

Original Article

Breaking up Romantic Relationships: Costs Experienced and Coping Strategies Deployed

Carin Perilloux, Psychology Department, University of Texas at Austin, USA. Email: perilloux@mail.utexas.edu (Corresponding author).

David M. Buss, Psychology Department, University of Texas at Austin, USA.

Abstract: This study examined differences between men and women, and between individuals experiencing rejection (Rejectees) and individuals doing the rejecting (Rejectors) in romantic relationship break-ups. We tested fourteen evolution-based predictions about romantic breakups using data from 193 participants; ten received support. Women more than men, for example, experienced costly sequelae such as the loss of a mate's physical protection and harmful post-breakup stalking by the ex-partner. Both men and women who were rejected, compared with those who did the rejecting, experienced more depression, loss of self-esteem, and rumination. Rejectors, on the other hand, experienced the reputational cost of being perceived by others as cruel. Exploratory data analyses revealed that women more than men reported experiencing negative emotions after a breakup, particularly feeling sad, confused, and scared. Both sexes used an array of strategies to cope with the breakup, ranging from high base-rate strategies such as discussing the breakup with friends to low base-rate strategies such as threatening suicide. The largest sex difference in coping strategies centered on the act of shopping, used by women Rejectors as well as women Rejectees, likely a strategy of appearance enhancement prior to re-entering the mating market. Discussion focuses on the adaptive significance of sex differences and individual differences based on rejection status.

Keywords: relationship termination, sex differences, breakup, strategies, costs

Introduction

Over 85% of adult Americans have experienced at least one breakup of a romantic relationship (Battaglia, Richard, Datteri, and Lord, 1998). Ending romantic relationships is

neither a contemporary nor a culture-specific problem. Evidence from traditional societies supports the view that breakups were a recurrent feature of our human evolutionary past. Among the !Kung San hunter-gatherers of Botswana, romantic relationships may be terminated by either party whenever desired. The average !Kung tribe member experiences multiple romantic relationships before settling down with a long-term mate (Howell, 1976). Among the Ache of Paraguay, the average adult of 40 has experienced 12 marriages and 11 breakups (Hill and Hurtado, 1996). Although the Ache are unusual in their high frequency of breakups, an empirical analysis of the ethnographic record indicates that some level of divorce occurs in all cultures (Betzig, 1989). In short, based on the available evidence, it is reasonable to assume that romantic breakups have posed recurrent adaptive problems for many individuals over evolutionary history. Much social psychology research has focused on romantic relationship termination from a proximate perspective; the current research uses the lens of an evolutionary perspective.

The current research examined individual differences in rejection status, with a special focus on the emotions and costs experienced and the coping strategies enlisted. Evolved psychological mechanisms are hypothesized to influence the ways in which people interpret breakups, the emotions they experience following a breakup, and the aspects of the breakup perceived to be most costly. Selection also may have shaped specific strategies to deal with costs experienced contingent on two key circumstances--sex (male, female) and rejection status (Rejector, Rejectee). Below we outline our rationale for 14 predictions regarding conditional strategies based on sex and rejection status.

Sex Differences in the Breakup Experience

When examining the costs experienced after a romantic relationship termination, researchers have focused mostly on the divorces of married couples, examining proximate factors such as division of shared resources and effects of divorce on dependent children (Amato, 2000; Avellar and Smock, 2005; Gray and Silver, 1990; Sbarra and Emery, 2005). Several studies have documented sex differences in the costs experienced after breakup. Women typically report experiencing more benefits after the breakup and men report poorer adjustment (Avellar and Smock, 2005; Bevvino and Sharkin, 2003; Haugaard and Seri, 2003; Mika and Bloom, 1980). This pattern is not universal, however; other studies find that men and women experience breakups quite similarly (McCarthy, Lambert, and Brack, 1997; Metts, Cupach, and Bejlovec, 1989; Sprecher et al., 1998). Our study attempts to clarify these findings by examining a larger array of potential costs derived from evolutionary-psychological predictions.

Although both men and women engage in long-term committed mating, the sexes differ in key aspects of their reproductive biology and mating psychology (Buss, 2003; Buss and Schmitt, 1993; Gangestad and Simpson, 2000; Kenrick, Sadalla, and Groth, 1990; Symons, 1979). Women bear the larger minimum parental investment--nine months of gestation as well as the metabolic costs of lactation--and therefore are more selective in their mate choice (Trivers, 1972). When men pursue short-term mating, they are usually less selective, but when they pursue a heavy investment strategy of long-term mating, they too become highly selective (Buss and Schmitt, 1993). Heavy investment in only one relationship can lead to large costs if the relationship is terminated. If humans have faced recurrent costs associated with breakup, it follows that selection would favor adaptations that reduce, avoid, or cope with these costs. In domains in which women and men have experienced recurrent differences in the nature, frequency, or intensity of these costs, an evolutionary perspective suggests that selection would favor sex-differentiated strategies in these domains (Buss, 1995).

Women, more than men, prefer mates with resource-acquisition potential (Buss, 1989). A man's resources, however, are only desirable to the extent that he is willing to share them. One way in which women gauge a man's willingness to invest is by his level of emotional commitment to her (Buss, 2003). Emotional commitments include expressions of love, sacrifices of time, allocation of resources, and public declarations of commitment, which are usually costly and hence honest signals. We predicted that (1) female Rejectees, compared to male Rejectees, would experience higher costs associated with losing the emotional investment of their ex-partner.

