

Psychological Factors in the Longitudinal Course of Battering: When Do the Couples Split Up? When Does the Abuse Decrease?

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The longitudinal course of battering was investigated over a 2-year time span. Forty-five batterers and their spouses were assessed with self-report, psychophysiological, and marital interaction measures. Both the stability of the relationship and of the battering were assessed. At the two-year follow-up, 62% of the couples were still married and living together, while 38% had separated or divorced. A combination of six variables, reflecting severity of husband emotional abuse, wife dissatisfaction, husband physiological arousal, and wife defending herself assertively, was 90.2% accurate in predicting separation or divorce 2 years later. Of the couples still living together at follow-up, 46% of the batterers did not reduce their levels of severe violence, while 54% did significantly decrease levels of violence. Husbands who continued to be severely violent at 2-year follow-up were more domineering, globally negative and emotionally abusive toward their wives at Time 1 than husbands who reduced their levels of violence. Even though 54% of the batterers decreased the frequency of violent acts over the 2-year period, only 7% achieved complete desistance. Moreover, husband emotional abuse did not decrease over the 2-year period, even when physical abuse did.

Although married women have been battered by their husbands throughout the history of civilization, social and behavioral scientists have only been conducting research in this area for the past 20-25 years. National surveys reveal the magnitude of the problem: an estimated 2 million wives are severely beaten by their partners each year (Straus & Gelles, 1990). Data on homicides indicate that women are more likely to be killed by their male partners than any other category of perpetrator (Browne & Williams, 1993). Although much progress has been made over the past two decades in gathering facts about domestic violence, there remain many unanswered questions. One area that has received very little attention is how violent relationships change over time. In the marital interaction

literature, we can predict, with startling accuracy, which couples will eventually divorce. (Gottman 1995)

To the extent that we can understand the processes by which battering relationships end, or the factors that determine decreases in violence, policy makers, law enforcement officials, and psychotherapists would have empirical guidance for decisions about how to prosecute, punish, and treat batterers. Cross-sectional research provides some clues into the future of an abusive relationship, but only longitudinal studies can provide an empirical basis allowing for the prediction of outcomes for batterers and battered women.

The stability of violent relationships has undergone investigation, with recent studies finding that violent relationships may not be as stable as previously thought. For example, of 187 abused women in a shelter interviewed by Okun (1986), over 43% ended their relationships within 2 years. As another example, Schwartz (1988) interviewed 639 women who reported experiencing spousal assault at some point in their lives. A substantial number of these victims were either divorced (31.8%) or separated (46.9%) at the time of the interview. The apparent instability of these relationships leads to curiosity about how the process of separation or divorce unfolds. Speculation about the termination of abusive relationships has traditionally been fueled by investigations in which battered women are the sole focus of analysis, such as asking women in retrospect why they left, or what contributed to their decision to leave (see reviews by Holtzworth-Munroe, Smutzler, & Sandin, *in press*; Strube, 1988). Such factors as financial influence or status have been considered, with studies finding that women who are employed are more likely to leave an abusive relationship (Strube & Barbour, 1983, 1984). Studies investigating the severity and frequency of violence have had mixed results, with some studies finding less severe and less frequent violence more highly correlated with a woman staying with her partner (Gelles, 1976), and other studies finding that the more severe the physical injuries, the longer women remained with their spouses (Hilbert & Hilbert, 1984; Pagelow, 1981). Some of the other factors investigated include marital commitment (Loeske & Cahill, 1984; Strube & Barbour, 1983, 1984) and persuasive techniques of the batterer (Schutte, Malouff, & Doyle, 1987). Unfortunately, the retrospective nature of these reports, the reliance on women as sole informants, and the selection factors affecting composition of the samples all cloud the interpretation of these findings.

What about the couples who stay together? How often does the violence decrease? Does it ever go away entirely? If so, does emotional abuse continue in the absence of physical violence? Retrospective reports have indicated that spousal abuse tends to increase in severity and frequency over time (Pagelow, 1981; Walker, 1984), especially during the first few years of marriage, and then stabilizes (Follingstad, Hause, Rutledge, & Polek, 1992). Pagelow went so far as to assert: "One of the few things about which almost all researchers agree is that batterings escalate in frequency and intensity over time" (1981, p.45). However, longitudinal studies suggest that wife assault sometimes subsides over time. In a study of young couples from a community sample, O'Leary, Barling, Arias et al. (1989) examined the rates of physical aggression in couples 1 month before marriage, and then 18 and 30 months later. Analyses revealed that overall rates of physical aggression decreased over the course of 3 years. Feld and Straus (1990) found that 43% of a sample of men who were abusive at an initial assessment showed decreases in physical assault after 1 year. Quigley and Leonard (*in press*) followed violent husbands over a 3-year time span and found that 23.9% of the violent husbands who were initially violent desisted from violence by 3-year follow-up. Although the time frames of most studies are relatively brief, the data do suggest that violence in abusive relationships does not necessarily persist at high levels across time. What remains unclear is when and how either decreases in violence or absolute desistance come about.

