better than no relationship at all. In other contexts, it may leave victims with weakened social alliances and less support to combat their stalkers.

Humans have a menu of strategies for attracting, retaining, and re-obtaining mates who defect (Buss 2003a,

b). We are not proposing that stalking is the only, much less the primary, strategy. Benefit-bestowing strategies are often the most effective means of achieving mating goals. Stalking, in contrast, is often a cost-inflicting strategy, and it can be costly to the perpetrator as well as to the victim. Stalking victims and their families may retaliate against the stalker with their own cost-inflicting counter-strategies that can range from damaging stalkers' reputations to injuring or killing them. Additionally, stalking can backfire, causing outcomes that are opposite to those that stalkers desire. Rather than attracting mates, for example, stalking behaviors may drive potential partners away.

Given the costs of using stalking as a tactic for mate acquisition, it is often more effective to relinquish the pursuit of someone who is not interested in a relationship and seek potential mates who might be more receptive. However, people do not have limitless options when it comes to choosing mates. Access to potential mates is typically restricted by geography, personal mate value, and the effectiveness of tactics of attraction and seduction. For some individuals, stalking can make the difference between acquiring a mate or a transient sexual opportunity and being excluded from mating entirely. In sum, we propose that stalking, despite its costs to the stalker, was one among a menu of strategies favored by selection to help address adaptive problems relevant to mating.

Hypothesized Functions of Stalking

Because the potential costs of stalking are so great, we hypothesize that stalking strategies evolved to address only a subset of adaptive problems, which include:

1. acquiring a new mate
2. guarding an existing mate to prevent defection
3. fending off potential mate poachers
4. poaching away someone else's mate
5. strategically interfering with competitors for mates
6. reacquiring an ex-mate
7. sexual exploitation and predation
8. guarding female mates and kin to prevent them from being sexually exploited

In general, we hypothesize that stalking will be used for these goals only after available, lower-cost alternative strategies have been tried, but have failed to deliver desired benefits.

The hypothesized evolved functions of stalking are consistent with some descriptions of stalking and typologies of stalkers proposed by other researchers. For example, Mullen et al. (2000) describe intimacy-seekers and incompetent suitors interested in starting new relationships with a partner. Sinclair and Frieze (2005) argue that stalking behaviors can be part of normal courtship, which is also consistent with Emerson et al. (1998) concept of pre-

stalking behaviors. Langhinrichsen-Rohling et al. (2000), discuss how stalking can take the form of unwanted pursuit behaviors by ex-partners following the dissolution of a romantic relationship. Predatory stalkers interested in sexually attacking their victims have been proposed by Mullen et al. (2000). Finally, Dutton and Goodman (2005) have argued that stalking can be used as a tactic of coercive control in existing relationships, which is consistent with our hypothesis that stalking could function as part of a strategy of mate guarding.

Acquiring a New Mate

Most commonly, people strive to embody the desires of the opposite gender as strategy to attract mates (Buss 2003a, b). Such attraction tactics, however, are not always successful, leaving a mate-seeker with only two options: be persistent or abandon attempts to attract a desired partner. We hypothesize that humans have decision rules that weigh the probable success of both options, depending on factors such as the availability of other desirable mates, self-perceived mate value, past history of mating successes and failures, and cues to the likely success of persistence in overcoming possible mates' resistance to starting a relationship. If the pool of desirable mates in individuals' social spheres is large, we hypothesize that individuals will be less likely to persist in the pursuit of any particular mate who they fail to attract. This will be particularly true for individuals high in mate value. This hypothesis is supported by research that found a significant negative correlation between relationship alternatives and pursuit and aggression (Dutton and Winstead 2006a, b). However, we hypothesize that people who believe that they were unsuccessful in accurately representing their desirable qualities to members of the opposite gender will be more likely to persist in their pursuit of desirable mates who initially reject them by creating additional opportunities to demonstrate their attractive qualities. Finally, we propose that persistence in the pursuit of desirable mates will be more common among those who perceive their victims to exhibit cues to "stalkability," such as naïveté, friendliness, lacking kin in close proximity, or lacking other "body-guards" such as close kin or existing mates (Buss and Duntley 2008).

Persistence in the use of mate attraction tactics (e.g., flirting, offering gifts) has been shown to be an effective mate acquisition strategy, both among humans (Buss 2003a, b; Buss and Schmitt 1993) and non-human primate, mammalian, and insect species (Arnqvist and Rowe 2005). Common tactics of persistent suitors include repeatedly requesting dates, sending gifts, love notes, flowers, and other displays of affection, and trying to engage the desired member of the opposite gender in

conversations that will provide opportunities to convince the person to start a romantic relationship. The behaviors demonstrate the persistent suitors' willingness and ability to devote time and resources to a relationship, as well as showcasing their desirability and suitability as a mate. The persistence of pursuers in the face of rejection may also be an honest signal of their intensity of emotional investment.