Women also tend to prefer mates who are physically fit, tall, and moderately muscular because these qualities afforded sufficient protection for the woman and her children (Buss and Schmitt, 1993; Frederick and Haselton, 2007). We predicted that (2) female Rejectees, compared to male Rejectees, would report higher costs associated with losing the protection of their mate. Men can also turn their physical formidability against their mates as a tactic of mate-guarding, a tactic which women almost never enact (Buss and Shackelford, 1997; Daly and Wilson, 1988; Shackelford, Goetz, Buss, Euler, and Hoier, 2005). For the woman, the costs of enduring violence or intimidation can be very high. If a man can force her to remain in a relationship even though he is an undesirable mate, he has bypassed her ability to choose—one of the cardinal components of women's mating strategies. A man may threaten to inflict such costs in order to make his partner unwilling or unable to procure extra-pair copulations to cuckold him. If the relationship has already dissolved, threatened costs can deter his rivals from attempts to mate with her, keeping the window open for making up and restarting the relationship.

Intrusive contact after the breakup appears to be enacted at equal rates by men and women. Women victims, however, experience more fear than men victims (Duntley and Buss, 2002). Men are more likely than women to report engaging in direct unwanted pursuit behaviors such as showing up at their ex-partner's home, whereas women are more likely to report engaging in less direct unwanted pursuit behaviors such as leaving phone messages (Haugaard and Seri, 2003; Langhinrichsen-Rohling, Palarea, Cohen, and Rohling, 2000). Because the average man is more capable of causing physical harm than the average woman, we predicted that (3) female Rejectors would rate stalking and persistent attempts to restart the relationship by their ex-partners as more costly than male Rejectors.

Men may also attempt to maintain sexual access to a woman and avoid breakup using a strategy that exploits her evolved preference for long-term mating. Because women value emotional commitment so highly in their mates, men may deploy a counter-strategy to exploit this desire: he may attempt to maintain sexual access to a woman by signaling an increase in his emotional investment to her. In the modern world, men can accomplish this by suggesting they become exclusive to one another, cohabit, obtain a mutual pet, get married, or have children. Thus, we predicted that (4) men would be more likely than women to report success in preventing a breakup through suggestions of increasing their level of commitment to their partner.

Even before the breakup, a Rejector may begin enacting preemptive strategies. Infidelity, for example, can be a tactic to obtain additional resources or sexual access outside the relationship, or alternatively as a tactic for ending the relationship itself. Infidelity can also serve to prepare the Rejector to quickly find a replacement mate following an anticipated breakup. Combined with men's evolved desire for sexual variety (Buss and Schmitt, 1993; Symons, 1979), this leads to the prediction that (5) male Rejectors would be more likely to engage in sexual activities with new potential mates before the breakup than female Rejectors. The sex

difference in desire for sexual variety may also affect behavior after the breakup. If the Rejector truly wants to end the relationship, but still finds the Rejectee sexually desirable, the Rejector may attempt to obtain additional sexual access even after the breakup. Following this logic, we predicted that (6) female Rejectees would be more likely to report that their partner asked for sexual access to them after the breakup.

Breakup Experiences by the Rejectee and the Rejector

Rejectees often experience a desire to maintain the relationship, whereas the Rejectors may be able to afford to reject their partner on the assumption that they can obtain a better mate (or alternatively are better off without the existing mate). The difference in rejection status may be perceived both by both parties as well as their peer network, which can influence social reputation and alter perceived mate value. It is reasonable to hypothesize that Rejectors will be perceived, all else equal, as higher in mate value than the Rejectee. Exceptions, of course, exist such that sometimes the Rejector leaves the Rejectee because the Rejectee has already begun a relationship with someone else. Selection would have favored individuals who best cope with their rejection status either by obtaining new mates or by monitoring and protecting their mate value after the breakup. Of course, breakups can sometimes be mutual, but the current research focuses on differences as a function of rejection status.

Low mood has been hypothesized to be a response to adaptive problems that require rumination and future trajectory recalibration (Nesse, 2000). Based on this hypothesis, low mood might function to help the Rejectee to recalibrate mate value following the breakup. Low mood is not a homogenous experience since the behavioral aspects that compose low mood differ depending on the cause of the low mood (Keller and Nesse, 2005). Loss of a romantic partner specifically tends to be associated with outward expressions of grief such as crying, as well as internal emotions that serve to prevent future occurrences of the aversive event. Crying may act as a signal to others that elicits sympathy and help, and can serve to strengthen alliances between the distressed person and those who provide comfort. Sadness also can prompt the individual to avoid similar situations in the future by bringing the features of the failure into the forefront for encoding and analysis (Keller and Nesse, 2005).

Based on peer inferences of lower mate value, combined with the theory of low mood as an adaptive response, we predicted that (7) Rejectees would report experiencing depression more than Rejectors; (8) Rejectees would report more rumination over the breakup than Rejectors; (9) Rejectees would report experiencing more of a decrease in self-esteem than Rejectors; (10) Rejectees would report being perceived as less desirable than their ex-partner more than Rejectors; (11) Rejectees would report more worry than Rejectors that they will be unable to find a new mate. Predictions 7 and 8 have received some empirical support in previous studies (Amato, 2000; Mearns, 1991); Predictions 9, 10 and 11 have not been directly tested empirically to our knowledge.