Whereas all 3 of these published longitudinal studies (Feld & Straus, 1988, O'Leary et al., 1989, Quigley et al., in press) relied on self-report measures of violence severity as potential predictors of changes in violence, we examined predictors of both marital stability and changes in violence using a multifaceted assessment package, including self-report and observational measures. As informative as self-report measures are, they are relatively subjective and susceptible to various forms of bias and distortion. We attempted to extend previous work by recruiting a sample of severely violent batterers and their partners (Jacobson et al., 1994) and following them over the course of 2 years to track both their relationship status and changes in violence. Two previous longitudinal studies (O'Leary et al., 1989; Quigley et al., in press) used newlywed samples, thus only capturing physical aggression as it is manifested at the beginning of relationships. Although Feld and Straus (1990) used married couples from all stages of marriage, their predictors were limited to severity of violence.

Thus, the purpose of this study was to address 2 questions. First, in what ways do couples who remain in abusive relationships differ from couples who are no longer together? Second, in what ways do couples who decrease the level of violent acts differ from those who continue to have a high level of violence?

Given the present state of knowledge, we took an exploratory, theory-building approach to investigating changes in battering relationships over time. We thought it would be premature to test a theory, or to be limited by a specific set of hypotheses. A more fruitful approach is to let the data speak, and to cast as broad an empirical net as possible. Thus, the purpose of this study was to generate hypotheses as much as it was to confirm preexisting notions from previous work.

However, we were guided by two principles, based on our own previous work and that of others. First, we assumed that the more severely abusive the husband is, the more likely it is that the relationships will end, even though the data connecting severity of husband violence and women's leaving are inconsistent (Holtzworth-Munroe et al., in press). Similarly, we assumed that the more severely abusive the husband is, the more likely it is that the couples who stay together will continue to have high levels of severe violence (Feld & Straus, 1990; Quigley & Leonard, in press). Second, we assumed that battered women who seemed intolerant of the abuse (e.g., expressing indignation or 'holding their ground' on either observational or paper-and-pencil measures) would be more likely to end up separated or divorced. Similarly, if the relationships were still intact, these same characteristics in battered women should result in decreased violence over time.

METHOD

Subjects

We recruited 60 couples who engaged in severe husband-to-wife domestic violence (DV).¹ These couples were part of a larger sample collected by Jacobson et al. (1994). All couples were recruited through a combination of public service announcements, media advertising, and random digit telephone dialing. Subjects responded to radio, newspaper, or posted ads stating, "Married couples, earn up to \$200 in research study. Seeking couples experiencing conflict in their marriage." People who called were briefed on the procedures over the phone and were told that the purpose of the study was "to better understand marriage relationships. Ultimately this knowledge helps us to improve our relationship therapy programs." All participants had to be 18 years of age or older, legally married, and both spouses had to participate. If individuals met these criteria, wives were administered our telephone versions of

the Locke and Wallace (1959) Marital Adjustment Test and the Conflict Tactics Scale (CTS; Straus, 1979). They were not told explicitly that we were studying domestic violence.

The CTS was used to determine whether or not couples experienced severe enough levels of husband-to-wife violence for inclusion in the study. The CTS assesses partner and self-aggression during the past year. The scale has shown high reliability and a consistent internal factor structure (Caulfield & Riggs, 1992). To ensure a severely violent group of men, we chose husbands who, based on the wife's CTS reports of husband violence, exhibited any of the following behaviors within the past year: (a) he had pushed, grabbed, shoved, slapped, hit, or tried to hit his wife six or more times; (b) kicked, bit, or hit his wife with a fist at least twice; or (c) beat her up, threatened her with a knife or gun, or used a knife or gun at least once.² The CTS scores for the DV group indicated a moderate to severe level of violence. During the year prior to participation in our study, 34% of the wives had been beaten up, 66% had been kicked, bitten or hit, 24% of the husbands had been arrested on a domestic violence charge, and 83% of the wives had been injured by their husbands' actions, with 21% seeking medical attention. Approximately 18% ($N = 8$) of husbands and 36% ($N = 16$) of wives were in some form of therapy. Couple therapy was most common: half of the men in treatment were being seen with their partners. Only one husband was currently in gender-specific treatment for violence. Given that 82% of male batterers in our sample were not in any current form of treatment and only one batterer was receiving therapy specifically geared toward violent behavior, our sample cannot be considered a clinical sample.

Even though we were not seeking a sample where the violence was bidirectional, close to 50% of the wives admitted to levels of violence that would have qualified them for the study based on a criterion of wife-to-husband violence, and close to 80% acknowledged at least some violence. Thus, despite selecting for husband-to-wife violence, in the vast majority of DV couples the wife also admitted to engaging in at least some violence herself. However, this should not imply that the form or function of wife violence was equivalent to that of their husbands: bidirectionality does not imply mutuality. Previous research indicates that male violence in this sample was unique in its ability to control, subjugate, and intimidate women (Jacobson et al., 1994).

Overview of Procedures

A detailed description of study procedures is provided in Jacobson et al. (1994) and Gottman et al. (1995). The procedures described here will detail those pertinent to the present paper.

Data were collected from available DV couples at 2 time points: Time 1 (initial assessment) and Time 2 (2-year follow-up). Although no psychophysiological or psychopathology data were collected at Time 2, the remaining procedures were consistent across both time periods, and all other measures were collected at both points in time. During their visits spouses completed a structured interview and a series of questionnaires which are detailed below.

