
From Vigilance to Violence

Tactics of Mate Retention in American Undergraduates

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Although the attraction and selection of mates are central to human reproduction, the retention of acquired mates is often necessary to actualize the promise of reproductive effort. Three empirical studies used act frequency methods to identify, assess the reported performance frequencies of, and evaluate the perceived effectiveness of 19 tactics and 104 acts of human mate guarding and retention. In Study 1 ($N = 105$), a *hierarchical taxonomy* of tactics was developed from a pool of nominated acts. We then assessed the *reported performance frequencies* of 19 retention tactics and 104 acts and tested three hypotheses derived from evolutionary models in an undergraduate sample ($N = 102$). Study 2 ($N = 46$) provided an independent test of these hypotheses by assessing the *perceived effectiveness* of each tactic. Discussion draws implications for sexual poaching, susceptibility to pair-bond defection, and the power of act frequency methods for preserving the proximate specificity and systemic complexity inherent in human mating processes.

KEY WORDS: Mate retention; Mate guarding; Sex differences.

INTRODUCTION

Selection by consequences is a powerful principle that can be realized at many levels of analysis. It forms the basis of Darwin's theory of natural selection, which involves three essential components: *variation* (e.g., due to mutation), *selection* (differential replication of variants), and *retention* (genetic preservation of selected variants). Operant learning is similarly structured (Skinner 1981). The variants are behaviors, the selection mechanism is reinforcement, and reinforced behaviors are retained through changes in brain states, or "engrams," as yet undiscovered.

Mating behavior, broadly conceived, is also structured by selection logic. The pool of potential mates composes the variants. Selection processes

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operate to reduce this larger pool to a few, to one, or to none. And tactics are used to guard or retain acquired mates (e.g., Flinn in press). While much research has been conducted on mate selection (e.g., Buss 1985; Epstein and Guttman 1985) and some on mate attraction (e.g., Buss in press; Kennrick and Trost 1986; Symons 1979), little is known about the tactics that humans use to retain mates once they have been acquired.

What tactics and strategies do humans use to retain their mates? Daly, Wilson, and Weghorst (1982) propose male sexual jealousy as one tactic of guarding. Mate guarding itself has been proposed as a superordinate strategy, subsuming diverse tactics that evolve to ensure paternity, prevent alien insemination, and defend against investing in genetically unrelated young (Thornhill and Alcock 1983; Daly et al. 1982; Flinn in press; Parker 1974; Trivers 1972; Wilson 1975).

Sexual jealousy and mate guarding, however, may be considered to be two tactics within a larger class of tactics of *mate retention*. In humans, at least, direct mate guarding and jealousy represent only the most obvious tactics. The retention of a human mate often requires more than vigilance and physical restraint. Tactics may be subtle, including dissuading potential competitors, luring one's mate with positive inducements, or even rendering one's mate less attractive or evocative to competitors. These tactics appear to fall outside the category of "mate guarding," but are accurately subsumed by the category of "mate retention."

The nature, range, and incidence of human retention tactics remain uncharted. A crucial research agenda, therefore, is: 1) to identify the nature and range of mate retention tactics among humans, 2) to develop an organized taxonomy of these tactics, 3) to assess which tactics are performed more and less frequently by males and females, and 4) to gauge for each tactic its effectiveness at successfully retaining mates. These basic goals formed the focus of this series of studies. Before turning to these studies, it is useful to examine briefly prior taxonomies of mate guarding and specific predictions that can be drawn from evolutionary theory.

EXISTING TAXONOMIES OF MATE GUARDING

The corpus of previous research on mate guarding is not large; on humans, it is miniscule. Three investigators, however, have provided at least preliminary taxonomies of mate guarding tactics. Ghiselin (1974) considers *male sequestering* to be a form of sexual selection that provides an alternative mechanism to female choice. Ghiselin considers two major forms: 1) sequestering by inhibiting access of other males, and 2) sequestering by attracting and maintaining the favor of females.

The most obvious way to inhibit the access of other males is to use brute force—to drive off rival males and herd females to keep them under control. This category of sequestering also includes more subtle forms of

influence such as preventing the female from mating again. The sperm plugs of certain crabs and insects provide vivid examples. Tactics for attracting and maintaining the favor of females are equally diverse, including plumage display, protection from predators, and parental provision.

Wilson (1975) provides a taxonomy of sorts by enumerating eight distinct types of postcopulatory competition among males, of which five may be considered forms of mate retention: 1) mating plugs and repellents, 2) prolonged copulation, 3) a passive phase in which the male remains attached to the female after copulation, 4) guarding the female without physical holding, and 5) departure of the mating pair from the vicinity of rival males.

Perhaps the most comprehensive taxonomy of mate guarding tactics is that of Thornhill and Alcock (1983) in the context of *insect* mating systems. *Concealment of mates from competition* represents the first category of tactics. This includes physically removing the female from areas containing competitors, counteracting the attractant signals of receptive females, and reducing the conspicuousness of courtship display.

The second major category in Thornhill and Alcock's taxonomy consists of *physical prevention of takeovers by other males*. This includes maintaining close contact with the mate and repulsing interfering males. Repulsion of interfering males subsumes the tactics of chasing off other males, building a "fence" around females, and jostling other males away.

No comparable taxonomies of tactics exist for humans. Indeed, it appears that the only form of human mate retention that has received serious research attention has been sexual jealousy (Daly et al. 1982). Thus, an important first step is to identify the nature and range of tactics that humans use to guard and retain their mates. Evolutionary theory may be used to guide the formation of specific hypotheses about the sorts of mate retention tactics that will be performed by human males and females.

SPECIFIC PREDICTIONS ABOUT SEX DIFFERENCES IN TACTICS

Mate retention is important in humans for both males and females, but for different evolutionary reasons. For males, the primary risks of failing to adequately retain an acquired female are alien insemination, loss of mating effort expended to date, and lost parental effort devoted to someone else's offspring (Daly, et al. 1982). Cuckolded males not only risk investing valuable resources in another's child, but risk losing entirely the time, energy, and resources they have devoted to acquiring the mate initially. Severe reproductive penalties follow from failing to retain an acquired mate. Daly et al. (1982) propose male sexual jealousy as one mechanism that has evolved in humans to prevent cuckoldry, and they hypothesize that male jealousy should be closely tied to potential female sexual infidelity (see also Symons 1979).

In contrast, male infidelity *by itself* poses little risk to a female. Without adequate retention tactics, however, a human female risks losing the resources garnered through her mate such as money, status, and protection from marauding males. Females risk the redirection of these resources away from her, her children, and her kin, and toward intrasexual competitors. According to Daly et al. (1982), female jealousy should be less intense than male jealousy; should be less clearly centered on sexual infidelity, and should be heavily centered on preventing loss of economic and material resources.

Males and females thus differ in the nature of the resources that are lost by failures at mate retention. A male risks losing access to his mate's reproductive value. A female risks losing her mate's economic and material resources. Therefore, the most effective tactics for *retaining* a mate should be those that *provide* the mate with sex-linked reproductively relevant resources. Failure to provide these resources will result in the loss of the mate to an intrasexual competitor who is more willing or able to do so.

Hypothesis 1

Males, more than females, will retain their mates by providing economic and material resources that are inherent in female mate selection criteria (Buss 1987; Symons 1979).

Hypothesis 2

Females, more than males, will retain their mates by providing them with the reproductive (i.e., sexual) opportunities that are inherent in male mate selection criteria; included in these hypothesized retention tactics are attempts by the female to appear maximally reproductively valuable, which implies alteration of appearance to be attractive, youthful, and healthful (Buss 1987; Symons 1979).