Rejectors too face specific costs based on their role in the breakup. Because Rejectors are responsible for ending the relationship, they may experience negative feedback from their peer network if they are perceived as cruel. Rejectors may be characterized as the villains and Rejectees as the victims. Suffering reputational damage such as appearing heartless or unsympathetic can diminish one's ability to obtain future long-term mates, and also may incite retribution on the part of the Rejectee. These potential costs might motivate Rejectors to behave sympathetically or altruistically to their previous partner as a strategy to avoid incurring such

costs. Therefore, we predicted that (12) Rejectors would report a higher cost associated with being perceived as cruel by their peers than Rejectees.

Just as post-breakup strategies differ between the sexes, they may also differ by rejection status. To the extent that Rejectors and Rejectees have recurrently faced different adaptive problems after the end of a relationship, selection may have fashioned specific strategies for each context. If the Rejector is the initiator the breakup, the Rejectee should typically be regarded as lower in mate value. It follows that the Rejector may have some leverage over the Rejectee and this imbalance in power may lead to submissive expressions by the Rejectee in an attempt to retain or regain the Rejector. We predicted that (13) Rejectees, on average, would report displaying submissive gestures like crying, pleading and threatening to commit suicide more than Rejectors.

Rejectors may have strategies for preventing or diminishing these costs. Rejectors might use a positive tone during the breakup and attempt to minimize costs inflicted on the Rejectee throughout the breakup process (Banks, Altendorf, Greene and Cody, 1987; Metts et al., 1989). Another strategy would be to express sympathy and concern for the Rejectee in order to signal goodwill and a continued alliance (Banks, et al., 1987). Thus, we predicted that (14) Rejectors would report trying to boost their ex-partner's self-esteem more often than Rejectees. This strategy not only exhibits the Rejector's kindness, it also specifically addresses one of the Rejectee's main problems after the breakup: decreased mate value instantiated as lowered self-esteem.

Emotional aftermath of breakup

Breakups often cause mental anguish and sometimes even psychological disorders (Hill, Rubin, and Peplau, 1976; Monroe, Rohnde, Seeley, and Lewinsohn, 1999; Sprecher, Felmlee, Metts, Fehr, and Vanni, 1998; Tashiro and Frazier, 2003). Although breakups are painful, individuals differ in their experience of the psychological aftermath. An exploratory portion of our study examined these individual differences by comparing the emotions experienced by the two sexes as well as by the Rejectors and Rejectees. Previous research using various inventories of emotions suggests that women experience more positive valence emotions and less initial distress following a breakup than men (Choo, Levine, and Hatfield, 1996; Hill et al., 1976; Sprecher, 1994; Sprecher et al., 1998). Other studies find that women experience more depression after a breakup than men (Mearns, 1991). Rejectors and Rejectees have reported experiencing the same levels of distress following a breakup (Tashiro and Frazier, 2003), but Hill and colleagues (1976) documented that Rejectors felt less depressed and lonely and more happy, free and guilty compared to Rejectees. The current study extends this research by providing an inventory of emotions varying from positive to negative and from low intensity to high intensity to explore sex differences and differences based on rejection status in a non-marital sample.

Materials and Methods

Participants

Participants were 98 males and 101 females who had experienced at least one romantic breakup. We recruited 113 participants through the university participant pool to fulfill a course requirement, and 86 participants from other psychology courses who received extra credit in their course if they chose to participate. All participants were students at a large university in the southern United States. The mean age of all participants was 20.58 years ($SD = 2.32$). The

sample consisted of primarily heterosexual participants ($n = 193$); those participants who indicated a bisexual ($n = 3$) or homosexual ($n = 3$) orientation were excluded from the analyses that follow. Our remaining sample consisted of 69% White non-Hispanic, 15% Hispanic, 5% East Asian, 5% African-American, 2% East Indian participants and 4% chose "Other ethnicity." Most participants indicated that their families were middle class (85%).

All participants had been involved in a breakup: 80% had experienced a breakup as a Rejector and 71% as a Rejectee at some point in their lives. Participants had been involved in an average of three romantic relationships that lasted at least one month in duration with their longest relationship lasting on average 21 months. Of the female participants, 55% indicated that they had initiated this most recent breakup (Rejectors), and 45% indicated that their partner had initiated the breakup (Rejectees). Of the male participants, 58% were Rejectors in their most recent breakup whereas 42% were Rejectees. Overall, 56% of the sample indicated that they had been the Rejector in their latest breakup while 44% indicated they had been the Rejectee.

Materials

We designed a new instrument specifically for this study to explore the various aspects of romantic relationship termination. Following general questions regarding participant experience with breakup in general, the instrument included questions about a specific breakup the participant had experienced, the emotions experienced immediately following that breakup, the costs associated with that breakup, as well as any strategies used after the breakup. The instrument required participants to respond regarding their most recent breakup. Each item asked the participant to rate, on a Likert scale ranging from one to seven, the degree to which he or she had experienced a given cost, or engaged in a given strategy, after the breakup. When a participant indicated that he or she had not experienced a cost or engaged in a strategy, this was recorded as zero on the scale. Three additional questions presented dichotomous choices as to whether the participant engaged in a behavior or not, in order to test specific predictions. These included "Has an ex-partner ever asked you for "one last sexual experience after a breakup?"", "Has an ex-partner ever asked you to continue having sexual relations with him/her after the breakup (become friends with benefits)?" and "Have you ever tried increasing your level of commitment when a partner tried to breakup with you?" The last item included a list of examples of ways they may have increased their commitment: ask your partner to move in with you, ask your partner to marry you, tell your partner that you want to have children.