The couples also participated in a laboratory interaction, during which they were videotaped while discussing areas of conflict in their relationship. After the participants filled out a problem inventory in which they each rated the perceived severity of particular conflict areas (e.g., in-law, sex, money, communication), the interviewer identified the 2 areas rated most problematic by both spouses. The couple was then interviewed to help make the problem areas more specific (e.g., "communication" might become "disagreeing about how to behave at a party"). Couples then talked for 15 minutes in the laboratory about these 2 problems areas in their marriages (e.g., money, in-laws, and sex). The interactions were later coded using the Specific Affect Coding System (SPAFF; Gottman, 1995). In addition, at Time 1, the nonviolent arguments³ were videotaped and several psy-

chophysiological measures were taken during a resting baseline and the subsequent marital interactions.

Psychophysiological Measures

A more complete description of our psychophysiological measures is provided in Gottman et al. (1995). We selected five psychophysiological dependent measures that we obtained from 3 kinds of recording devices placed on the surface of the participant's skin and from a fourth device attached to the participant's chair.

1. Cardiac Interbeat Interval (IBI). This is a measure of the time interval between successive spikes (R-waves) of the electrocardiogram (ECG). It is essentially equivalent to a measure of heart rate (heart rate = $60,000/IBI$ in ms) but has certain distributional advantages for parametric analysis. Beckman miniature electrodes were placed in a bipolar configuration on opposite sides of the subject's chest.

2. Pulse Transmission Time to the Finger (PTT-F). This is a measure of the elapsed time between the R-wave of the ECG and the arrival of the pulse wave at the finger (upstroke). A UFI photoplethysmograph was attached to the middle finger of the nondominant hand and measured the volume of light passing through, which is modulated by the volume of blood in the finger during each heart beat. PTT is affected by changes in the contractile force of the heart and changes in the mean arterial blood pressure. PTT is an excellent sympathetic nervous system (SNS) activation measure because the SNS affects both processes that affect PTT, myocardial contractility and arterial distensibility. PTT can be thought of roughly as a measure of blood pressure.

3. Finger Pulse Amplitude (FPA). This is an estimate of the relative volume of blood reaching the finger on each heart beat, detected by a finger photoplethysmograph on the nondominant hand. The computer measured the valley-to-peak amplitude on the FPA signal after each heart beat, averaging FPA over 1-s intervals. FPA is a useful measure for our purposes because it provided some indication of changes in the peripheral blood flow, which, in turn, is thought to relate to general alarm responses and fear.

4. Skin Conductance Level (SCL). This measure was obtained by passing a small voltage between Beckman electrodes attached to the middle phalanges of the first and third fingers of the nondominant hand. The computer monitored the SCL signal and computed its level at a resolution of $1 \mu\text{mho}$, averaging the signal over 1-s periods. SCL is one of a number of useful measures of electrodermal activity. It is sensitive to the changes in the level of sweat in the glands located in the palms of the hand. These sweat levels are thought to change in response to emotional (as opposed to temperature) stimuli.

5. General Somatic Activity Level (ACT). This was our simplest and least obstructive measure, as well as our only measure of muscular activity. The participant's chair was mounted on a platform that was coupled to a rigid base in such a way as to allow an imperceptible amount of "flexing," which induced a small current that was amplified and integrated through a polygraph.

The SPAFF (Time 1 and Time 2)

The SPAFF is a cultural informant coding system in which coders consider an informational gestalt consisting of verbal content, voice tone, content, facial expression, gestures, and body movement. Using a computer-assisted video coding station and a computer program that gives automated timing information (with a vertical interval time code signal), observers coded the onsets of each of a set of listener and speaker affects. Three coders

classified the behaviors of speaker and listener as affectively neutral, or as one of 5 positive affects (humor, affection, validation, interest-curiosity, and joy-enthusiasm), or as one of 10 negative affects (anger, disgust, contempt, domineering, belligerence, whining, sadness, tension, defensiveness, and listening with stonewalling). Twenty-five percent of the data were recoded as a reliability check. Coders coded husbands' and wives' affects separately (the records were later merged), coding both listener and speaker behaviors continuously and entering any change in behavior as a new code while the computer noted the time. An episode was defined as all the time between one behavior code and another. For all variables we used the duration of each specific affect code. Thus, our data reflect the amount of time each partner engaged in a particular affect.

Our SPAFF coding system demonstrated high levels of reliability, with kappas averaging 0.89. Generalizability coefficients for individual codes were all over 0.80 and averaged 0.87 (see Gottman et al., 1995, for more information).

Additional Measures

Millon Clinical Multiaxial Inventory (MCMI-II; Millon, 1987) (Time 1). Husbands and wives were independently administered the MCMI-II to assess personality styles and clinical syndromes. The MCMI-II is a 175-item, true-false, self-report inventory intended to be used with clinical populations. This widely used instrument has 22 clinical scales that parallel the DSM-III-R (American Psychiatric Association, 1987), plus 3 response set scales.