Hypothesis 3

Males, in general, will engage in higher frequencies of mate guarding acts because of the greater reproductive costs associated with failures at mate guarding (Daly and Wilson 1983; Trivers 1972; Barash 1977; Symons 1979; Dawkins 1976; Williams 1975; Ghiselin 1974; Van Den Berghe 1979). This hypothesized sex difference, however, may be compromised if sexual infidelity by a male provides a powerful predictive cue to the female of redirection of her mate's resources. To the extent that male infidelity provides this cue, female tactics of retention also should evolve and should center on preventing sexual infidelity. Thus, male and female acts of retention both may center on sex and may be performed with equal frequency, but for different proximate reasons.

The present studies were designed to examine tactics of mate retention within the context of a larger conceptual framework (Buss 1986). This frame-

work starts with reproductively relevant goals or tasks at the highest level. Superordinate strategies (general methods for achieving a goal), middle-level tactics (specific methods for achieving a strategy), and specific acts subsumed by each tactic are used to accomplish each goal. Examples of goals are attracting desirable mates, selecting mates, and producing offspring. Retaining acquired mates is also considered to be an evolutionary goal, the accomplishment of which protects prior mating effort and facilitates actualization of the reproductive fruits of that effort. Several broad strategies may be directed toward this goal, such as direct guarding, providing positive inducements, and threatening negative inducements.

Each superordinate strategy in turn is composed of specific tactics. For the strategy of Direct Guarding, for instance, one can deploy tactics of Vigilance, Mate Concealment, or Monopolization of mate's time. Acts such as "He did not let her talk to other males at the party" and "She called to make sure he was where he said he would be" compose the most subordinate level and provide the medium through which psychological mechanisms evolve (Buss 1986; but see Symons 1987). It is through specific acts that the goals or functions of mate retention are realized.

Acts are expected to differ in how *effective* they are at retaining mates. Some may compel one's mate to adhere to the mating bond, while others falter at this task. Throughout evolutionary history, individual learning histories, or both, selection pressures should have favored effective tactics over less effective tactics. These considerations generate a fourth hypothesis.

Hypothesis 4

Acts assessed to be highly effective at successfully retaining mates will be performed more frequently in the context of mating relationships than will acts assessed to be less effective.

As described earlier, human males and females differ in the reproductively relevant resources garnered and potentially lost through a mate. Males and females are predicted to differ, therefore, not only in how often they *perform* certain mate retention tactics, but also in *how effective* such tactics are. This leads to two final hypotheses.

Hypothesis 5

Tactics of mate retention that involve providing economic and material resources will be more effective for male performers than for female performers.

Hypothesis 6

Tactics of mate retention that involve sexual inducements and apparent enhancement of reproductive value will be more effective for female performers than for male performers.

In sum, the following studies were conducted to address these key issues: 1) to identify the nature and range of mate retention tactics in a sample of American undergraduates, 2) to develop a preliminary taxonomy of such tactics, 3) to assess reported performance frequencies of each tactic within the taxonomy, 4) to test three specific evolutionary hypotheses about sex differences in the reported performance of retention tactics, 5) to assess the perceived effectiveness of each tactic within the taxonomy, 6) to provide an independent test of the sex difference hypotheses in the context of perceived tactic effectiveness, and 7) to test the hypothesis that reported performance frequencies will be calibrated to perceived tactic effectiveness.

STUDY 1: A TAXONOMY OF HUMAN MATE RETENTION TACTICS AND ASSESSMENTS OF REPORTED FREQUENCY

Rationale

The goals of the first study were three: First, to identify the range of acts and tactics by which undergraduate males and females retain their mates; second, to develop a preliminary taxonomy of retention tactics based on these acts; third, to obtain reports of performance frequency of the acts and tactics subsumed by this taxonomy. Act frequency methodology (Buss and Craik 1983, 1984) was used for this and subsequent studies reported in this article.

Method for Obtaining Acts of Mate Retention

Subjects. Subjects for this part of the study were 105 undergraduate students—58 females and 47 males—drawn randomly from large classes of introductory psychology. The mean age was 19.16 ($SD = 1.63$).

Act nominations. Each subject was given an act nomination form that contained the following instructional set:

In this study, we are interested in the things that people do when they want to prevent their partner from getting involved with someone else. For example, you might say "He put his arm around her when other guys were around to let them know she was taken" or "She called to make sure that he was where he said he would be" or "He told her that the other guy who was interested in her was a sleaze."

We are interested in *specific behaviors*. One should be able to answer the following questions about each of your act nominations: Have you ever performed this act? If so, how often have you performed it?

Please think of three people you know (including yourself) who have done things to prevent their partner from getting involved with someone else and list them below. First list the things that males [females] you know have done; then list the things that females [males] you know have done to prevent their partner from getting involved with someone else.

Five lines were provided for act nominations for males and five lines were provided for nominations for females.

Act Selection and Construction of Taxonomy

The goal of this nomination procedure was to identify a diverse range of acts of mate retention that could be used for subsequent studies and could form the basis for a preliminary taxonomy of tactics. The construction of this preliminary taxonomy may be honorifically called iterative, but trial-and-error would be a more accurate description. First, the large numbers of redundantly nominated acts were eliminated, as were general tendency statements and statements considered too vague to constitute an observable act (e.g., "He likes to keep an eye on her"). These reduction procedures left 104 reasonably distinct acts, all of which were retained for subsequent studies.

Second, these 104 acts were categorized rationally into 19 homogeneous act clusters. Scrutiny of the 19 homogeneous act clusters suggested that they could be partitioned into two broad categories—those involving *intersexual manipulations* (acts directed toward one's mate) and those involving *intrasexual manipulations* (acts directed toward same-sex potential competitors).

Third, tactics within each of these two broad categories were further classified. Intersexual manipulations were partitioned into *Direct Guarding* (Vigilance, Concealment of Mate, and Monopolization of Mate's Time), *Negative Inducements* (Infidelity Threat, Punishment of Mate's Threat to Infidelity, Emotional Manipulation, Commitment Manipulation, and Derogation of Competitors), and *Positive Inducements* (Resource Display, Sexual Inducements, Enhancement of Physical Appearance, Love and Caring, and Submission and Debasement).

Intrasexual manipulations were further partitioned into *Public Signals of Possession* (Verbal Signals of Possession, Physical Signals of Possession, and Possessive Ornamentation) and *Negative Inducements* (Derogation of Mate to Competitors, Intrasexual Threats, and Violence). The specific acts listed under each category are shown in Table 1.

It should be noted that this preliminary taxonomy, like all taxonomies of behavior, is somewhat arbitrary. Several of the intersexual manipulations, such as Concealment of Mate for example, could be regarded as intrasexual manipulations as well, since they function to prevent access to one's mate by intrasexual competitors. Similarly, arguments could be marshaled that some specific acts belong in tactics other than those into which they were classified.

The primary value of this preliminary taxonomy, however, is that it provides the most detailed taxonomy of mate retention tactics yet proposed, provides a starting point that can be elaborated and refined by further investigation and empirical evaluation, and provides a heuristic for conducting research on performance frequencies and tactic effectiveness.