Mate acquisition frequently emerges as a motive in stalking research (Sinclair and Frieze 2005). One study found that 22% of stalking was motivated by a desire to start a relationship with the victim (Budd and Mattinson 2000). Another found that 23% of stalking was motivated by a stalker's desire to initiate an intimate relationship with the victim (Hall 1997).

Guarding an Existing Mate to Prevent Defection

Although men and women both enter long-term relationships for the benefits that they provide, there remain other possible mates who may be perceived as more desirable. An individual in a long-term relationship sometimes can benefit from having a romantic affair. Men historically benefited from affairs by directly increasing their reproductive success (Buss 2003a, b). Women historically benefited by gaining access to better genes, additional resources, or facilitating mate switching (Greiling and Buss 2000; Meston and Buss 2009).

Infidelity, however, inflicts costs on long-term partners, including the diversion of reproductively valuable resources to rivals, reputational damage, and decreasing perceived mate value (Buss 2000). Buss and Shackelford (1997a) showed that people engage in tactics that range from vigilance to violence in order to retain their long-term mates. Indeed, studies of acts of mate retention typically discover acts of stalking, including the following: He called her at unexpected times to see who she was with; She dropped by unexpectedly to see what he was doing; He hacked into her email account to read her personal mail; She had her friends check up on him; and He called her to make sure she was where she said she would be (Buss 1988; Buss and Shackelford 1997a, b)

We hypothesize several gender-differentiated triggers of stalking in the service of mate guarding. Men's stalking behavior in service of mate guarding, relative to that of women's, is hypothesized to have triggers that include: being mated to women who are young and physically attractive (two classes of cues to fertility), being exposed to potential mate poachers who have superior economic resources or prospects, and having a mate who displays signs of sexual interest in a rival. Women's use of stalking in the service of mate guarding, relative to that of men's, is hypothesized to have triggers that include: being mated to men high in income and status striving, the presence of

female rivals who are more physically attractive, and having a partner who shows signs of emotional involvement with another woman.

Stalking behaviors, in principle, can be effective mate guarding tactics because they monopolize the time of a partner. Indeed, the intentional monopolization of a mate's time emerges as a common mate guarding strategy that is high in perceived effectiveness (Buss 1988). It reduces opportunities for infidelity or defection, reduces exposure to rivals, and sends a signal to would-be mate poachers that the partner is "taken."

In support of the mate guarding function of stalking, one study found that jealousy, envy, or distrust of the partner were included in the motivation of 32% of stalking cases (Dressing et al. 2005). In other research, 15% of male stalkers were motivated to check up on their partner, perhaps catching her with another man (Palarea 2004). Across studies, an average of 21.71% of stalking included a jealousy motive (Spitzberg and Cupach 2007), the emotion most central to human mate guarding (Buss 2002).

Fending off Potential Mate Poachers

Mate poaching is a common strategy of human mating (Schmitt and Buss 2001; Schmitt et al. 2004). Most people have experienced mate poaching in one form or another—that others had tried to poach them out of a relationship or that they had tried to poach someone else out of a relationship. More than a third of people indicate that they had lost a long-term mate to a poacher. We hypothesize that stalking behaviors used against mate poachers function primarily by making the costs of poaching higher than the benefits of successfully luring away someone's mate. Decreasing the net fitness benefits of poaching would make poachers less motivated to continue their pursuit of the mate of someone who uses stalking behavior to deter them.

Poaching Away Someone else's Mate

It may seem counterintuitive that behaviors capable of retaining mates and fending off poachers could also be used by poachers as part of a strategy to lure someone else's mate into a relationship. We hypothesize that this is precisely what stalking behaviors are capable of doing. The same strategies that can be successful in acquiring a new mate can be used by individuals to make someone else's mate their own. These strategies consist of tactics such as persistence in requests for dates, monopolizing time, sending unwanted gifts, and repeated phone calls, letters, emails, and instant messages. A primary obstacle for those who desire others' mates is the current partner of the targeted potential mate. There are two ways that stalking behaviors are hypothesized to be functional in dealing with the current partners. First, stalking behaviors

could be directed by a poacher toward both members of a long-term relationship in order to make the costs of defending their mateship greater than the value of keeping it. This could be accomplished through a pattern of stalking harassment and threats that would lead a couple to view their existing relationship as too costly and hence less desirable than other mating opportunities.