To create the instrument, a short nomination procedure was used to identify the costs associated with the end of a romantic relationship. These nominations were completed by a separate sample of 48 males and 122 females who were randomly assigned to list costs associated with being the Rejector in a breakup or costs associated with being the Rejectee in a breakup. Their individual responses were organized by the researchers into groups characterized by a single identified problem. These costs were included in the actual instrument created for this study, in addition to the costs we originally planned to include based on specific predictions to be tested. In order to populate the list of strategies, we created our own list based on the costs provided and the behaviors that one could engage in to alleviate those costs. We also included several behaviors and activities for which we had specific predictions. In order to verify we had included the most important costs and strategies we asked participants at the end of the study whether they had thought of any other costs or behaviors we had not mentioned and no participant named any that were not already included in our instrument.

Procedure

Participants either responded to our survey online or in person. Those who participated online were given an internet address to access the instrument on their own time. Those who participated in our lab were greeted by a researcher and led into an individual office with a computer and consent form. After obtaining consent, the participant was left alone to complete the survey on the computer. At the end of the instrument, participants viewed an online debriefing form.

Results

For all direct tests of *a priori* predictions we used a two-tailed α level of .05. Due to the response ranges of the questions in the survey, with zero representing participants who did not experience the item, nearly all of the variables' distributions were skewed. For this reason, we analyzed all comparisons between means using the non-parametric Mann-Whitney rank sum test. Frequency variables were analyzed using the Chi Square statistic. For the exploratory analyses, we present measures of central tendency and variability to illustrate the differences between groups although we did not make *a priori* predictions for every item. Due to the exploratory nature of these variables and the large number of statistical tests (12 emotions, 19 costs and 20 strategies), we used a more conservative non-directional α level of .01 for these analyses. We created composite variables for three pairs of items in order to reduce the number of statistical analyses and because they represent theoretically similar constructs: verbal abuse and physical abuse were averaged into the abuse variable, persistent courting and stalking were averaged into the stalking variable, and loss of ex-partner's money and loss of ex-partner's possessions were averaged into the loss of ex-partner's resources variable.

Tests of the 14 evolution-based predictions

Of our 14 predictions, 10 received statistically significant support from the data (Table 1). The difference between male ($M = 3.45$, $SD = 2.03$) and female ($M = 4.25$, $SD = 2.17$) Rejectees on the average costliness of losing their ex-partner's emotional investment approached, but did not reach, conventional statistical significance ($p < 0.08$). The data supported Prediction 2: female Rejectees ($M = 0.90$, $SD = 1.58$) rated losing the protection of their ex-partner as more costly than male Rejectees ($M = 0.21$, $SD = 0.86$). We used the composite variable of stalking to test Prediction 3: the mean of participants' ratings of ex-partner's stalking behavior and ex-partner's persistent attempts to restart the relationship. The variables were combined because persistent unwanted courting is actually stalking but participants may be more likely to label their behavior as persistence rather than stalking. Because these experiences occur at a low rate, we also evaluated this prediction using the composite variables for only participants who reported at least one of the two items, 55 women and 51 men in our sample. The pattern of results remained the same in both cases: female Rejectors ($M = 2.18$, $SD = 1.95$) rated persistent attempts by their ex-partner to restart the relationship as more costly than male Rejectors ($M = 1.17$, $SD = 1.16$) in the full sample.

Prediction 4 received support, with more males than females reporting success in preventing a breakup by increasing their level of commitment. Prediction 5 was supported: male Rejectors ($M = 1.83$, $SD = 1.69$) reported engaging in sex with other potential mates before the breakup more than female Rejectors ($M = 1.13$, $SD = 0.49$). Prediction 6 was not supported: female Rejectees were no more likely to report that their partner had asked for one or more

sexual experiences after the breakup than male Rejectees. This was evaluated based on whether their partner asked for a single last sexual act, and whether their partner asked to remain sexually active for an extended period of time.

Prediction 7 was supported: Rejectees ($M = 4.30$, $SD = 1.89$) reported more depression after the breakup than Rejectors ($M = 3.59$, $SD = 2.05$). Prediction 8 was also supported: Rejectees ($M = 4.59$, $SD = 2.13$) reported more rumination over the breakup than Rejectors ($M = 3.62$, $SD = 2.34$). Consistent with Prediction 9, Rejectees ($M = 3.34$, $SD = 2.07$) experienced decreased self-esteem after the breakup more than Rejectors ($M = 2.23$, $SD = 1.92$). Predictions 10 and 11 were not supported: Rejectors ($M = 1.41$, $SD = 1.09$) and Rejectees ($M = 1.19$, $SD = 0.69$) did not significantly differ in their perception of themselves as being less desirable than their ex-partner, nor in their fear of being unable to find a new mate (Rejectors $M = 3.41$, $SD = 2.27$, Rejectees $M = 2.84$, $SD = 2.33$), although the comparison of the latter approached significance ($p < 0.09$). Prediction 12 received support from the data: Rejectors ($M = 1.03$, $SD = 1.63$) indicated a higher cost of being seen as cruel compared to Rejectees ($M = 0.27$, $SD = 0.89$). Both parts of Prediction 13 were supported by the data. Rejectees ($M = 2.14$, $SD = 1.74$) reported more crying or pleading with their ex-partners than Rejectors ($M = 1.03$, $SD = 1.71$), as well as more suicide threats. Prediction 14 was also supported by the data: Rejectors ($M = 2.73$, $SD = 2.06$) reported more attempts to boost their ex-partners' self-esteem after the breakup than Rejectees ($M = 2.01$, $SD = 1.65$).