Table 1. Taxonomy of Tactics and Acts of Mate Retention

Intersexual manipulations

Direct guarding

Vigilance

- He called her at unexpected times to see who she was with.
- He called her to make sure she was where she said she would be.
- He had his friends check up on her.
- He snooped through her personal belongings.
- He questioned her about what she did when they were apart.
- He dropped by unexpectedly to see what she was doing.
- He read her personal mail.
- He stayed close to her while they were at the party.
- At the party, he did not let her out of his sight.

Concealment of mate

- He did not take her to the party where other males would be present.
- He refused to introduce her to his same-sex friends.
- He took her away from the gathering where other males were present.
- He did not let her talk to the other males.

Monopolize mate's time

- He spent all his free time with her so that she could not meet anyone else.
- He insisted that she stay at home with him rather than going out.
- He monopolized her time at the social gathering.
- He insisted that she spend all her free time with him.
- He would not let her go out without him.

Negative inducements

Threaten infidelity

- He flirted with another woman in front of her.
- He showed interest in other women to make her angry.
- He went out with other women to make her jealous.
- He talked to another woman at the party to make her jealous.

Punish mate's threat to infidelity

- He became angry when she flirted too much.
- He ignored his mate when she started flirting with others.
- He threatened to break up if she ever cheated on him.
- He yelled at her after she showed an interest in other men.
- He said that he would never talk to her again if he ever saw her with someone else.
- He hit her when he caught her flirting with someone else.
- He became jealous when she went out without him.

Emotional manipulation

- He cried when she said she might go out with someone else.
- He made her feel guilty about talking to other men.
- He told her he would "die" if she ever left.
- He threatened to harm himself if she ever left.
- He pleaded that he could not live without her.
- He cried in order to keep her with him.
- He told her that she was dependent on her.
- He pretended to be mad so that she would feel guilty.

Commitment manipulation

- He asked her to marry him.
- He got her pregnant so she would stay with him.
- He told her they needed a total commitment to each other.
- She told him she was pregnant (item applicable to female only).

Derogation of competitors

- He cut down the appearance of other males.
- He started a bad rumor about another male.
- He cut down the other guy's strength.
- He pointed out to her the other guy's flaws.
- He told her that the other guy she was interested in had slept with nearly everyone.
- He told her the other guy was stupid.
- He told her the other guy was just out to use her.

Positive inducements

Resource display

- He spent a lot of money on her.
- He bought her an expensive gift.
- He bought her a bouquet of flowers.
- He took her out to a nice restaurant.
- He bought her some jewelry (e.g., ring, necklace).
- He bought her a small gift.

Table 1. (Continued)

Intersexual-manipulations

Positive inducements

Sexual inducements

- He gave in to her sexual requests.
- He acted sexy to take her mind off other guys.
- He performed sexual favors to keep her around.
- He had a physical relationship with her to deepen their bond.
- He gave in to sexual pressure to keep her.

Enhancing physical appearance

- He made up his face look nice.
- He dressed nicely to maintain her interest.
- He wore the latest fashions to enhance his appearance.
- He made sure that he looked nice for her.
- He made himself "extra attractive" for her.

Emphasize love and caring

- He told her that he loved her.
- He went out of his way to be kind, nice, and caring.
- He complimented her on her appearance.
- He was helpful when she really needed it.
- He displayed greater affection for her.

Submission and debasement

- He told her that he would change in order to please her.
- He became a "slave" to her.
- He gave in to her every wish.
- He went along with everything she said.
- He acted against his will to let her have her way.

Intrasexual manipulations

Public signals of possession

Verbal signals of possession

- He introduced her as his girl friend (woman, spouse, etc.).
- He told his male friends how much they were in love.
- He bragged about her to other guys.
- He mentioned to other males that she was taken.
- He told others the intimate things they had done together.

Physical signals of possession

- He held her hand when other guys were around.
- He kissed her when the other guys were around.
- He held her closer when another male walked into the room.
- He put his arm around her in front of others.
- He sat next to her when others were around.

Possessive ornamentation

- He asked her to wear his jacket.
- He asked her to wear his ring.
- He gave her jewelry to signify that she was taken.
- He wore her clothes in front of others.
- He hung up a picture of her so others would know she was taken.

Negative inducements

Derogation of mate to competitors

- He told other guys terrible things about her so that they wouldn't like her.
- He told other guys that she was not a nice person.
- He told other guys that she was stupid.
- He told other guys she might have a social disease.
- He told others she was a "pain."

Intrasexual threats

- He yelled at the other guys who looked at her.
- He stared coldly at the other guy who was looking at her.
- He threatened to hit the guy who was making moves on her.
- He gave the other guy a dirty look when he looked at her.
- He told the other guy to "stay away" from her.
- He confronted the guy who had made a pass at her.

Violence

- He hit the guy who made a pass at her.
- He picked a fight with the guy who was interested in her.
- He got his friends to beat up the guy who was interested in her.
- He vandalized the property of the guy who had made a pass at her.
- He slapped the guy who made a pass at her.

Method for Obtaining Assessments of Reported Performance

Subjects. One hundred and two undergraduate subjects, 52 females and 50 males, participated in this part of Study 1. None had participated in the act nomination stage. The mean age was 18.94 ($SD = 0.84$).

Assessment of background information. Subjects first completed a questionnaire that asked whether or not they had been involved in a romantic relationship within the past year, in how many different "romantic relationships" and "physical relationships" they had been involved within the past two years, and with what frequency had they dated within the past two years. Subjects who indicated "yes" to the question about involvement within the past year were retained for this study; eight subjects who indicated that they had not been romantically involved were given alternative procedures and not included.

Remaining subjects ($N = 102$) then answered specific questions about their romantic partner: initials of their romantic partner, age and class of partner, number of months of involvement with partner, probability that subject would still be with this partner in one year, and a rating on a 7-point scale of how close the relationship was with the partner.

Act reports of performance frequency. Subjects then completed an Act Report in the first-person singular of how often, if at all, they had performed each of the 104 acts of mate guarding and retention within the past year. The instructional set preceding the 104 acts was as follows:

On the following pages are listed a series of acts or behaviors. In this study, we are interested in the acts that people perform in the context of their relationship with their romantic partner. Please circle the word that represents your most accurate estimate of *how often you have performed each act within the past year*. If you have not performed the act at all within the past year, circle "NEVER"; circle "RARELY", "SOMETIMES," or "OFTEN" to represent your best estimate of the relative frequency with which you have performed each act *within the past year*.

Results

Most and least frequently reported acts. Tables 2 and 3 show the acts that are most and least frequently performed by males and females in this sample. The potential scores range from 1.00 (no subjects report ever having performed the act) to 4.00 (all subjects report performing the act often).

Most frequently reported male mate retention acts involve complimenting the mate on her appearance; sitting next to her when others are around; being nice, kind, affectionate, and helpful to the mate; giving in to her sexual requests; and purchasing gifts and dinners for her. Least frequently reported male acts include getting her pregnant to keep her, using violence against her and potential intrasexual poachers, and derogating intrasexual rivals as well as his partner.