Second, stalking in the service of mate poaching sometimes drives a wedge between the man and woman in a long-term relationship (Schmitt and Buss 2001). At the same time that a current partner views the advances of a poacher as a threat to his or her relationship that should be repelled, the courting persistence of a rival opens the possibility that one's mate might have done something to encourage the poacher, might be interested in a relationship with the poacher, or might already be taking steps to leave the long-term partner for the poacher. The use of stalking behaviors such as sending notes that read "Can't wait to share more special times," or "Thank you for last night,"—could function to trigger feelings of jealousy in current mates, escalate conflicts within their relationship, and make the relationship seem less attractive to both partners. By comparison, a relationship with the poacher might actually start to seem more desirable.

Strategically Interfering with Competitors for Mates

Another proposed function of stalking behaviors is as a strategic tool to give individuals an advantage over competitors in acquiring mates. We hypothesize that stalking behaviors can function to provide a competitive advantage in within-gender competition for mates in at least two ways. First, stalking can interfere with competitors' ability to embody potential mates' desires. Individuals have limited time and resources to devote to enhancing and displaying the characteristics that make them desirable to the opposite gender. The successful deployment of cost-inflicting stalking behaviors against competitors can decrease the competitors' ability to invest in mate acquisition, weaken their displays of characteristics desired by the opposite gender, and make the stalker seem more attractive by comparison.

Second, stalking behaviors can render the pursuit of certain mates too costly for that rival to carry out effectively. When two men compete for the same woman, a stalker's calls to the rival's workplace, sabotaging the rival's resources, or damaging the rival's social reputation can give the stalker a competitive edge or dissuade his victim from attempting to attract the woman.

Reacquiring an Ex-mate

There are a number of costs associated with losing a mate (Buss 2005). The partners of lost mates no longer have

access to their mates' residual reproductive value, no longer receive resources from their former mates, and are unlikely to receive continued support from the family members and social allies of their former mates. After a mate defects, the resources that they once offered become available to benefit rivals. In addition, former mates may share vulnerabilities and potentially status-damaging secrets with their future romantic partners and members of their new social coalitions, decreasing the spurned partner's ability to attract and retain other mates in the future.

In addition to whatever benefit-bestowing tactics stalkers use to regain lost mates (e.g., giving flowers or gifts), stalking for this function often includes cost-inflicting tactics. This notion is supported a range of studies on stalking (Emerson et al. 1998; Palarea et al. 1999; Mullen et al. 2000; Sheridan et al. 2003; Spitzberg and Cupach 2007; Williams and Frieze 2005).

Research suggests that stalking to regain a lost mate is quite pervasive. Hall (1997) found that 58% of stalkers' motivation came from not accepting the end of a romantic relationship. Forty six percent of stalkers' motivations in another study stemmed from not being able to let go after the end of their romantic relationship (Sheridan et al. 2001). In other research, 30% of stalkers' were motivated to resume a former romantic relationship (Dressing et al. 2005). As noted above, evidence suggests that both women and men engage in mild forms of unwanted pursuit after being spurned (Langhinrichsen-Rohling et al. 2000), whereas men are more likely to engage in more extreme, high-risk, illegal forms of stalking after being spurned (Tjaden and Thoennes 1998).

An interesting question is why stalkers expend so much effort to regain a former mate rather than simply trying to attract a replacement mate. One possibility centers on the relative mate value of two individuals. All else equal, those who get rejected will tend to be lower in mate value than those who do the rejecting (Perilloux and Buss 2008). Furthermore, being rejected, if it becomes known, lowers an individual's mate value further. So the stalker, being lower in mate value than his ex-partner, might realistically appraise that it will be difficult or impossible to replace her with a mate of comparable value. In this circumstance, reacquiring a higher value ex-mate may be more beneficial than settling for a lower value new mate.

Sexual Exploitation and Predation

Significant potential costs await the perpetrators of sexual assault and other forms of sexual exploitation. Victims, their families, and the larger social group often retaliate against the attacker. We hypothesize that selection would have favored the imposition of harsh costs on sexual victimizers as strategies to decrease the potential of future

attacks (see also Duntley 2005). However, the fitness benefits of sexually exploitative behavior remain if the costs imposed by victims and their allies could be bypassed or minimized. We hypothesize that covert stalking of victims is one possible solution that evolved for this purpose. Spying on potential victims, obtaining information about their habits, routines, and social alliances, could give the stalker valuable information to help avoid the costs associated with strategies of sexual exploitation. The stealth stalking tactics of sexual predators may function to assess the exploitability of potential victims (Buss and Duntley 2008), or as part of a surprise attack to catch the victim unawares.

Research suggests that being stalked is associated with a higher risk of being raped (Baum et al. 2009; Tjaden and Thoennes 1998). We speculate that the actual risk is likely to be greater than these findings suggest, since the data were drawn from reports by victims who knew that they were being stalked before they were sexually victimized. Many rape victims may never become aware that they were stalked prior to the assault. Since sexual assault is an adaptive problem inflicted on women more than men (Lalumière et al. 2005), our theory predicts that women are more likely to have evolved anti-stalking defenses to prevent becoming a victim of sexual assault. Evidence consistent with this prediction comes from the finding that far more women report that they have been followed, presumably stalked, by strangers who they believe have the intention of raping them, and reporting that they have taken effective evasive action that prevented them from being raped (Buss 2005).