Emotions experienced after romantic relationship termination

An exploratory feature of our study assessed the emotions experienced after the breakup for comparison between the sexes within Rejectors and Rejectees, and between Rejectors and Rejectees themselves (Table 2). Similar proportions of Rejectors and Rejectees reported feeling *vengeful*, *indifferent*, *scared*, *remorseful* and *regretful* after the breakup. Those who were rejected, however, reported feeling substantially more *sad*, *angry*, *confused*, *shocked* and *jealous* after the breakup than those who did the rejecting. Rejectors reported a mix of more *happiness* and more *guilt* after the breakup than Rejectees. However, when further dividing the Rejector and Rejectee categories by sex, revealing trends emerged. Within Rejectees, the sexes reported equal frequencies of all the emotions listed. Women who were rejected, more than men who were rejected, reported feeling *sad*, *confused* and *scared*. In contrast, the only emotions that male Rejectors reported more than female Rejectors were *happy* and *indifferent* (although $p < .05$).

Costs experienced after romantic relationship termination

Our instrument assessed 19 different costs that could be associated with a romantic breakup. Table 3 presents group means and statistical tests for each cost studied. Within Rejectees, most of these costs were experienced similarly by men and women, such as *loss of concentration*, *loss of ex-partner's resources or skills*, *inability to acquire replacement mate* and *perceived less desirable* than their ex-partner. The only statistically significant sex difference found within Rejectees revealed higher costliness associated with *loss of protection* for women than men, supporting Prediction 8 above. Among the Rejectors, men and women reported experiencing some similar costs, such as *loss of shared friends*, *loss of sexual access*, *loss of ex-partner's resources*. Among Rejectors, however, women reported higher costliness associated with *stalking*, supporting Prediction 9 above, and *loss of protection*, mirroring the effect among Rejectees.

Breaking up

Table 1. *Tests of a priori predictions*

Item	Group (<i>Mean</i>)		Group (<i>Mean</i>)	Test statistic ^a
1 Loss of emotional investment	Female Rejectees (4.25)	>	Male Rejectees (3.45)	-1.76
2 Loss of protection	Female Rejectees (0.90)	>	Male Rejectees (0.21)	-2.68**
3 Stalking	Female Rejectors (2.18)	>	Male Rejectors (1.17)	-2.60**
4 Increased commitment	Males	>	Females	$\chi^2(1) = 5.13^*$
5 Infidelity	Male Rejectors (1.83)	>	Female Rejectors (1.13)	-1.98*
6 Sexual access after breakup	Female Rejectees	>	Male Rejectees	$\chi^2(1) = 0.36$ (once)
	Female Rejectees	>	Male Rejectees	$\chi^2(1) = 0.86$ (multiple)
7 Depression	Rejectees (4.30)	>	Rejectors (3.59)	-2.32*
8 Rumination	Rejectees (4.59)	>	Rejectors (3.62)	-2.71**
9 Lower self esteem	Rejectees (3.34)	>	Rejectors (2.23)	-3.80**
10 Perceived less desirable	Rejectees (1.41)	>	Rejectors (1.19)	-1.43
11 Unable to acquire mate	Rejectees (3.41)	>	Rejectors (2.84)	-1.74
12 Perceived cruel	Rejectors (1.03)	>	Rejectees (0.27)	-3.73**
13a Crying, pleading	Rejectees (2.14)	>	Rejectors (1.03)	-2.15*
13b Threaten suicide	Rejectees (1.08)	>	Rejectors (1.03)	-1.96*
14 Increase ex's self esteem	Rejectors (2.73)	>	Rejectees (2.01)	-2.39*

^a Mann-Whitney rank-sum test unless otherwise indicated

* $p < 0.05$; ** $p < 0.01$

Table 2. *Percent of males and females experiencing various emotions after a romantic relationship breakup*

	Rejectors			Rejectees			Rejectors	Rejectees	χ^2
	Males ^a	Females ^b	χ^2	Males ^c	Females ^d	χ^2			
Sad	35	77	17.66**	63	88	6.22*	56	76	7.64**
Angry	16	27	1.65	54	60	0.25	22	57	23.05**
Confused	16	50	12.44**	54	70	1.97	33	63	15.00**
Shocked	12	21	1.30	43	63	2.89	16	53	26.14**
Vengeful	2	13	3.96*	17	18	0.00	7	17	4.21*
Happy	35	17	4.12*	3	3	0.01	26	3	17.07**
Indifferent	16	4	3.88*	11	5	1.05	10	8	0.27
Jealous	6	17	2.68	20	33	1.49	11	27	6.73**
Scared	12	38	8.31**	20	30	0.99	25	25	0.01
Guilty	33	44	1.27	9	18	1.29	38	13	13.11**
Remorseful	10	13	0.13	11	13	0.02	11	12	0.02
Regretful	20	25	0.29	40	28	1.31	23	33	2.42

^a*n* = 49; ^b*n* = 48; ^c*n* = 35; ^d*n* = 40; **p* < 0.05; ***p* < 0.01

Breaking up

Table 3. *Reported costliness of problems experienced after a romantic relationship termination*