Table 2. Most and Least Frequently Reported Mate Retention Acts—Male Sample

No.	Mean	SD	Act
Most frequently performed			
1	3.61	0.49	I complimented her on her appearance.
2	3.49	0.58	I sat next to her when others were around.
3	3.48	0.65	I went out of my way to be kind, nice, and caring.
4	3.39	0.57	I was helpful when she really needed it.
5	3.16	0.72	I made sure that I looked nice for her.
6	3.04	0.79	I displayed greater affection for her.
7	3.04	0.84	I dressed nicely to maintain her interest.
8	2.98	0.80	I put my arms around her in front of others.
9	2.90	1.06	I gave in to her sexual requests.
10	2.84	0.80	I bought her a small gift.
11	2.84	0.83	I spent a lot of money on her.
12	2.80	1.08	I held her hand when other guys were around.
Least frequently performed			
1	1.00	0.00	I got her pregnant so she would stay with me.
2	1.00	0.00	I got my friends to beat up the guy who was interested in her.
3	1.00	0.00	I told the other guys that she might have a social disease.
4	1.00	0.00	I hit her when I caught her flirting with someone else.
5	1.00	0.00	I slapped the guy who made a pass at her.
6	1.02	0.14	I vandalized the property of the guy who made a pass at her.
7	1.04	0.20	I told other guys terrible things about her so they wouldn't like her.
8	1.04	0.20	I hit the guy who made a pass at her.
9	1.04	0.20	I refused to introduce her to my same-sex friends.
10	1.04	0.20	I started a bad rumor about another male.
11	1.06	0.32	I threatened to harm myself if she ever left me.
12	1.08	0.40	I told her that the other guy she was interested in has slept with nearly everyone.

Table 3. Most and Least Frequently Reported Mate Retention Acts—Female Sample

No.	Mean	SD	Act
Most frequently performed			
1	3.54	0.64	I was helpful when he really needed it.
2	3.48	0.70	I made up my face to look nice.
3	3.44	0.70	I complimented him on his appearance.
4	3.33	0.79	I made sure that I looked nice for him.
5	3.29	0.78	I sat next to him when others were around.
6	3.29	0.80	I went out of my way to be kind, nice, and caring.
7	3.10	0.76	I made myself "extra attractive" for him.
8	3.04	0.99	I held his hand when other girls were around.
9	3.02	0.90	I bought him a small gift.
10	2.98	1.00	I dressed nicely to maintain his interest.
11	2.96	0.79	I wore the latest fashions to enhance my appearance.
12	2.89	0.86	I put my arm around him in front of the others.
Least frequently performed			
1	1.00	0.00	I hit the girl who made a pass at him.
2	1.00	0.00	I picked a fight with the girl who was interested in him.
3	1.00	0.00	I got pregnant so that he would stay with me.
4	1.00	0.00	I told other girls that he might have a social disease.
5	1.00	0.00	I vandalized the property of the girl who had made a pass at him.
6	1.00	0.00	I threatened to harm myself if he ever left me.
7	1.00	0.00	I slapped the girl who made a pass at him.
8	1.02	0.14	I got my friends to beat up the girl who was interested in him.
9	1.02	0.14	I told him that the girl who was interested in him slept with nearly everyone.
10	1.04	0.19	I yelled at the other girl who looked at him.
11	1.04	0.19	I told the other girls that he was stupid.
12	1.04	0.19	I told the other girls to stay away from him.

Most frequently reported female mate retention acts include being nice, kind, and affectionate. There is also a strong presence of reported acts involved in altering appearance to look nice, making up the face, and dressing nicely and stylishly. Least frequently reported acts by females include hitting, vandalizing, spreading bad rumors, threatening self-harm if the male leaves, slapping, yelling, and verbal communications to rivals to stay away.

Sex Differences in Use of Tactics

Table 4 shows the analyses of sex differences in reported performance frequencies at the tactic level, along with the means and standard deviations of each tactic, corrected for the number of acts composing each tactic for comparative purposes.

Three of the four specific hypotheses are confirmed in these data. Males, more than females, use the tactic of Resource Display to retain mates. Females, more than males, use the tactics of Enhancing Appearance and Infidelity Threat to retain their mates. Specifically falsified is the hypothesis that Sexual Inducements will be used by females more than by males. Indeed, the sex difference is significant in the opposite direction.

Several sex differences in reports of mate retention tactics were found that were not predicted in advance. Males, more than females, report using

Table 4. Sex Differences in Reported Performance of Mate Retention Tactics

Tactic	Males		Females		t-test
	Mean	SD	Mean	SD	
Vigilance	1.72	0.34	1.76	0.44	-0.52
Concealment of mate	1.30	0.42	1.13	0.22	2.42*
Monopolization of time	1.48	0.45	1.33	0.31	1.90
Infidelity threat	1.52	0.60	1.82	0.74	-2.23*
Punishment of threat to mate's infidelity	1.55	0.43	1.50	0.44	0.56
Emotional manipulation	1.34	0.36	1.33	0.33	0.18
Commitment manipulation	1.25	0.35	1.25	0.34	0.00
Derogation of competitors	1.34	0.51	1.30	0.27	0.40
Resource display	2.48	0.64	2.13	0.70	2.73**
Sexual inducements	2.10	0.63	1.81	0.50	2.65**
Appearance enhancement	2.62	0.58	3.18	0.63	-4.69***
Love and care	3.20	0.51	3.17	0.60	0.13
Submission and debasement	1.92	0.49	1.58	0.53	3.44***
Verbal possession signals	2.09	0.68	2.18	0.65	-0.69
Physical possession signals	2.69	0.57	2.63	0.67	0.36
Possessive ornamentation	1.44	0.44	1.41	0.41	0.25
Derogation of mate	1.14	0.24	1.23	0.38	-1.48
Intrasexual threats	1.32	0.42	1.17	0.25	2.19*
Violence	3.04	0.11	1.00	0.03	2.13*
Total	180.43	27.67	179.51	25.97	0.16

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

Table 5. Sex Differences in Reported Performance Frequency

No.	t-test	Males		Females		Acts
		Mean	SD	Mean	SD	
More frequent male performance						
1	4.57*	2.18	0.64	1.58	0.70	I went along with everything she said.
2	4.25*	2.14	0.76	1.50	0.75	I acted against my will to let her have her way.
3	3.37*	1.92	0.98	1.33	0.79	I bought her some jewelry (e.g., ring, necklace).
4	3.26**	2.12	0.99	1.54	0.80	I bought her a bouquet of flowers.
5	3.21**	1.73	1.01	1.20	0.60	I asked her to wear my jacket.
6	3.12**	2.69	0.82	2.13	0.97	I took her out to a nice restaurant.
7	2.75**	1.73	0.87	1.29	0.70	I performed sexual favors to keep her around.
8	2.69**	1.49	0.71	1.17	0.43	I gave her jewelry to signify that she was taken.
9	2.45***	1.24	0.56	1.04	0.19	I told the other guys to stay away from her.
10	2.39***	1.45	0.77	1.15	0.42	I did not take her to the party where other males would be present.
11	2.27***	1.12	0.39	1.00	0.00	I picked a fight with the guy who was interested in her.
12	2.23***	1.33	0.69	1.08	0.39	I threatened to hit the other guy who was making moves on her.
13	2.04***	1.27	0.67	1.06	0.24	I asked her to wear my ring.
14	2.00***	1.35	0.66	1.13	0.35	I insisted that she spend all of her free time with me.
More frequent female performance						
1	-9.32*	1.81	1.04	3.48	0.70	I made up my face to look nice.
2	-4.91*	1.27	0.67	2.06	0.94	I wore his clothes in front of others.
3	-2.94**	2.45	0.96	2.96	0.79	I wore the latest fashions to enhance my appearance.
4	-2.88**	2.67	0.72	3.10	0.76	I made myself "extra attractive" for him.
5	-2.78**	1.84	0.85	2.31	0.85	I flirted with another male in front of him.
6	-2.33***	1.92	0.98	2.38	1.03	I told my female friends how much we were in love.
7	-2.13***	1.00	0.00	1.12	0.38	I hit him when I caught him flirting with someone else.
8	-2.01***	1.41	0.57	1.73	0.99	I told others he was a pain.