Guarding Kin from Sexual Exploitation and Violence

We hypothesize that natural selection favored the use of stalking behaviors for the purpose of protecting genetic kin. These behaviors may include repeated, unwanted phone calls to check-up on family members, dropping by unannounced to events that family members are attending, and covertly spying on the activities of family members to gain knowledge about their routines, social alliances, and to be in a position to intervene if someone attempts to inflict costs on them. A common example is daughter-guarding (Perilloux et al. 2008). People who are stalked by family members often view it as unwanted. It interferes with their ability to choose mates and make choices of activities based on their own desires.

There is an asymmetry in how much the older generation of families value the younger generation relative to how much the younger generation values the older generation that is consistent with their relative mate values. Older family members tend to value younger family members more, leading us to hypothesize that more stalking in the

service of family guarding will be perpetrated by older family members and will be directed primarily at younger family members. There is also an asymmetry between male and female relatives in the cost of being sexually victimized. Females, but not males, can become pregnant as a result of having their mate choice (and their family's influence on their mate choice) bypassed through a male aggressor's use of sexual coercion. In addition, females are typically less physically formidable than males. Following from this, we hypothesize that people will be more likely and more vigilant in the use of stalking tactics to guard their female relatives than their male relatives. Empirical research supports this hypothesized gender difference (Perilloux et al. 2008), and suggests that stalking for the purpose of daughter guarding will be the most prevalent form of kin guarding.

In general support of these kin guarding hypotheses, Bates (1942) reported that 68.7% of fathers and 97.1% of mothers sought to influence their daughters' romantic relationships, while 49.1% of fathers and 79.4% of mothers sought to influence their sons' romantic relationships. Other researchers have concluded that parents are more likely to interfere with their daughter's than with their son's romantic relationships (Driscoll et al. 1972; Kan et al. 2008; Updegraff et al. 2004).

Sensitivity to Problems Solvable through the Use of Stalking Behaviors

In order for any of the proposed stalking adaptations to function, they must be activated in appropriate circumstances. We hypothesize that stalking behaviors activated in response mating contexts that involve acquiring, retaining, or regaining reproductive access to the opposite gender will be more common in men than in women. Stalking behaviors often involve the infliction of costs, which is a risky strategy. Men historically have had more to gain and less to lose by taking those risks than do women, since more men than women are shut out of mating entirely.

A meta-analysis conducted by Spitzberg and Cupach (2007) provides some support for this hypothesis, finding that women are more than two and a half times as likely to be victims of stalking as men. Other research has found that men are more likely to engage in stalking than are women (Langhinrichsen-Rohling et al. 2000; Palarea et al. 1999; Resnick 2007). The greater male-perpetrated prevalence of stalking provides circumstantial support for the notion that this strategy has either been more effective historically for men than for women, or has been effective in solving a wider array of adaptive problems for men than for women.

False Beliefs Maintained by Stalkers

We suggest that stalkers maintain false beliefs that facilitate the adoption and persistence of stalking behaviors. In contexts of

mate acquisition or re-acquisition of a former mate, we hypothesize that stalkers sometimes believe that their persistence is truly desired by their victims; that their victim's lack of apparent reciprocation of romantic interest is actually a "test" of the stalker that conceals the victims true level of love; that any attention the victim gives to the stalker signals deeper romantic feelings than actually exist; and that their stalking actions do not inflict serious, lasting, or any costs on their victims.

Some of these ideas have been supported by existing research. For example, Langhinrichsen-Rohling et al. (2000) found that people rejected by a romantic partner were less likely to report that they had engaged in severe stalking behaviors compared to the reports of those who had spurned them. They also reported that their pursuit had more positive outcomes. This suggests that perpetrators may be unaware of the magnitude of the negative impact of their stalking behaviors, perhaps making it less likely that they will stop. Additionally, in their study of unrequited attraction Sinclair and Frieze (2005) found that people reported being on the receiving end of more stalking behaviors than they reported engaging in, suggesting a bias in their perceptions of one or both. They also found that men were more likely than were women to over-report signals that the object of their affection was interested and underreport signals of rejection. Finally, Spitzberg and Cupach (2007) proposed that, obsessive relational pursuers believe having a particular relationship is the key to happiness and self worth. The pursuers experience frustration when their desired relationship is not achieved and push harder for it.