Emotional Abuse Questionnaire (EAQ; Waltz, Rushe, & Gottman, unpublished) (Time 1 and Time 2). The EAQ is a project-designed, partner-report measure. It contains 66 items pertaining to threatening, controlling, degrading, and sexually abusive behaviors done in the past by the spouse. Each item is rated on a 4-point scale (Never to Very Often). Four subscales were theoretically derived from the EAQ: Isolation, Degradation, Sexual Abuse, and Property Damage. The coefficient alphas for the Isolation, Degradation, Sexual Abuse, and Property Damage subscales were .92, .94, .72, and .88, respectively. The Isolation subscale comprises 24 items and includes such items as: "My partner tries to control whom I spend time with," "My partner has disabled the car," and "My partner often disapproves of my friends." The Degradation subscale is comprised of 28 items and includes such items as, "My partner humiliates me in front of others," "My partner ridicules me," and "My partner forced me to do things that are against my values." The Sexual Abuse subscale is comprised of 7 items including, "My partner makes me engage in sexual practices I consider perverse" and "My partner has intentionally hurt me during sex." The Property Damage subscale is comprised of 7 items including, "My partner has damaged things that I care about" and "My partner has threatened to destroy my property."

Dyadic Adjustment Scale (DAS; Spanier, 1976) (Time 1 and Time 2). The DAS is a widely used measure designed to assess the quality of marriage and similar dyads. It is a 32-item paper and pencil measure intended to measure global marital satisfaction, dyadic cohesion, consensus, and affectional expression.

Participants

Of the initial 60 domestically violent (DV) couples in our Time 1 sample, we were able to ascertain the marital status of 45 at the 2-year follow-up. We were unable to contact the remaining 15 couples. In order to examine whether the missing couples differed in any systematic way from those couples remaining in the study, we compared the 2 groups on Time

1 on: (a) education; (b) income; (d) years married; (e) marital adjustment (DAS score); (f) frequency of domestic violence (CTS score); and (g) emotional abuse (EAQ score). The missing and remaining couples did not differ at Time 1 on any of these variables.

RESULTS

A large number of univariate tests were conducted.⁴ Given the theory-building, hypothesis-generating, and principle-driven nature of the study, we chose to simply report our significant findings, without adjusting alpha levels for the number of tests conducted. Since it is difficult to adequately assess the distributions of variables with small group sizes, we also analyzed our data, where applicable, through nonparametric statistical tests. Although we only report parametric analyses, the results from nonparametric comparisons were virtually identical. Of course, caution is necessary in interpreting findings, including those that are consistent with our a priori principles.

Predicting Marital Status at 2-Year Follow-Up (Time 2) From Time 1 Data

In the following series of analyses, we considered Time 1 variables that discriminated between couples who were separated/divorced or still-together at 2-year follow-up to examine in what ways violent couples who remained in abusive relationships differed from couples who were no longer together. We first looked at differences in demographic, marital satisfaction, and severity of domestic violence variables. We also examined marital interaction variables, including both affective and psychophysiological measures, as well as personality/psychopathology factors. We then conducted a discriminant function analysis

TABLE 1. Time 1 Scale Scores and Demographics for Separated/Divorced (SEP/DIV) and Still Together (TOG) Couples

Time 1 Scores	n	Time 2 Marital Status		F(dfs)
		TOG Couples M(SD)	SEP/DIV Couples M(SD)	
Dyadic Adjustment Scale				
Wife	45	93.9 (14.2)	71.7 (23.4)	F(1, 43) = 15.8***
Husband	42	98.2 (14.9)	86.9 (19.6)	F(1, 40) = 4.4*
Education ^a				
Wife	45	14.2 (2.2)	14.1 (2.9)	F(1, 43) < 1, ns
Husband	45	14.1 (3.0)	13.9 (2.1)	F(1, 43) < 1, ns
Income ^b				
Wife	45	799.5(714.3)	1084.2 (805.8)	F(1, 43) = 1.5, ns
Husband	43	1727.7(950.0)	1484.1(1099.7)	F(1, 41) < 1, ns
Age				
Wife	45	36.6 (11.6)	33.0 (7.7)	F(1, 43) = 1.3, ns
Husband	44	37.5 (9.8)	33.7 (8.7)	F(1, 42) = 1.6, ns
Years married	45	7.9 (8.0)	5.6 (4.4)	F(1, 43) = 1.1, ns
No. children	45	2.1 (1.9)	1.6 (1.7)	F(1, 43) < 1, ns

^aYears of education. ^bGross monthly income.

* $p < .05$. *** $p < .0001$.

TABLE 2. Time 2 Severity of Violence and Emotional Abuse Scale Scores for Separated/Divorced (SEP/DIV) and Still Together (TOG) Couples