* $p < 0.001$.** $p < 0.01$.*** $p < 0.05$.

the tactics of Mate Concealment, Submission and Debasement, Intrasexual Threats, and Violence. Finally, the hypothesis that males perform more acts of mate guarding and retention is not supported in these data. The test for this sex difference does not approach significance.

Sex differences in specific acts. t-tests were conducted for each of the 104 specific acts to examine sex differences in performance frequency in greater detail. Those showing significant differences are shown in Table 5. The greater male reports of acts of submission and debasement are strongly seen in acts such as going along with everything that she said and acting against his will. Greater male reporting of acts of resource display is seen in acts such as purchasing jewelry, flowers, and nice dinners for the female. Sex differences in intrasexual threats and violence are seen in acts such as "threatening to hit the other guy" and picking a fight with the potential poacher.

Greater female- than male-reported performance is seen prominently in acts of appearance alteration such as making up the face, wearing the latest fashions, and making herself "extra attractive" for her partner. The act of flirting with other men in front of her partner seems specifically designed to elicit a jealous reaction.

Table 6. Correlations Between Relationship Seriousness and Mate Retention Tactics

Tactics	Males			Females		
	Months involved ¹	Probability in 1 year ²	Related closeness ³	Months involved ¹	Probability in 1 year ²	Related closeness ³
Vigilance	0.51***	0.49***	0.33*	0.32*	0.35*	0.24
Concealment of mate	0.31*	0.38**	0.13	-0.06	0.06	-0.18
Monopolization	0.44**	0.35*	0.13	0.24	0.28*	0.17
Infidelity threat	0.25	-0.03	0.04	-0.07	-0.00	-0.25
Punishment of mate's threat of infidelity	0.39**	0.39**	0.15	0.07	0.04	0.02
Emotional manipulation	0.66***	0.54***	0.34*	0.26	0.08	0.27
Commitment manipulation	0.54***	0.34*	0.10	0.46***	0.28	0.28
Derogation of competitors	0.25	0.15	0.10	0.25	0.25	0.44
Resource display	0.45***	0.24	0.36*	0.58***	0.29*	0.66***
Sexual inducements	0.26	0.18	0.14	0.15	-0.03	0.02
Appearance enhancement	0.06	0.12	0.13	0.04	0.03	-0.17
Love and care	0.43**	0.31*	0.32*	0.43**	0.25	0.49***
Submission and debasement	0.40**	0.30*	0.17	0.01	-0.12	-0.07
Verbal possession signals	0.42**	0.38**	0.33*	0.38**	0.27	0.37**
Physical possession signals	0.32*	0.36*	0.32*	0.39**	0.41**	0.43**
Possessive ornamentation	0.53***	0.26	0.27	0.50***	0.31*	0.50***
Derogation of mate	-0.01	-0.34*	-0.40**	-0.18	-0.22	-0.39**
Intrasexual threats	0.40**	0.20	-0.11	0.12	0.16	0.14
Violence	0.31*	-0.09	-0.20	0.19	0.01	0.15

¹ How many months have you been involved with her[him]?

² What is the probability that you will be with this person in one year?

³ How close would you describe your relationship with her[him]?

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

Relationship seriousness and mate retention tactics. To examine whether the intensity and seriousness of the romantic relationship are associated with mate guarding and retention tactics, the variables of Months Involved, Probability of Being Together in One Year, and Relationship Closeness were correlated with performance reports of each of the 19 tactics for males and females separately. These results are shown in Table 6.

Many of the tactics of mate retention are positively correlated with the seriousness of the relationship. The correlations that appear especially robust for both sexes are those with the tactics of Vigilance, Commitment Manipulation, Resource Display, Love and Care, Verbal and Physical Signals of Possession, and Possessive Ornamentation. The only tactic that appears to be consistently negatively correlated with relationship seriousness is Derogation of Mate. Sexual Inducement and Appearance Enhancement are not significantly correlated with relationship seriousness.

DISCUSSION

The results of Study 1 lend support to the hypothesis that male undergraduates use the tactic of Resource Display to retain mates more than female undergraduates do. They also support the hypotheses that females use Appearance Enhancement and Infidelity Threat more than males do to retain mates. In contrast, the hypothesis that females would use the tactic of Sexual Inducement more than males is falsified by these data. Indeed, in this sample males appear to use this tactic significantly more than females do.

Perhaps the most striking finding to emerge from Study 1 is how similar males and females are in the acts and tactics they report using to retain and guard their mates. The correlation across the 104 acts between males and females for mean performance is $+0.91$. This suggests that in spite of several significant sex differences, males and females in this sample show remarkable similarity in the tactics they report using to retain their mates. Indeed, this study found no overall sex difference in mate retention tactics, using a summary score consisting of all 104 acts.

The significant correlations between relationship seriousness and mate retention tactics suggest that such tactics come into play primarily in serious relationships with long-term potential. Since long-term relationships generally produce offspring more often than short-term affairs, this finding, although it was not predicted in advance, is congruent with an evolutionary account.

Obtaining reports of performance frequencies of acts of mate retention provides an important first step in identifying which tactics appear to be performed more and less frequently, which tactics show significant sex differences, and the manner in which reported performance is related to the seriousness of the relationship. However, assessment of reported performance frequency does not yield direct information about how effective each

tactic is in accomplishing the goal of retaining one's mate. Assessing act and tactic effectiveness was the goal of Study 2.

STUDY 2: JUDGMENTS OF TACTIC EFFECTIVENESS

Goals and Rationale

The purposes of Study 2 were: 1) to identify which acts and tactics are considered most and least effective at successfully retaining mates; 2) to provide an independent test of the sex differentiated hypotheses of resource display, appearance enhancement, sexual inducement, and infidelity threat; and 3) to test the hypothesis that acts judged to be highly effective will be performed more frequently than acts judged to be less effective.

Method

Subjects. Subjects for Study 2 were 46 undergraduate students, 26 females and 20 males, none of whom had participated in Study 1. The mean age was 19.22 (SD = 3.65). Subjects were tested in groups ranging from 6 to 10.

Design. The design of Study 2 was a 2×2 in which the first factor was sex of subject (male, female) and the second was sex of actor (male, female).

Procedure. Subjects received the following written instructions:

Below are listed acts that someone might perform to keep or retain his [her] mate, and prevent her [him] from leaving him [her] for another man [woman]. In this study we are interested in your judgments about *how effective* each act would be in *keeping his [her] mate* and *preventing her [him] from seeing other males [females]*. Please read each act carefully, and think about its likely consequences. Then rate each act on how effective it is likely to be in keeping his [her] mate and preventing her [him] from seeing other males [females].

Use this 7-point scale: a "7" means that you feel the act will be *very effective* in keeping his [her] mate and preventing her [him] from seeing other males [females]. A "1" means that you feel the act will be *not very effective* in keeping his [her] mate and preventing her [him] from seeing other males [female]. A "4" means that you feel the act will be *moderately effective* in keeping his [her] mate and preventing her [him] from seeing other males [females]. Use intermediate numbers for intermediate judgments.

Following this instructional set was a visual display of the rating scale, succeeded in turn by the 104 acts to be assessed on effectiveness in retaining a mate. Half of the males and half of the females received the male-actor version (He . . .); the other half of each sex received the female-actor version (She . . .).