Error Management Theory and Anti-stalking Defenses

Victims' perceptions of stalkers' motives may be biased in ways that benefit them. For example, victims could benefit from overestimating the danger represented by their stalkers as a strategy to help them avoid the possible costs of being victimized. In an uncertain social world, individuals can make two kinds of errors when predicting another person's actions: They can overestimate or underestimate the likelihood that the individual will engage in a particular behavior. According to Error Management Theory (Haselton and Buss 2000), there is often an asymmetry in the costs of the two types of errors. In the case of stalking, for example, overestimating the likelihood that a stalker will inflict serious costs is a less costly error than underestimating the likelihood. The overestimation error would lead people who are stalked to fear stalkers more and take steps to avoid the possibility of incurring serious costs. An underestimation error would provide less motivation to defend against stalking tactics and leave the object of stalking more vulnerable to being victimized. Based on this logic, we hypothesize that stalking victims will tend to overestimate the threat posed by their stalkers. Because the costs of being

stalked are hypothesized to be larger for women than for men, we also hypothesize that women's overestimation-of-danger bias will be greater than will men's.

Discussion

We have proposed an evolution-based theory of stalking—that stalking evolved as one among a number of strategies designed to solve ancestrally recurrent problems of human mating and intra-gender competition. At this point, many components of our evolutionary conception of stalking are best viewed as hypotheses that await future empirical tests. Some may be confirmed. Others may be refuted. At a minimum, we hope that our framework has heuristic value in guiding scientists to pose new research questions and to discover aspects of stalking that are currently unknown. In this discussion, we explore several points relevant to the evaluation of the theory and its future developments, starting with the issue of verification and falsification.

What Empirical Evidence Would Falsify This Evolutionary Theory of stalking?

Our evolutionary theory of stalking is best viewed as a collection of hypotheses, with each hypothesis producing specific empirical predictions. Evidence of cross-cultural universality in the use of stalking behaviors *by itself* is not sufficient to make a compelling case for our evolutionary arguments. However, a key prediction from the theory is the *contexts* in which a stalking strategies become activated, such as using stalking to attempt to reacquire a mate after having been jilted, will be cross-culturally universal. Finding that stalking is *not* adopted in other cultures to address the adaptive problems described in this paper would refute our theory, as would research findings that do not support the dozens of specific hypotheses reported in this paper. Our theory generates a number of specific hypotheses and predictions that other theories do not (see Table 2 for a summary). As with all theories, evaluation of its merits ultimately will rest with the cumulative weight of the evidence in comparison with competing theories of stalking—its heuristic value in leading to new discoveries, its ability to generate novel predictions that are subsequently confirmed, and its comprehensiveness in explaining the known corpus of empirical findings parsimoniously.

Not All Stalking is Centered Around Problems of Mating; Some Stalking Seems to be Motivated Primarily by Other Goals, Such as Revenge

We do not propose that *all* stalking is about mating in a direct sense. Adaptations for stalking, however, can only have

evolved if they contributed in the past to reproductive success, either directly or indirectly. Mating goals, being close to the engine of the evolutionary process, are hypothesized to be central to most forms of stalking. Acquiring a mate can directly increase stalkers' reproductive success. Stalking in service of daughter guarding does not directly increase parents' personal reproductive success, but may do so indirectly by influencing the daughter to choose a higher quality mate. Stalking a boss or a co-worker who has blocked a man's job prospects or ascension in the work hierarchy is also related to mating, albeit indirectly, since a man's economic resources are so central to women's mate selection (Buss 2003a, b).

Stalking for the proximate goal of extracting revenge can be function in an evolutionary sense as well. It sends a signal to the victim that the stalker's interests are not to be trifled with, and so can deter actions detrimental to the stalker in the future. Successfully carried out vengeance can send an honest signal to the broader social community that an individual is formidable and will not tolerate being wronged. Failure to seek revenge against cost-inflicting individuals can lead victims to be perceived as weak and easily exploitable, making them more likely to be targeted in the future (Buss 2005; Duntley 2005; Ghiglieri 2000; Keeley 1997; Meston and Buss 2009).

Not all instances of stalking are evolutionarily adaptive, nor are they morally or legally acceptable even if they do solve adaptive problems successfully. Indeed, some instances of stalking reflect true pathology, the malfunctioning of evolved psychological adaptations. The key point is that there is no reason to be skeptical about the hypothesis that revenge-motivated stalking is often related to solving social adaptive problems, many of which are mating-related, either directly or indirectly.

If Stalking is Hypothesized to be Evolutionarily Adaptive for a Range of Different Purposes (e.g., Acquiring a Mate, Regaining a Lost Mate), How Can the Theory Explain the Many Instances in Which Stalking Seems Maladaptive?

Some stalkers clearly suffer from psychological disorders, defined from an evolutionary psychological perspective as a harmful malfunctioning of evolved psychological mechanisms (Wakefield 2005). Some instances of erotomania, for example, in which stalkers experience delusional beliefs about love reciprocated from a movie star who lacks knowledge of the stalker's existence, reflect psychopathology rather than proper psychological functioning. Knowledge of evolved mating strategies sometimes sheds light on these sorts of pathologies. Brüne (2001), for example, provides compelling evidence that erotomania is a pathological variant of an evolved long-term mating strategy.