	Rejectors			Rejectees		
	Males	Females	<i>z</i>	Males	Females	<i>z</i>
Depression	2.62 (2.28)	3.54 (2.36)	-2.02*	3.21 (1.97)	3.78 (2.12)	-1.08
Lower self esteem	1.11 (2.03)	1.89 (2.40)	-1.76	2.03 (2.19)	3.05 (2.40)	-1.79
Loss of concentration	1.96 (2.44)	2.56 (2.61)	-1.25	2.48 (2.39)	2.63 (2.53)	-0.15
Loss of shared friends	1.48 (1.77)	1.54 (2.17)	-0.38	1.45 (2.08)	2.63 (2.63)	-2.04*
Loss of sexual access	2.45 (2.09)	2.24 (1.97)	-0.39	2.94 (2.37)	2.50 (2.51)	-0.96
Loss of resources	0.28 (0.75)	0.44 (1.02)	-1.16	0.73 (1.34)	0.48 (1.01)	-0.72
Loss of partner's skills	0.68 (1.36)	1.47 (2.04)	-2.19*	1.30 (1.96)	1.46 (2.05)	-0.36
Loss of emotional investment	3.15 (2.26)	4.08 (2.39)	-1.96*	3.45 (2.03)	4.25 (2.17)	-1.76
Personal information revealed	0.73 (1.41)	2.00 (2.49)	-2.55*	1.36 (1.67)	1.20 (1.94)	-0.77
Unable to acquire mate	2.20 (2.57)	2.04 (2.71)	-0.43	2.61 (2.69)	2.78 (2.54)	-0.28
Appear unavailable	1.13 (1.95)	1.49 (2.08)	-0.81	1.63 (2.08)	1.98 (2.57)	-0.36
Interference in relationships	1.35 (2.11)	1.68 (2.25)	-0.88	0.82 (1.78)	1.36 (2.23)	-1.28
Stalking by ex-partner	1.17 (1.16)	2.18 (1.95)	-2.60**	0.70 (1.14)	1.28 (1.80)	-1.32
Loss of protection	0.00 (0.00)	0.44 (1.18)	-2.65**	0.21 (0.86)	0.95 (1.88)	-2.68**
Abuse	0.47 (0.86)	0.91 (1.38)	-1.51	0.48 (1.08)	0.56 (1.11)	-0.01
Appearing less desirable	0.02 (0.15)	0.35 (1.06)	-1.64	0.48 (1.18)	0.48 (1.34)	-0.34

Notes: Non-parametric Mann-Whitney Rank Sum Tests were performed comparing males and females within breakup status for each strategy and *z*-scores are reported. Means are reported for each group with standard deviations in parentheses.

p* < .05; *p* < .01

Breaking up

Table 4. *Strategies used after a romantic relationship termination*

	Rejectors			Rejectees		
	Males	Females	<i>z</i>	Males	Females	<i>z</i>
Discuss breakup	3.40 (1.80)	5.23 (1.78)	-4.42**	4.24 (2.02)	4.65 (2.21)	-0.87
Remain friends	4.36 (2.10)	4.23 (2.22)	-0.21	3.88 (2.23)	4.30 (2.27)	-0.80
Increase ex-partner's self esteem	2.85 (1.96)	2.62 (2.17)	-0.81	2.52 (1.89)	1.60 (1.32)	-2.50*
Reveal sadness	2.66 (1.86)	3.51 (2.35)	-1.63	3.82 (2.33)	3.48 (2.08)	-0.58
Rumination	3.00 (2.26)	4.23 (2.29)	-2.68**	4.21 (1.92)	4.90 (2.27)	-1.56
Cry, plead	1.34 (1.11)	2.26 (2.07)	-2.91**	2.21 (1.82)	2.08 (1.69)	-0.02
Threaten suicide	1.06 (0.44)	1.00 (0.00)	-1.00	1.09 (0.29)	1.08 (0.35)	-0.65
Drink heavily	1.98 (1.94)	2.36 (2.26)	-0.79	1.85 (1.56)	1.78 (1.64)	-0.61
Use drugs	1.36 (1.15)	1.38 (0.97)	-0.79	1.30 (0.98)	1.30 (1.09)	-0.26
Spend money to attract	1.40 (0.97)	1.51 (1.37)	-0.13	1.33 (0.82)	1.08 (0.35)	-1.80
Shop	1.28 (0.95)	2.45 (1.97)	-3.87**	1.36 (1.45)	2.55 (1.88)	-3.72**
Avoid ex-partner	3.19 (2.25)	3.81 (2.47)	-1.19	3.30 (2.16)	3.63 (2.59)	-0.52
Request sexual encounter with ex-partner	1.45 (1.10)	1.36 (0.90)	-0.10	1.85 (1.64)	1.27 (1.06)	-1.71
Continue sexual contact with ex-partner	1.49 (1.25)	1.34 (0.87)	-0.07	1.55 (1.25)	1.45 (1.41)	-0.65
Increase commitment	1.17 (0.67)	1.17 (0.73)	-0.01	1.27 (1.01)	1.15 (0.80)	-0.68
Show affection to someone else	2.00 (1.76)	2.00 (1.46)	-0.46	1.73 (1.35)	2.33 (1.70)	-1.69
Infidelity	1.83 (1.69)	1.13 (0.49)	-1.98*	1.12 (0.42)	1.10 (0.50)	-0.66
Interfere with ex-partner's romance	1.43 (1.28)	1.49 (1.30)	-0.53	1.73 (1.46)	1.45 (1.28)	-0.98
Threaten ex-partner	1.04 (0.29)	1.32 (1.07)	-1.95	1.21 (0.60)	1.15 (0.66)	-1.00
Physically abuse	1.04 (0.29)	1.13 (0.88)	-0.02	1.00 (0.00)	1.02 (0.16)	-0.91

Notes: Non-parametric Mann-Whitney Rank Sum Tests were performed comparing males and females within breakup status for each strategy and *z*-scores are reported. Means are reported for each group with standard deviations in parentheses.