Results

Reliability of act effectiveness judgments. Alpha reliability coefficients (Cronbach 1951) were computed for each of the four cells in the 2×2 matrix. These reliabilities are 0.90 and 0.89 for male judges' ratings of male and female actors, respectively. The corresponding reliability coefficients for female judges are 0.96 and 0.89. These results suggest that composite reliability can be obtained regarding which acts are more and less effective in retaining mates.

Acts judged to be most and least effective. Tables 7 and 8 show the acts judged to be most and least effective for male actors and female actors, respectively. Acts judged to be highly effective for males include being kind, nice, caring, affectionate, and complimentary. Acts judged to be least effective for males include those of violence such as hitting one's mate and acts of snooping through personal mail and belongings. Similarly, derogation of mate to others (e.g., telling others she is stupid) is judged to be relatively ineffective.

For female actors, being nice, kind, and loving are also judged to be highly effective at retaining one's mate. Other highly effective female acts include making herself "extra attractive," dressing nicely to maintain his interest, acting sexy to take his mind off other women, and making up her face. Least effective female acts parallel least-effective male acts in the

Table 7. Most and Least Effective Male Acts of Mate Retention

No.	Mean	SD	Act
Most effective			
1	6.74	0.54	I was helpful when she really needed it.
2	6.50	0.83	I went out of my way to be kind, nice, and caring.
3	6.38	0.71	I told her that I loved her.
4	5.87	1.01	I displayed greater affection for her.
5	5.70	0.88	I complimented her on her appearance.
6	5.44	1.88	I asked her to marry me.
7	5.38	1.44	I introduced her as my girlfriend (woman, spouse, etc.)
8	5.25	1.39	I told my male friends how much we were in love.
9	5.21	1.25	I bought her a bouquet of flowers.
10	5.17	1.24	I dressed nicely to maintain her interest.
11	5.13	1.18	I made sure that I looked nice for her.
12	5.00	1.67	I told her that I would change in order to please her.
Least effective			
1	1.09	0.29	I hit her when I caught her flirting with someone else.
2	1.30	0.47	I read her personal mail.
3	1.30	0.56	I snooped through her personal belongings.
4	1.39	0.66	I vandalized the property of the guy who had made a pass at her.
5	1.39	0.72	I did not let her talk to other males.
6	1.42	0.93	I went out with other women to make her jealous.
7	1.48	1.12	I told the other guys that she was stupid.
8	1.52	0.95	I told others she was a pain.
9	1.65	1.15	I told others the intimate things we had done together.
10	1.65	0.78	I would not let her go out without me.
11	1.65	1.23	I showed an interest in other women to make her angry.
12	1.70	0.93	I slapped the man who made a pass at her.

Table 8. Most and Least Effective Female Acts of Mate Retention

No.	Mean	SD	Act
Most effective			
1	6.05	0.84	I was helpful when he really needed it.
2	5.77	1.23	I went out of my way to be kind, nice, and caring.
3	5.41	0.96	I displayed greater affection for him.
4	5.27	1.16	I made myself "extra attractive" for him.
5	5.00	1.02	I complimented him on his appearance.
6	5.00	1.41	I dressed nicely to maintain his interest.
7	4.96	1.21	I made sure that I looked nice for him.
8	4.73	1.58	I told him that I loved him.
9	4.68	1.46	I wore the latest fashions to enhance my appearance.
10	4.59	1.26	I made up my face to look nice.
11	4.46	1.37	I acted sexy to take his mind off other girls.
12	4.18	1.56	I bought him a small gift.
Least effective			
1	1.59	0.96	I read his personal mail.
2	1.68	0.95	I slapped the girl who made a pass at him.
3	1.73	0.88	I vandalized the property of the girl who had made a pass at him.
4	1.77	0.97	I snooped through his personal belongings.
5	1.82	1.33	I hit the girl who made a pass at him.
6	1.86	1.32	I yelled at the other girl who looked at him.
7	1.86	1.17	I got my friends to beat up the girl who was interested in him.
8	1.86	0.94	I yelled at him after he showed an interest in other women.
9	1.91	1.15	I told the other girls that he was stupid.
10	2.00	1.23	I threatened to hit the other girl who was making moves on him.
11	2.05	1.25	I hit him when I caught him flirting with someone else.
12	2.09	1.07	I said that I would never talk to him again if I saw him with someone else.

violence and snooping categories. Hitting, vandalizing, and yelling do not seem to be highly effective for the goal of mate retention.

Analysis of variance. An ANOVA (2×2) was conducted for each of the 19 composited tactics to examine main effects for sex of actor and sex of rater, as well as the interaction between these factors. Only one of the 19 interaction terms was significant beyond the 0.05 level, which is approximately what would be expected on the basis of chance alone. In contrast, there were six main effects due to sex of actor and six main effects due to sex of rater.

The results for sex of actor are shown in Table 9, along with the means and standard deviations for each sex separately. As predicted, tactics judged to be effective for males more than females include Resource Display. Also as predicted, tactics judged to be effective for females more than males involve Infidelity Threat. The hypothesized sex differences for effectiveness of Sexual Inducement and Appearance Enhancement are not confirmed in these data.

Several unanticipated sex differences emerged from these analyses. The tactics of Commitment Manipulation, Love and Care, and Verbal Signals of Possession all show greater judged effectiveness for males than for females. In retrospect, the finding that male commitment is perceived as highly effective in retaining female mates is consistent with various evolutionary

Table 9. Differences in Perceived Effectiveness for Male and Female Actors

Tactic	Male Actor		Female Actor		F
	Mean	SD	Mean	SD	
Vigilance	2.15	0.67	2.42	0.98	0.07
Concealment of mate	1.88	0.99	2.43	1.09	2.82
Monopolization of time	2.50	0.86	2.64	1.45	0.39
Infidelity threat	1.66	0.97	2.63	1.24	7.91**
Punishment of threat to infidelity	2.16	0.74	2.58	1.02	2.38
Emotional manipulation	2.47	0.84	2.63	1.11	0.23
Commitment manipulation	3.97	1.30	2.65	1.11	13.84***
Derogation of competitors	2.04	0.78	2.50	1.14	2.28
Resource display	4.50	0.95	3.76	1.21	5.66*
Sexual inducement	3.87	1.29	3.94	1.07	0.00
Appearance enhancement	4.44	0.95	4.90	1.14	1.92
Love and care	6.23	0.57	5.39	0.82	16.38***
Submission and debasement	3.59	1.29	3.06	1.42	1.97
Verbal possession signals	4.20	0.88	3.26	1.17	11.15**
Physical possession signals	4.17	1.13	3.51	1.17	4.85*
Possessive ornamentation	3.59	1.02	2.97	1.34	3.63
Derogation of mate	1.78	1.05	2.20	1.22	1.32
Intrasexual threats	2.48	0.84	2.21	1.11	1.22
Violence	1.83	0.76	1.84	0.95	0.00
Total	313.23	52.66	310.77	92.83	0.11

* $p < 0.05$.** $p < 0.01$.*** $p < 0.001$.

Means and Standard Deviations are corrected for the number of Acts composing each tactic so that relative tactic effectiveness can be directly evaluated.

accounts (e.g., Dawkins 1976; Daly and Wilson, 1983; Trivers 1972), although it was not part of the present set of hypotheses.

Six tactics showed significant main effects for sex of rater: Punishment of Mate's Threat to Infidelity, Sexual Inducement, Verbal Signals of Possession, Physical Signals of Possession, Derogation of Mate, and Intrasexual Threats. All these effects show that male raters believe these tactics to be more effective than do female raters.