Scale and Spouse Tested	<i>n</i>	Time 2 Marital Status		<i>F</i> (<i>dfs</i>)
		TOG Couples <i>M</i> (<i>SD</i>)	SEP/DIV Couples <i>M</i> (<i>SD</i>)	
Conflict Tactics Scale (self)				
Wife	44	11.0(12.3)	12.0(14.1)	<i>F</i> (1, 42) < 1, <i>ns</i>
Husband	42	11.6(24.9)	11.9(17.8)	<i>F</i> (1, 40) < 1, <i>ns</i>
Conflict Tactics Scale (partner)				
Wife	45	19.9(22.2)	24.3(31.3)	<i>F</i> (1, 43) < 1, <i>ns</i>
Husband	42	7.6 (8.8)	22.6(24.0)	<i>F</i> (1, 40) = 8.3**
Emotional Abuse Questionnaire (partner)				
Isolation subscale				
Wife	39	43.4(11.1)	54.1(17.8)	<i>F</i> (1, 37) = 5.4*
Husband	41	47.5(16.3)	54.4(21.8)	<i>F</i> (1, 39) = 1.3, <i>ns</i>
Degradation subscale				
Wife	39	63.7(14.0)	77.1(24.1)	<i>F</i> (1, 37) = 4.8*
Husband	40	56.3(18.2)	64.7(20.8)	<i>F</i> (1, 38) = 1.8, <i>ns</i>
Sexual Abuse subscale				
Wife	38	12.2 (4.4)	13.4 (4.7)	<i>F</i> (1, 36) < 1,
Husband	40	10.6 (3.4)	9.5 (2.7)	<i>F</i> (1, 38) = 1.1, <i>ns</i>
Property Damage subscale				
Wife	38	11.0 (4.0)	13.5 (5.9)	<i>F</i> (1, 36) = 2.3,
Husband	40	9.0 (3.1)	9.6 (3.1)	<i>F</i> (1, 38) < 1, <i>ns</i>

p* < .05. *p* < .01.**TABLE 3. Time 1 SPAFF Means and Standard Deviations for Separated/Divorced (SEP/DIV) and Still Together (TOG) Couples**

SPAFF Code	<i>n</i>	Time 2 Marital Status		<i>F</i> (<i>dfs</i>)
		TOG Couples <i>M</i> (<i>SD</i>)	SEP/DIV Couples <i>M</i> (<i>SD</i>)	
Husband contempt	45	11.5 (19.2)	30.3 (36.5)	<i>F</i> (1, 43) = 5.2*
Husband neutral	45	554.1(139.4)	416.2(156.0)	<i>F</i> (1, 43) = 9.5**
Husband humor	45	19.4 (25.3)	3.9 (8.7)	<i>F</i> (1, 43) = 5.9*
Wife defensiveness	45	140.8(111.5)	254.7(154.6)	<i>F</i> (1, 43) = 8.2**
Wife humor	45	19.3 (25.8)	5.3 (11.5)	<i>F</i> (1, 43) = 4.4*
Husband global negative affect	45	225.0(127.8)	394.5(158.7)	<i>F</i> (1, 43) = 10.5**

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

with variables that effectively discriminated between the 2 groups, to maximize prediction of separation/divorce 2 years following our initial assessment.

Demographic Variables and Marital Satisfaction. Of the 45 couples available at the 2-year follow-up, 28 (62%) were still married and 17 (38%) had separated or divorced. Table 1 shows the means and standard deviations for husbands and wives in the still-together

(TOG) and separated/divorced (SEP/DIV) and groups on Time 1 demographic variables and marital satisfaction (measured by the DAS).

At Time 1, wives and husbands who had separated or divorced at the 2-year follow-up reported lower levels of marital satisfaction than wives and husbands from couples who were still-together. Even though the correlation between husband and wife DAS scores is .70, the wife DAS scores discriminated between the 2 criterion groups much more strongly. The 2 groups did not significantly differ on Time 1 demographic variables.

Physical and Emotional Abuse. Table 2 shows the means and standard deviations of the TOG and SEP/DIV groups on frequency of violence (as measured by the CTS) and emotional abuse (as measured by the EAQ) at Time 1.

In couples who were separated or divorced at 2-year follow-up, husbands reported significantly higher levels of wife-to-husband violence at Time 1 than still-together husbands. Women who were separated/divorced at Time 2 reported higher levels of husband emotional abuse in the forms of isolation and degradation at Time 1 than women in the still-together group.⁵

Observed Behavior and Affect During Nonviolent Arguments. Table 3 shows the means and standard deviations for both groups on SPAFF codes obtained during their 15-minute nonviolent argument at Time 1. We conducted a total of 15 ANOVAs (for each partner) in order to examine our SPAFF codes; here we present the analyses only for variables on which significant findings emerged.

Husbands from couples who were no longer together at Time 2 were significantly more contemptuous, displayed less humor, and showed less neutral affect toward their wives at Time 1 than still-together husbands. Separated/divorced wives were significantly more defensive and displayed less humor toward their husbands at Time 1 than their still-together counterparts.

The findings for neutral affect can be seen essentially as the inverse of negative affect, since positive affect was so rare in this sample. Thus, the predictive power of neutral affect was in fact related to negative affect. To demonstrate this, we created an aggregate category of global negative affect, summing the most negative affect codes (belligerence, contempt, defensiveness, and domineering) to create a variable which reflected global negative affect (GNA). We then compared husbands from both groups at Time 1 on levels of global negative affect toward their wives. As expected, husbands in the separated/divorced group showed significantly higher levels of global negative affect toward their wives than husbands in the still-together group.⁶

Psychophysiology During Nonviolent Arguments. The summary means and standard deviations for the 2 groups on psychophysiological data obtained during the Time 1 nonviolent arguments are shown in Table 4. We conducted a total of 5 ANOVAs (for each partner); here we present the analyses only for variables on which significant findings emerged.