Table 2 Examples of falsifiable hypotheses derived from our theory.

1. Adaptations that produce stalking strategies and anti-stalking defenses are hypothesized to have evolved in both genders.
2. For contexts in which the function or effectiveness of stalking was similar for men and women, we hypothesize that the psychological design features, such as those that motivate stalking behaviors, were also similar.
3. For contexts in which the function or effectiveness of stalking differed for men and women, we hypothesize that psychological design features, such as those that motivate stalking behaviors, also differed.
4. Only men are hypothesized to have motivational mechanisms to use stalking as an information-gathering technique about the routines and relationships of members of the opposite gender to facilitate later sexually exploitative or coercive strategies.
5. Women will have anti-stalking defenses to prevent sexual coercion that differ in nature and potency from those of men.
6. Anti-stalking defenses evolved in the genetic kin of victims of stalking in addition to those possessed by the victims themselves.
7. Selection has favored the use of physical violence and credible threats of physical violence to facilitate a strategy of stalking in men more than in women.
8. More stalking will be perpetrated by men in response to contexts of sexual infidelity.
9. More stalking will be perpetrated by women in response to contexts of emotional infidelity.
10. Humans have evolved multiple stalking adaptations, corresponding to the distinct adaptive problems that stalking strategies are capable of solving.
11. Some design features of stalking may have been exapted from hunting adaptations and warfare adaptations, both of which entail stalking behaviors as key tactics. These include the use of *stealth*, *persistent pursuit*, *the element of surprise*, and sometimes the *use of weapons*.
12. It is usually clear to the victims of overt stalking what their stalkers desire, whether a sexual liaison, a romantic relationship, the prevention of relationship defection, or the deterrence of a same gender competitor.
13. Covert stalking functions to gather information about the routines and relationships of a person.
14. A large magnitude of investment in overt stalking represents an evolved honest signal to the victim of a stalker's strength of motivation.
15. Individuals who invest the most in using stalking to acquire a mate are hypothesized to sometimes be successful in changing how their victims perceive them—from unwanted suitors to potential mates capable of embodying their victim's desires.
16. In cases of covert stalking, the amount of time, energy, and resources invested are hypothesized to be predictors of the probability of a secondary, overt stalking strategy being attempted.
17. Stalking strategies evolved to address only a subset of adaptive problems, which include:
 - acquiring a new mate
 - guarding an existing mate to prevent defection
 - fending off potential mate poachers
 - poaching away someone else's mate
 - strategically interfering with competitors for mates
 - reacquiring an ex-mate
 - sexual exploitation and predation
 - guarding female mates and kin from sexual exploitation and violence

Table 2 (continued).

18. Stalking will be used for the above goals only after available lower cost alternative strategies have been tried, but fail to deliver desired benefits.
19. Humans have decision rules that weigh the probable success of embodying potential mates' desires and persistence to attract mates, depending on factors such as the availability of other desirable mates, self-perceived mate value, past history of mating successes and failures, and cues to the likely success of persistence in overcoming possible mates' resistance to starting a relationship.
20. If the pool of desirable mates in individuals' social spheres is large, individuals will be less likely to persist in the pursuit of any particular mate who they fail to attract. This will be particularly true for individuals high in mate value.
21. People who believe that they were unsuccessful in accurately representing their desirable qualities to members of the opposite gender will be more likely to persist in their pursuit of desirable mates who initially reject them by creating additional opportunities to demonstrate their attractive qualities.
22. Persistence in the pursuit of desirable mates will be more common among those who perceive their victims to exhibit cues to "stalkability," such as naïveté, friendliness, lacking kin in close proximity, or lacking other "bodyguards," such as existing mates.
23. Men's stalking behavior in service of mate guarding, relative to that of women's, will have triggers that include: being mated to women who are young and physically attractive (two classes of cues to fertility), being exposed to potential mate poachers who have superior economic resources or prospects, and having a mate who displays signs of sexual interest in a rival.
24. Women's use of stalking in service of mate guarding, relative to that of men's, will have triggers that include: being mated to men high in income and status striving, female rivals who are more physically attractive, and having a partner who shows signs of emotional involvement with another woman.
25. Stalking behaviors used against mate poachers function primarily by making the costs of poaching higher than the benefits of successfully luring away someone's mate.
26. Selection favored the imposition of harsh costs on sexual victimizers as strategies to decrease the potential of future attacks.
27. People will be more likely and more vigilant in the use of stalking tactics to guard their female relatives than their male relatives.
28. Stalking behaviors activated in response mating contexts that involve acquiring, retaining, or regaining reproductive access to the opposite gender will be more common in men than in women.
29. In contexts of mate acquisition or re-acquisition, stalkers sometimes believe that their persistence is truly desired by their victims; that their victim's lack of apparent reciprocation of romantic interest is actually a "test" of the stalker that conceals the victim's true level of love; that any attention the victim gives to the stalker signals deeper romantic feelings than actually exist, and that their stalking actions do not inflict serious, lasting, or any costs on their victims.
30. Stalking victims will tend to overestimate the threat posed by their stalkers. Women's overestimation-of-danger bias will be greater than will men's.