Sex differences in perceived act effectiveness. To examine the sex differences in perceived act effectiveness for male and female performers in greater detail, t-tests were conducted for each of the 104 acts. Twenty-six showed significant differences. These are shown in Tables 10 and 11.

These results provide a more detailed depiction of the sex differences in judged tactic effectiveness. Acts perceived to be more effective for males than for females include requests for marriage, declarations of love and commitment, being kind, considerate, and helpful; and giving flowers, rings, jackets, and jewelry to the female.

The greater female- than male-perceived act effectiveness results show several interesting patterns that did not emerge from the broader analysis of tactics. Specifically, making up one's face is judged to be more effective for females than for males in retaining mates. Attempts to make the

Table 10. Sex Differences in Act Effectiveness—Acts Believed to be More Effective for Males

No.	t-test	Mean	SD	Mean	SD	Acts
1	6.00*	5.43	1.88	2.45	1.41	I asked her to marry me.
2	4.93*	6.38	0.71	4.73	1.58	I told her that I loved her.
3	3.87*	4.22	1.41	2.59	1.40	I told her we needed a total commitment to each other.
4	3.41*	5.21	1.25	3.86	1.42	I bought her a bouquet of flowers.
5	3.35**	5.25	1.39	3.77	1.60	I told my male friends how much we were in love.
6	3.35**	4.42	1.82	2.77	1.48	I asked her to wear my jacket.
7	3.27**	6.74	0.54	6.05	0.84	I was helpful when she really needed it.
8	3.19**	5.38	1.44	4.00	1.48	I introduced her as my girlfriend (woman, spouse, etc.)
9	3.08**	5.00	1.67	3.50	1.63	I told her that I would change in order to please her.
10	2.84**	4.54	1.50	2.23	1.63	I asked her to wear my ring.
11	2.59***	4.13	1.52	2.95	1.53	I mentioned to other males that she was taken.
12	2.45***	5.70	0.88	5.00	1.02	I complimented her on her appearance.
13	2.36***	6.50	0.83	5.77	1.23	I went out of my way to be kind, nice and caring.
14	2.34***	4.43	1.34	3.45	1.47	I put my arm around her in front of others.
15	2.06***	5.00	1.53	4.05	1.62	I held her hand when other girls were around.
16	2.05***	4.17	1.23	3.32	1.56	I bought her some jewelry (e.g., ring, necklace).

* $p < 0.001$.** $p < 0.01$.*** $p < 0.05$.

partner jealous also show strong sex differences in act effectiveness. This is seen especially for the acts "I went out with other men to make him jealous," "I talked to another man at the party to make him jealous," and "I showed interest in other men to make him angry." It is interesting to speculate that the greater male incidence of jealousy noted by Daly and Wilson (1983) may partly reflect an effective *female* tactic of mate retention in addition to a male tactic for guarding against alien insemination.

Correlations between reported performance and perceived effectiveness. To test the hypothesis that more effective mate retention acts would be performed more frequently, correlations were computed between the 104 reported performance means and the corresponding act effectiveness judgment means for male and female performance and male and female actor effectiveness. The correlation between male reported performance and the acts perceived to be effective for males is +0.77; the correlation between female reported

Table 11. Sex Differences in Act Effectiveness—Acts Believed to be More Effective for Females

No.	t-test	Mean	SD	Mean	SD	Acts
1	-4.19*	2.79	1.62	4.59	1.26	I made up my face to look nice.
2	-3.52*	1.87	1.10	3.27	1.55	I wore his clothes in front of others.
3	-3.50**	1.09	0.29	2.05	1.25	I hit him when I caught him flirting with someone else.
4	-2.90**	1.42	0.93	2.55	1.60	I went out with other men to make him jealous.
5	-2.61***	1.83	1.27	2.91	1.51	I talked to another man at the party to make him jealous.
6	-2.52***	1.91	0.90	2.95	1.76	I told him the other girl was out to use him.
7	-2.47***	1.39	0.72	2.23	1.45	I did not let him talk to other females.
8	-2.42***	3.58	1.06	4.45	1.37	I acted sexy to take his mind off other girls.
9	-2.34***	1.52	0.95	2.36	1.43	I told others he was a pain.
10	-2.39***	1.65	1.23	2.59	1.40	I showed interest in other men to make him angry.

* $p < 0.001$.** $p < 0.01$.*** $p < 0.05$.

performance and acts judged to be effective for females is +0.81. These results strongly support the hypothesis that effective mate retention acts are performed more frequently, although the lack of unity suggests room for a few high frequency-low effectiveness acts as well as a few low frequency-high effectiveness acts.

The cross-sex correlations were also computed to test the more specific hypothesis that performance frequencies will correlate more highly with same-sex actor effectiveness than with opposite-sex actor effectiveness. The correlation between male frequencies and female actor effectiveness is +0.82; the corresponding correlation for female frequency and male actor effectiveness is +0.67. These results give only partial support to the more specific prediction. Finally, the correlation between male and female actor effectiveness across the 104 means is +0.84, suggesting high congruence in which acts are considered to be effective for males and females.

Discussion

Study 2 was designed to obtain an assessment of which acts of mate retention are more and less effective, to test specific sex differentiated predictions about which tactics are more effective, and to test the hypothesis that highly effective acts will be performed more frequently than acts judged to be less effective. Results suggest that Love/Care and Resource-Display are the highest for both sexes in judged effectiveness in retaining a mate. In contrast,

Violence, Mate Concealment, and Mate Derogation are lowest in effectiveness.

Study 2 provides an independent test of the sex differences hypotheses. Two findings confirm the *a priori* hypotheses and provide an independent conceptual replication of the results found in Study 1. Male Resource Display is judged to be more effective than female Resource Display at retaining mates. Female threats to infidelity are judged to be more effective than male threats to infidelity at retaining mates. The hypothesized greater-female-than-male effectiveness for the tactics of Appearance Enhancement and Sexual Inducement received only weak support in Study 2 at the act level and no support at the tactic level. The acts "I made up my face to look nice" and "I acted sexy to take his mind off other women" did show the predicted sex differences, but these differences were not significant for the tactics into which these acts were composited. Finally, the hypothesis that effective acts would be performed more frequently than less effective acts was robustly supported by relating the results from Study 1 with those of Study 2.

GENERAL DISCUSSION

Within human mating systems, attracting and selecting mates represent only the first steps toward reproduction. Mates typically must be retained to realize the promise of reproductive effort. Although tactics of mate guarding have been extensively examined in insects (Thornhill and Alcock 1983), little conceptual and empirical work has been conducted with humans (but see Daly et al. 1982; Flinn *in press*). The present studies represent an effort to identify the range and diversity of tactics of mate retention among American undergraduates, to develop a preliminary taxonomy of tactics, to test several predictions derived from evolutionary theory, to assess in a preliminary fashion the frequency with which different acts and tactics are performed, and to identify the perceived effectiveness of each act and tactic.

Study 1 was used to develop a taxonomy of mate retention tactics through an act nomination procedure. Nineteen distinct tactics subsuming 104 topographically diverse acts are included in the taxonomy. This taxonomy, consisting of intersexual and intrasexual manipulations, must be regarded as preliminary. A crucial next step is to explore tactics of mate retention used by samples from other cultures and differently composed samples within this culture. It would be particularly interesting to identify the similarities and differences of mate retention tactics across different mating systems.