p* < .05; *p* < .01

Coping strategies deployed after romantic relationship termination

Of the 20 strategies and behaviors in our instrument, Rejectees again tended to respond similarly regardless of sex, as shown in Table 4. Male and female Rejectees reported engaging in 19 of the 20 strategies at statistically similar rates, such as *discussing the breakup*, *crying and pleading with ex-partner*, *avoiding ex-partner*, and *threatening ex-partner*. The only exception was that female Rejectees reported engaging in more *shopping* than male Rejectees, perhaps because shopping can function as an appearance-enhancement strategy to improve their new value on the mating market. The Rejectors also reported many strategies at similar rates regardless of sex, including *remain friends with ex-partner*, *boost ex-partner's self-esteem*, *drink heavily*, *use drugs*, *spend money to attract new partner*, and *show affection to someone else in public*. The same pattern emerged among the coping strategies as among the costs: more sex differences within the Rejectors than the Rejectees. Female Rejectors, more than male Rejectors, reported more *rumination*, *discussing breakup* with family and friends, *crying and pleading with ex-partner* and *shopping* after the breakup.

Discussion

This study was designed to test evolution-based predictions and to explore the aftermath of romantic breakup assessing the costs experienced and the strategies used to cope with breakup. We also sought to uncover the ways in which individual differences in sex and romantic rejection status influence the costs experienced and coping strategies deployed. We found important differences in the breakup experience between Rejectors and Rejectees. Within these groups, we found that sex differences were more prevalent within Rejectors than within Rejectees in the emotions and costs experienced and the strategies deployed, although it should be noted that the lower number of Rejectees ($n = 75$) than Rejectors ($n = 97$) may partially account for this difference. Our predictions followed from novel hypotheses based on mid-level evolutionary theories, as well as predictions or results that have been documented by researchers using the standard social science model (e.g., Banks, et al., 1987; Choo et al., 1996; Sprecher et al., 1998). The evolutionary perspective leads to novel predictions not previously proposed or tested by previous researchers, notably Predictions 1, 2, 4, 5, 12, and 13.

Women tended to report severe reactions to breakup in general as measured by the emotions reported, costliness experienced, and strategies used. That women tended to report more negative emotions following breakup was surprising, given previous studies which document that adult men usually react and feel more negatively following breakup than women (Choo et al., 1996; Hill et al., 1976; Mika and Bloom, 1980; Sprecher, 1994; Sprecher et al., 1998) and that women tend to report more personal growth after breakup (Bevino and Sharkin, 2003; Mearns, 1991; Tashiro and Frazier, 2003). The results of our three exploratory instruments regarding emotions, costs and strategies instead suggest that this effect may be age-dependent. Perhaps men in our sample had less to lose, or more to gain, from the end of their relationships than women. Non-college samples, lacking access to large pools of potential mates, may confront a different set of adaptive problems. Male college undergraduates, having potential access to hundreds or thousands of attractive fertile women, may prefer to engage in a short-term mating strategy as opportunities arise (Buss and Schmitt, 1993). Therefore, the loss of a committed relationship among undergraduate men may not be as costly in this historically unusual environment for men (ancestral small group living would have rendered the number of potential mates in the dozens rather than thousands). The loss of an ambitious, intelligent mate at this age may be more costly for women than for men, however, because they are currently at or

near their peak mate value and therefore the time at which they are most capable of obtaining the highest quality long-term mate that they can. Men at this age, on the other hand, have more time and potential to increase their mate value in the future. Although future mate value is more variable for males, it generally peaks at a later age than for females (Buss, 2003), and thus settling down with a long-term mate at this point may preclude both sexual access to a variety of women as well as long-term access to a female of higher mate value if they had waited to commit.

Of our 14 predictions, 10 received support from the data. We expected sex differences within rejection status, reflecting sex differences in evolved mating strategies. Women tend to prefer long-term mating to short-term mating and they gauge the level of their partners' commitment by the amount of time and emotional investment they receive. We therefore predicted that female Rejectees would experience more costs from losing their partner's emotional investment compared to male Rejectees but this difference only approached significance in the predicted direction (Prediction 1). Historically, another part of what a man brings to a relationship has been physical protection of his partner and therefore we predicted that women should value this protection and experience higher costs when it is lost (Prediction 2). Female Rejectees, compared to male Rejectees, did report experiencing more severe costs associated with the loss of their partner's protection following the breakup. These costs ranged from feelings of fear or insecurity to experiencing actual abuse when lacking a romantic partner for protection. Just as a man may provide greater protection than a woman, he is also in a position to inflict greater physical harm. As predicted, stalking and persistent unwanted courtship behaviors were rated more costly by women than by men (Prediction 3). The fact that we did not find a significant sex difference on the stalking variable may be attributable to the small proportion of participants who had actually experienced stalking and could truly rate its costliness.

As predicted, displays of commitment as a method of mate retention in the face of a breakup were more effective when used by men than women (Prediction 4). Based on Sexual Strategies Theory, we predicted that male Rejectors would be more likely to engage in one or more sexual affairs before the breakup (Buss and Schmitt, 1993). As expected, male Rejectors did report engaging in infidelity more than female Rejectors (Prediction 5). We also predicted that more female Rejectees would report that their ex-partner attempted to secure one or more additional sexual activities with them after the breakup (Prediction 6). We did not find the predicted sex difference. This could mean that no sex differences exist, or that the sex differences are less pronounced at this age or in this environment due to the numerous opportunities at a university for sexual access to other mates. Women may also engage in post-breakup sexual activities in an attempt to maintain a sexual relationship that could be ratcheted back into a long-term mateship in the future.