To propose that some stalking is functional in the sense of being aimed at solving adaptive problems does not imply that stalking always succeeds in solving those problems—what can be called "instance failures." Indeed, stalkers

often fail in their quest to attract new mates, cannot prevent existing mates from defecting from the relationship, or fail to regain mates who have rejected them. These facts do not undermine the evolution-based theory of stalking, since *all* adaptations solve the adaptive problems for which they evolved probabilistically, and hence are successful only some of the time. Humans clearly have evolved fears of snakes and strangers (Marks 1987), yet every year thousands of individuals die from snake bites and millions are harmed by strangers. Adaptations evolve not because they invariably succeed. Rather, adaptations evolve because they yield a benefit in the currency of reproductive success, on average, compared to competing designs in the population during the period of time of their evolution. Hypothesized stalking adaptations, like all other adaptations, function probabilistically rather than invariantly. Just as “instance failures” do not falsify the hypothesis that humans have evolved snake fears, “instance failures” do not, by themselves, falsify the hypothesis that humans have evolved stalking adaptations.

Some stalking may reflect evolved mechanisms that were adaptive in the human ancestral past, but are no longer adaptive in the present environment. The enactment of laws against stalking and employing professional police to enforce those laws, for example, may render stalking as a strategy less successful in the modern environment that it was in the past. Nonetheless, if stalking behavior is generated by stalking adaptations, triggered by the adaptive problems toward which they were directed in the past, then it is critical to identify those underlying mechanisms, even if they are no longer currently adaptive in the modern environment.

In sum, although some instances of stalking may reflect mechanisms malfunctioning and some may reflect “instance failures” of properly functioning stalking adaptations, we propose that most pervasive patterns of stalking behavior, particularly those discussed in this paper, are products of an evolved psychology of stalking that was “designed” by selection to solve specific adaptive problems, many of which are central to human mating.

Conclusions

We have outlined an evolutionary theory of stalking. We propose that the central adaptive functions of stalking as a strategy entail solutions to problems of mating and within-gender competition. The most important hypothesized functions are: (1) acquiring a new mate, (2) guarding an existing mate to prevent defection, (3) fending off potential mate poachers, (4) poaching away someone else’s mate, (5) strategically interfering with competitors for reproductively relevant resources, (6) reacquiring an ex-mate, (7) sexual

exploitation and predation, and (8) guarding kin from sexual exploitation and violence.

The theory generates predictions about functions of stalking that are common to both men and women, as well as others that show gender differences. Reacquiring a mate after a breakup, for example, is hypothesized to be an evolved function of stalking for both genders. Women and men alike use mild forms of unwanted pursuit behaviors to reunite with their former mate (Langhinrichsen-Rohling et al. 2000). Stalking for sexual exploitation and predation, in contrast, is hypothesized to be primarily used by men. Furthermore, our theory predicts that men who stalk will be more likely than women who stalk to use high-risk and dangerous forms of stalking, and empirical evidence is consistent with this prediction (Tjaden and Thoennes 1998). Future empirical research will likely uncover other gender-differentiated design features of stalking.

Some design features of stalking, such as the use of stealth and persistent following almost certainly have been co-opted or exapted from earlier adaptations for hunting and traditional warfare. Some stalkers use stealth, while others make their stalking behavior overt and known to their victim. Some stalkers use threats of violence, while others use repeated low-level harassment without violence. These different patterns of behavior suggest that stalking is not a unitary phenomenon. Although we have used the word “stalking” as an umbrella term to subsume many different sorts of behavior, if the evolution-based theory proves to have merit, it will ultimately be desirable to fashion a taxonomy of stalking based on the evolved functions of stalking we have outlined (or the subset confirmed empirically). And ultimately, theoretical development should be directed toward identifying the different “design features” within each taxonomic element, as well as those they share with others.