Study 1 also assessed reports of performance frequencies of each of the 104 acts and 19 tactics. Predicted sex differences were found for greater male use of Resource Display and greater female use of Appearance Enhancement and Infidelity Threat. These results support the evolution-based predictions that female tactics of mate retention center on reproductive value

while male tactics of mate retention center on resource provision (Trivers 1972). In addition, undergraduate males more than females reported higher frequencies of intrasexual threats and violence—a finding congruent with the analysis of mate guarding in the context of male sexual jealousy (Daly et al. 1982; Flinn in press). Future research using differently composed samples could test the generality of these sex differences.

Several predictive failures and unanticipated results, however, suggest limits to this evolutionary account. The most important predictive failure was that males reported using sexual inducements more than did females, a finding contradictory to the evolutionary hypothesis. One possible explanation is that several acts may have been worded ambiguously. For example, the act "I gave in to her [his] sexual requests" may have been interpreted by some subjects as giving in to the female's request to abstain rather than her request to consummate. However, this interpretation does not accord with the finding for the specific (and less ambiguous) act "I performed sexual favors to keep her [him] around," which also shows greater male than female performance. Another possible explanation is that females may be more reluctant to admit using sexual inducements, while such reportorial inhibitions do not occur for males. Whether these results represent artifacts of the particular methods used, sex differences in reporting inhibitions, or legitimate problems for this evolutionary account must await replication using alternative methods and multiple data sources.

Study 1 also found strong correlations between the seriousness of the relationship and the frequency of performing many tactics of mate guarding. Tactics of Vigilance, Resource Display, Love and Care, Verbal and Physical Possession Signals, and Possessive Ornamentation were all positively correlated with relationship seriousness for both males and females. Only Degradation of Mates was negatively correlated with the seriousness of the relationship. These results suggest that tactics of mate retention come into play most strongly in the context of lasting pair bonds and considerably less so in the context of temporary romantic partners.

The methods used in Study 1 contain several limitations that could be circumvented in future research. First, since self-reports were used, social desirability could have biased reports of act performance. Second, subjects could be self-deceived and not have full or conscious access to the acts of mate retention they actually use. Future studies could profitably use multiple data sources (e.g., by friends or spouses) and different methods (e.g., direct observation) to address these methodological issues.

Study 2 was designed to provide an independent test of the evolution-based hypotheses and to provide an index of the effectiveness of each act and tactic. Independent judges agreed well with each other on the relative effectiveness of acts of mate retention. Resource Display was judged to be a more effective tactic when performed by males than when performed by females. Infidelity Threat was judged to be more effective when performed by females. Both results support the evolutionary predictions.

Study 2 also produced a predictive failure. No sex difference was found for the perceived effectiveness of Sexual Inducement as a mate retention tactic, a result that corroborates the predictive failure found in Study 1. In addition, appearance enhancement was judged to be only slightly more effective for females than for males, showing up strongly only for the act "I made up my face to look nice." These results pose problems for this evolutionary account.

An intriguing sex difference in perceived act effectiveness emerged for the acts "I went out with others to make him [her] jealous," "I talked to another man [women] at the party to make him [her] jealous," and "I showed interest in other men [women] to make him [her] angry." These acts were all judged to be more effective for females than for males. This suggests that male jealousy, in addition to being an evolved male tactic for guarding against alien insemination (Daly et al. 1982) may be *elicited intentionally by females* through the implied threat to fidelity as a tactic for retaining mates.

The hypothesis that effective acts and tactics will be performed more frequently than less effective acts and tactics was tested by relating the results from Study 1 with the results from Study 2. Correlations between mean-reported performance frequencies and mean-effectiveness ratings strongly supported the hypothesis. This finding is intriguing in that it suggests a kind of "matching law" (Herrnstein 1974), in which act performance frequency is calibrated to the effectiveness of successfully retaining a mate. Individual learning histories or our environment of evolutionary adaptedness (or both) appear to have selected for high-performance frequencies of those tactics that tend to be effective. Future research could fruitfully examine analogous behavioral calibration between performance frequencies and effectiveness at accomplishing other reproductively relevant tasks such as attracting a mate, rising in hierarchies, acquiring resources, or derogating intrasexual competitors (Buss 1986).

In spite of significant sex differences, male and female undergraduates are remarkably *similar* in the tactics and acts they report using to retain their mates. They also show great similarity in the tactics considered to be effective. The correlation between males and females for reported performance frequencies is +0.91; for act effectiveness, the correlation is +0.84. No significant *overall* differences were found between males and females for either total performance frequencies or total act effectiveness. These results suggest that, at least in these samples, tactics of mate retention are not exclusively or even primarily a male activity. The sexes show many more similarities than differences.

In this vein, it may be noted that Love and Care was a frequently reported tactic by both sexes and was also judged to be the most effective tactic—findings that were not anticipated by this evolutionary account. Perhaps love and care provide the most powerful cues of long-term willingness to commit reproductively relevant resources to the current pair bond. This

hypothesis could be tested by examining correlations between tactic usage and reproductive outcomes across couples.

Several further research directions are indicated. The occurrence of mate retention tactics implies the presence of poachers. Act frequency methods can be applied with equal incisiveness to tactics of poaching. The same sex difference hypotheses may be advanced for sexual poaching as were advanced for mate-guarding. Male poachers should use material and monetary resource lures; females should poach with inducements that communicate access to reproductive value. And, based on the present results, both sexes may be predicted to poach with tactics of love and care.

A related research direction concerns *susceptibility* to poachers. Males and females susceptible to poachers should be those whose mates fail to employ sex-effective retention tactics, combined with the presence of poachers who entice with sex-effective lures. The present data on tactic effectiveness yield a calculus of values by which susceptibility thresholds can be predicted, and they suggest that a profitable research direction would be longitudinal study of coupled individuals.

An important limitation of the present studies concerns the samples used—American undergraduates. These samples obviously are not representative of samples drawn from other cultures or even from other subcultures within America. Although systematic inquiry into precisely which features of American undergraduate socioecology differ from features found in other groups has not been conducted, several speculations may be advanced. American undergraduates tend to be exposed to a homogeneous social network consisting of hundreds of potential mates of similar age. The ideology is often egalitarian, and males and females are likely to have more similar career prospects than in other samples or cultures. Finally, there are typically weaker formal social strictures on extra-pair matings, such as those that occur in groups populated with kin, where strong religious mechanisms exist or where arranged marriages carry explicit prohibitions on extra-pair matings. These differences in socioecology are likely to have powerful effects on the mate retention tactics used and in the sorts of sex differences likely to occur. The results obtained in these studies must be interpreted within this context and may not be generalizable to mate retention tactics used in other cultures or subcultures.

A crucial next step, therefore, is to study other samples within this culture that differ in socioeconomic status, subcultural background, age, and marital status. Cross-cultural research would also go a long way toward testing the generality or specificity of the results found here. Finally, an exciting next step would be to use other data sources (e.g., reports by spouse as well as by self) and other methods (e.g., direct behavioral observation) to obtain assessments of tactics of mate retention and their relative effectiveness.

Mate guarding is a complex process. Daly and Wilson (1983) note that

acts as diverse as "violence and vigilance" are part of this process. By placing these two behavioral anchors on approximately opposite ends of the mate retention spectrum, Daly and Wilson astutely forecasted the tremendous range of acts all serving a single function, although it is clear that many of these acts can serve multiple functions. Act frequency methods appear to be effective at preserving the proximate specificity and systemic complexity inherent in this crucial component of human mating.

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