We found that husbands in the separated/divorced group showed larger finger pulse amplitude decreases from baseline than husbands in the still-together group. The direction of this difference indicated that as the nonviolent argument began, husbands in the separated/divorced group, on average, showed greater reductions in finger pulse amplitude than still-together husbands. The greater reduction in finger pulse amplitude can be roughly thought to reflect a general alarm response. This response is due to greater alpha-sympathetic activation on the part of separated/divorced husbands that causes arterial vasoconstriction and draws blood from the periphery of the body toward the trunk.

Husbands who were separated or divorced showed greater decreases in finger pulse transit time than those who remained with their partners. A decrease in finger pulse transit time can be roughly equated to increased blood pressure, another indicator of physiological

TABLE 4. Psychophysiological Means and Standard Deviations for Separated/Divorced (SEP/DIV) and Still Together (TOG) Couples

Change in Psychophysiological Variable from Baseline to First Half of Marital Interaction	n	Time 2 Marital Status		F(df)
		TOG Couples M(SD)	SEP/DIV Couples M(SD)	
Finger pulse amplitude differences (ms)				
Wife	44	-.004 (.009)	-.002 (.012)	F(1, 42) < 1, ns
Husband	44	-.001 (.007)	-.009 (.010)	F(1, 42) = 10.1**
Finger pulse transmit time (ms)				
Wife	44	-4.5 (13.8)	-3.8 (8.7)	F(1, 42) < 1, ns
Husband	44	-1.5 (9.0)	-6.8 (7.1)	F(1, 42) = 4.2*
Interbeat interval differences (ms)				
Wife	44	-27.1 (25.5)	-52.2 (51.4)	F(1, 42) = 4.7*
Husband	44	-22.6 (32.8)	-25.6 (44.4)	F(1, 42) < 1, ns

* $p < .05$. ** $p < .01$.

arousal. On this indicator, husbands who were later separated or divorced showed more physiological arousal during nonviolent arguments at Time 1.

Finally, we found that women in the separated-divorced group showed a larger interbeat interval decrease from baseline than women from the still-together group. The direction of this difference score indicates that as the nonviolent argument commenced, separated/divorced women had greater increases in heart rate, on average, than still-together women, which suggests that separated/divorced women showed greater physiological arousal.

Personality and Psychopathology. We examined the Time 1 MCMI-II scale scores to compare psychopathology and personality disorders between the separated/divorced and still-together groups. We conducted a total of 14 ANOVAs (for each spouse); here we present the analyses only for variables on which significant findings emerged. Separated/divorced men were significantly higher on the antisocial (SEP/DIV: $M = 85.6$, $SD = 25.9$; TOG: $M = 70.3$, $SD = 18.2$), $F(1,42) = 4.63$, $p < .05$) and narcissistic (SEP/DIV: $M = 86.7$, $SD = 29.0$; TOG: $M = 64.0$, $SD = 28.5$), $F(1,42) = 7.03$, $p < .05$, scales than still-together men.⁷ The mean antisocial and narcissistic scale score for husbands in the separated/divorced group were well above the scale score cutoff of 75 for diagnosing antisocial or narcissistic personality disorder. The men in the 2 groups did not differ on any of the MCMI-II (Millon Clinical Multiaxial Inventory) Axis I scales and there were no differences between the women in the 2 groups on any of the MCMI-II Axis I or Axis II scales.

Discriminant Analysis Predicting Separation/Divorce at 2-Year Follow-Up (Time 2). We conducted a discriminant function analysis to predict marital status at the 2-year follow-up. Since we were particularly interested in the combined abilities of variables from diverse domains to predict subsequent marital status, we selected at least one variable from the following domains: (a) marital satisfaction (DAS), (b) physical and emotional abuse (CTS and EAQ), (c) observed behavior and affect (SPAFF); (d) psychophysiology, and (e) psychopathology (MCMI-II). We only entered variables that significantly discrimi-

nated between groups and chose variables that were not highly intercorrelated with one another. In cases where there was more than one variable in a particular domain (e.g., psychophysiological) that discriminated between groups, we chose the variable with the highest bivariate correlation with divorce (e.g., husband finger pulse amplitude vs. wife inter-beat interval). In all, six Time 1 variables were entered in one step into the discriminant function analysis to preserve a minimum 6:1 ratio of subjects to predictor variables: (1) husband report of wife violence (CTS); (2) wife defensiveness (SPAFF); (3) wife reports of marital satisfaction (DAS); (4) husband global negative affect (SPAFF); (5) husband antisocial personality score (MCMI-II); and (6) husband finger pulse amplitude difference score. Table 5 contains the pooled within-group correlation matrix of predictors.

The resulting discriminant function analysis with the six predictors was highly significant, with a canonical correlation of .78, Wilks' $\lambda = .47$, $\chi^2 = 33.3$, $p < .0001$. Table 6 shows the resulting classification table.

The discriminant function was 94% accurate in classifying couples that were separated or divorced at follow-up and 87.5% accurate in classifying still-together couples, with 6% false positives in predicting togetherness and a 12.5% false-positive rate for predicting separations or divorces. The overall accuracy of the discriminant function in classifying marital status was 90%.