Another important direction for future theoretical and empirical development centers on potential anti-stalking adaptations. Because stalking often inflicts costs on victims, once stalking entered the human repertoire, selection would favor the evolution of anti-stalking defenses to prevent incurring those costs. Some hypothesized defenses include (1) cultivating friendships with members of the same gender and the opposite gender who can function as “bodyguards” for the stalking victim; (2) enlisting the aid of close kin for protection and stalker deterrence; (3) a specialized gender-differentiated psychology of stalking fear that functions to motivate anti-stalking behavioral tactics; and (4) an adaptive error management bias that leads victims to overestimate the likelihood that a stalker will physically harm or kill them. This overestimation bias may function to motivate victims to take defensive action to reduce the likelihood of incurring these severe costs. In short, we propose a *co-evolutionary theory of the psychol-*

ogy of stalking as a suite of functional strategies, as well as a suite of functional anti-stalking strategies designed to reduce or eliminate the costs of being a victim of stalking.

Because stalking shows some gender differences, our theory predicts that these will be mirrored in anti-stalking defenses. We expect that women, but not men, have evolved strategies to defend against men who stalk for the purpose of sexual assault. Men tend to use more high risk and severe forms of stalking than do women. We expect that women, but not men, have evolved anti-stalking defenses to prevent, avoid, or ameliorate these more cost-inflicting stalking strategies in the context of dealing with a spurned mate who seeks reunion. Because of the severe costs that sexual assault inflicts on women, we expect that women, but not men, will have error management biases that function to maximize the avoidance as stalkers who might have sexual assault as a motivation. Future work could fruitfully explore these and other hypothesized anti-stalking adaptations.

We have proposed specific, testable, potentially falsifiable hypotheses. Although we have presented some limited empirical evidence that appears to be consistent with the evolutionary theory of stalking, the power and utility of the theory must be evaluated in the future by the cumulative weight of scientific studies designed to test novel predictions derived from it. In the future, we hope that research from fields such as neuroscience (see Meloy and Fisher 2005) anthropology, and animal behavior will shed additional light on our understanding of stalking.

Our evolution-based theory of stalking does not preclude or necessarily contradict existing theories of stalking. The psychological theory that some stalkers experience shame and a narcissistic rage when rejected by a romantic partner, which then motivates stalking behavior (Meloy 1998), is perfectly compatible with the evolutionary hypothesis that some stalking behavior is motivated by efforts to regain a lover who has spurned them.

A number of stalker typologies have been proposed by researchers to give insight into the motives of stalkers as envisioned through the eyes of their victims (Boon and Sheridan 2002; Dressing et al. 2007; Meloy 2001; Mullen et al. 1999). For example, Mullen et al. (2000) have proposed stalkers who are “incompetent suitors” (p. 25) “intimacy seekers” (p. 22), “the rejected” (p. 19), “the resentful” (p. 26), and “the predatory” (p. 28). Our evolutionary theory of stalking is not incompatible with these typologies. Stalking for the function of mate acquisition, for example, appears to correspond to the “intimacy seeker.” Stalking for the function mate reacquisition after being spurned appears to correspond to the “rejected.”

Rather than replacing other theories of stalking, we envision that this evolutionary theory of stalking, to the

degree that it is supported empirically, will be integrated with other theories. For example, Meloy (1992, 1998) has argued for the application of attachment theory to stalking. Specifically, he proposed that stalking may be the result of a pathology of attachment. Attachment theory applied to stalking has provided insight into sources of individual differences that increase or decrease the likelihood that an individual will engage in stalking behaviors (Davis et al. 2000; Dutton and Winstead 2006a, b; Kienlen 1998; Lewis et al. 2001; Langhinrichsen-Rohling et al. 2000; Tonin 2004). Framed in evolutionary context, Meloy’s theory focuses on the subset of stalking that represents a malfunctioning of evolved attachment adaptations, which our theory fully acknowledges. From our perspective, the future empirical agenda must involve efforts to distinguish between stalking that represents the “normal functioning” of evolved stalking adaptations from stalking that represents a malfunctioning of other adaptations, such as those involved in attachment.

Another example of a stalking theory that could benefit from being integrated with our evolutionary theory of stalking is relational goal pursuit theory. According to this theory, “obsessive relational pursuers link the goal of having a particular relationship to higher-order goals such as happiness and self worth” (Spitzberg and Cupach 2007 p. 79). This is argued to lead people to have exaggerated feelings about the necessity of the goal. If the goal is blocked, the pursuer becomes frustrated and pushes harder to obtain it. Our theory provides an evolutionary level of explanation for why some relationships are viewed as being valuable in the first place. Specifically, relationships most closely linked with reproductive success over human evolutionary history should be viewed as the most valuable. An evolutionary perspective also suggests that the infliction of costs is not simply a maladaptive byproduct of unpropitious social forces, but rather can be the functional product of adaptations specifically designed to inflict costs to solve problems of mating and intra-gender competition.

In conclusion, we hope that our evolutionary perspective will provide novel insights, leads to new avenues of inquiry, and yields new empirical discoveries that cumulatively will furnish a more comprehensive understanding of stalking.

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