As expected, Rejectees tended to exhibit behaviors and feelings that function to solve the proposed adaptive problems they face after a breakup. Rejectors typically feel confident that they can find a better mate. Whether or not this is true, ending a relationship is a cue that the Rejectee is less desirable than the Rejector, or that the Rejector perceives such a discrepancy. In order to solve this adaptive problem, Rejectees would need to first identify the important aspects of the problems that caused the breakup, cease certain behaviors that may be within the set of problems, and reevaluate their relative value as a romantic partner for future mating. From the findings produced by this study, it appears this is precisely what Rejectees experience. Those who are rejected report more depression (Prediction 7) and rumination about the breakup

(Prediction 8) which may allow them to identify why the relationship that failed (Horwitz and Wakefield, 2007). Their self-esteem decreases (Prediction 9), which may represent a recalibration of self-perceived mate value.

Although Rejectees generally experience more severe costs, Rejectors too face costs. Rejectors risk acquiring a reputation as mean or uncaring by members of the peer group who sympathize with the Rejectee. Negative traits such as cruelty and coldness are not valued in a mate (Buss, 1989) and therefore Rejectors should be especially sensitive to such rumors, which this study confirmed (Prediction 12).

Strategies used in the aftermath of breakups were also affected by a person's rejection status. We predicted that Rejectees would be more likely than Rejectors to report behaviors that could induce a Rejector into remaining in the relationship. These behaviors could be low-cost such as crying or pleading with their ex-partner, or high-cost such as threatening to commit suicide (Prediction 13). Both low-cost and high-cost behaviors were reported more by Rejectees than Rejectors. When the stakes are high, as in losing a high quality partner, Rejectees engage in costly and sometimes risky strategies in an attempt to retain their mate. Rejectors, on the other hand, also possess strategies that solve the adaptive problems they face after a breakup. Since the findings show that they fear being seen as cruel, Rejectors should enact strategies to prevent acquiring this reputation. In order to accomplish this, Rejectors could show continued affiliation with the Rejectee and attempt to provide support and empathy for the Rejectee. To this end, the most successful way to assist the Rejectee is by helping to boost his or her self-esteem which will be damaged by the rejection (Prediction 14). The findings support this prediction, showing that Rejectors are more likely to attempt to boost their ex-partner's self-esteem than Rejectees.

Limitations and Future Directions

Most people have experienced romantic breakup as a Rejector, a Rejectee, or both. This study was limited in examining a fairly narrow age range: college students. This is not an unreasonable sample, given that this is an age range of often intense mating in which relationships are formed and dissolved with non-trivial frequency (Battaglia et al., 1998). Nonetheless, adaptive problems faced as a consequence of a breakup may vary as a function of age. Older individuals, for example, are more likely to experience adaptive problems involving shared children and shared resources. The existence of shared children would make breakups more costly because of the potential loss of bi-parental investment. Future studies could focus on romantic relationship termination among an older sample. In such a sample other areas of costs and strategies could be pursued related to parental investment and resource allocation. Variables in our instrument related to loss of an ex-partner's skills, money, and possessions are likely even more salient in an adult sample (Avellar and Smock, 2005).

Another limitation of this study is the use of self-report. Future research could employ other data sources, such as close friends or the romantic partners themselves, to establish convergence with the results found in the current study. Nonetheless, it is worth noting that self-report is the "method of choice" for assessing the participant's thoughts and emotions. It is also arguably the most accurate data source for the type of information we obtained: specific personal memories of post-breakup experiences.

Although intuitions tell us that Rejectees may be viewed as lower in mate value than Rejectors, research is needed on whether or how much this information influences mating decisions made by others. Do people routinely base some part of their decision of whether to become romantically involved with someone on the number of times he or she has been the

Rejector versus the Rejectee? How important is this information compared to other mating-relevant information like attractiveness, intelligence and resource potential?

Conclusions

The importance of maintaining a committed romantic relationship has loomed large throughout generations of human history due to the investment necessary to successfully raise helpless human offspring (Fraley, Brumbaugh, and Marks, 2005). A long-term romantic relationship represents the context that historically has allowed for successful reproduction and sustained investment in children, investment known to have direct effects on the survival and future success of the resulting children (Hill and Hurtado, 1996). Losing a romantic relationship undoubtedly inflicts substantial fitness costs on the individuals involved. Our research has explored the nature of these costs and the specific strategies used to cope with them. In our sample, women experienced considerably more negative emotions after the breakup than men—they reported being more sad, confused, and scared. Women also reported that the consequences of breakup were generally more costly. We speculated that this may be due to the differing future mate value trajectories of men and women (Symons, 1979).

The problems resulting from a breakup can range from minor to irreparable. After nearly every breakup, partners would have experienced some loss of sexual access, emotional investment, resources, as well as lost alliances with the previous mate's family and social circle. These problems are multiple and specific, and no single strategy can solve them all. Instead, we expect specialized strategies for dealing with distinct adaptive problems.

Five conclusions follow from the results of this study. First, men and women experience a large array of specific costs from a breakup, ranging from depression to stalking. Second, men and women deploy diverse strategies that cope with specific costs. Third, the costs experienced and the coping strategies deployed hinge importantly on whether the individual does the rejecting or is the recipient of a rejection. Fourth, women and men differ predictably in some of the key costs they experience and the coping strategies they deploy. Finally, the strategies employed appear to be specific to the costs experienced. These findings add support to the general hypothesis that breaking up poses critical adaptive problems, and that humans have developed context-contingent strategies designed to solve those problems.

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