Changes in Violence at 2-Year Follow-Up (Time 2) From Time 1 Data

In our next series of analyses we examined how couples whose husbands decreased their violence differ from those who continue to have a high level of violence. These analyses compare couples within the still-together (TOG) group on the basis of whether they continued to meet the study's criteria for severe domestic violence at 2-year follow-up.⁸ Of the 28 couples still together and potentially available for assessment at Time 2, 2 couples refused to participate in the Time 2 data collection, 12 couples still met the study's criteria for severe domestic violence, according to wife reports, and 14 couples no longer met criteria for severe domestic violence. We looked more closely at wife CTS reports of violence for the

TABLE 5. Pooled Within-Group Correlation Matrix of Predictors for Discriminant Function Predicting Time 2 Marital Status

Time 1 Predictors	1	2	3	4	5	6
1. Husband antisocial scale (MCMI-II)	—					
2. Husband finger pulse amplitude difference	.20	—				
3. Husband global negative affect (SPAFF)	-.28	-.12	—			
4. Wife violence (Husband CTS report)	.37	-.16	-.27	—		
5. Wife marital satisfaction (DAS)	.03	-.19	-.10	-.10	—	
6. Wife defensiveness (SPAFF)	.04	.06	.07	.14	-.19	—

TABLE 6. Classification Table of Discriminant Function Predicting Time 2 Marital Status

Actual Group	Cases	Predicted Group	
		Still-Together	Separated/Divorced
Still together	24	21 (87.5%)	3 (12.5%)
Separated/divorced	17	1 (5.9%)	16 (94.1%)

Overall percent of cases correctly classified: 90.24%. Canonical Correlation = .78, $\chi^2 = 33.3$, $p < .0001$.

husbands who decreased their violence in order to better understand the specific changes in their husbands' violent acts. A great majority of these batterers (86%) decreased their violence to the point where there was only one incident, on average, involving pushing, grabbing, or shoving during the previous year. With regard to even more extreme forms of violence, one batterer in this group was reported as having slapped his wife once in the past year and another batterer was reported as having hit his wife once in the past year. Although these 14 couples did not meet the study's domestic violence criteria at the 2-year follow-up, it is important to note that in 13 of these 14 couples at least some physical violence continued. Only one husband desisted from violence altogether. Therefore the group no longer meeting domestic violence criteria was labeled as Decreasing Domestic Violence (DDV), and the group continuing to meet domestic violence criteria was labeled as Not Decreasing Domestic Violence (NDDV). In this series of analyses, we examined the Time 1 differences with the goal of predicting Time 2 violence status (i.e., DDV vs. NDDV ANOVAs on Time 1 variables). On variables where we have data at both time points, we looked at changes from Time 1 to Time 2 with repeated measures ANOVAs. All variables aside from demographic, psychophysiological and personality measures were examined through this repeated measures approach.

Demographic Variables and Marital Satisfaction. Table 7 shows the Time 1 means and standard deviations of the NDDV and DDV groups on demographic and marital satisfaction variables. At Time 1, NDDV couples were older than those who showed a decrease in violence (DDV)^a. Husbands continuing their high rates of violence also reported lower marital satisfaction.

To examine changes in marital satisfaction over time, a repeated-measures group-by-time analysis of variance was conducted on the wives' and husbands' reports of marital satisfaction. With regard to wives' reports, a main effect for group was found with the marital satisfaction of NDDV wives being significantly lower at Time 2 (DDV: $M = 106.5$,

TABLE 7. Time 1 Scale Scores and Demographics for Couples Not Decreasing in Domestic Violence (NDDV) and Couples Decreasing in Domestic Violence (DDV)

Scale and spouse tested	<i>n</i>	Time 2 Violence Status		<i>F</i> (<i>dfs</i>)
		NDDV Couples <i>M</i> (<i>SD</i>)	DDV Couples <i>M</i> (<i>SD</i>)	
Dyadic Adjustment Scale				
Wife	26	90.0(12.9)	99.1(14.6)	$F(1, 24) = 2.8, ns$
Husband	25	9.15(13.0)	103.9(15.0)	$F(1, 23) = 4.7^*$
Age				
Wife	26	42.7(13.7)	31.2(7.1)	$F(1, 24) = 7.6^*$
Husband	26	41.8(11.6)	33.7(6.9)	$F(1, 24) = 4.9^*$
Education ^a				
Wife	26	14.2(1.7)	14.1(2.7)	$F(1, 24) < 1, ns$
Husband	26	14.5(3.0)	13.5(3.2)	$F(1, 24) < 1, ns$
Income ^b				
Wife	26	1029.2(858.5)	688.3(559.1)	$F(1, 24) = 1.5, ns$
Husband	25	1624.1(866.2)	1520.2(550.3)	$F(1, 23) < 1, ns$
Years Married	26	10.1(10.9)	6.0(4.4)	$F(1, 24) = 1.7, ns$
No. Children	26	2.9(2.3)	1.5(1.5)	$F(1, 24) = 3.7, ns$

^aYears of education. ^bGross monthly income.

* $p < .05$.

$SD = 21.0$; NDDV: $M = 86.1$, $SD = 20.5$), $F(1, 23) = 5.4$, $p < .05$. A repeated-measures group-by-time analysis of variance was also conducted on the husbands' reports of marital satisfaction. A main effect for group was found, with marital satisfaction for NDDV men being significantly lower at both time points (Time 2: NDDV: $M = 91.3$, $SD = 14.6$; DDV: $M = 107.6$, $SD = 19.2$), $F(1, 23) = 7.0$, $p < .05$.

Physical and Emotional Abuse. Table 8 shows the means and standard deviations of the 2 groups on severity of physical violence (as measured by the CTS) and emotional abuse (as measured by the EAQ) at Time 1 and Time 2.

At Time 1, the groups did not significantly differ in CTS wife reports of husband-to-wife physical violence, $F(1, 24) < 1$, n.s. Therefore, men continuing their high rates of violence were no more abusive at Time 1 than men who decreased their frequency over time. There were also no differences between the groups in husband reports of wife violence at Time 1, $F(1, 22) < 1$, n.s.

To examine changes in violence across time, repeated-measures group-by-time analyses of variance were conducted on spouses' reports of their own violence, as well as their reports of partner violence. With regard to wife reports of her own violence, a main effect for time was discovered, although only the group reporting decreases in husband violence also reported a decrease in wife to husband violence. For wife reports of husband violence, a main effect for group was discovered, with NDDV wives reporting a greater number of physically abusive acts by their husbands.

We also compared NDDV and DDV groups on the four subscales of the Emotional Abuse Questionnaire. Repeated-measures group-by-time analysis of variance on wives' reports of husband degradation revealed a main effect for group, with NDDV wives reporting higher levels of degrading emotional abuse than DDV wives across both time points.

Observed Behavior and Affect During Nonviolent Arguments. We compared the NDDV and DDV groups on SPAFF codes obtained during their 15-minute laboratory interaction at Time 1. Observational data were not available for three couples due to incomplete laboratory interactions and for four couples due to inaudible videotapes. Table 9 shows the means and standard deviations on SPAFF codes for the 2 groups at both time points.

Repeated measures group-by-time analyses of variance were conducted on husband and wife observed behavior and affect to examine their longitudinal course. We conducted a total of 15 ANOVAs (for each partner); here we present the analyses only for variables on which significant findings emerged. A group main effect was found for husband domineering, husband neutral, and husband global negative affect. Marital interactions for NDDV couples across time involved more husband domineering, less neutrality, and more husband global negative affect than the interactions of DDV couples. A time main effect was found for both husband and wife humor, with both husband and wives in both groups decreasing the amount of humor displayed from Time 1 to Time 2. A group by time interaction was also found for wife affection, with NDDV wives being more affectionate at Time 2 than Time 1 and DDV wives being more affectionate at Time 1 than Time 2. These group differences may be an artifact of the very low levels of wife affection across both of these groups. For instance, at either time point, the group that was lower in wife affection did not have a single display of affection (and therefore no variability in scores), while the group that was higher had displays that only lasted for one second, on average. Therefore, very small differences in wife affection became significantly different due to the constrained distribution of scores.

Personality and Psychopathology. We compared husbands in both groups on Time 1 MCMI-II scale scores. We conducted a total of 14 ANOVAs. There were no significant differences between the 2 groups on Time 1 husband reports on Axis I and II MCMI-II scales.

TABLE 8. Time 1 and Time 2 Severity of Physical and Emotional Abuse for Couples Not Decreasing in Domestic Violence (NDDV) and Couples Decreasing in Domestic Violence (DDV)

Scale and Spouse Tested	<i>n</i>	Time 1		Time 2		Effect		
		NDDV Couples <i>M(SD)</i>	DDV Couples <i>M(SD)</i>	NDDV Couples <i>M(SD)</i>	DDV Couples <i>M(SD)</i>	Group <i>F(dfs)</i>	Time <i>F(dfs)</i>	Group × Time <i>F(dfs)</i>
Conflict Tactics Scale (self)								
Wife	24	12.0(13.8)	11.2(12.5)	11.3(15.7)	3.3 (5.3)	$F(1, 22) < 1, ns$	$F(1, 22) = 5.5^*$	$F(1, 22) = 3.8, ns$
Husband	22	6.0 (5.0)	16.4(35.6)	2.7 (2.5)	1.3 (1.7)	$F(1, 20) < 1, ns$	$F(1, 20) = 2.6, ns$	$F(1, 20) = 1.1, ns$
(partner)								
Wife	26	24.2(26.7)	17.1(19.6)	18.3(20.5)	1.6 (1.3)	$F(1, 24) = 5.3^*$	$F(1, 24) = 3.9, ns$	$F(1, 24) < 1, ns$
Husband	23	8.4 (8.7)	7.6 (9.7)	8.3(11.5)	2.9 (3.2)	$F(1, 21) = 1.1, ns$	$F(1, 21) = 1.2, ns$	$F(1, 21) = 1.1, ns$
Emotional Abuse Questionnaire (partner)								
Isolation								
Wife	19	46.2(10.8)	41.1(11.6)	42.9 (8.6)	37.9(18.0)	$F(1, 17) < 1, ns$	$F(1, 17) = 2.1, ns$	$F(1, 17) < 1, ns$
Husband	23	44.5(19.2)	46.2(13.5)	45.4(14.7)	40.9(10.9)	$F(1, 21) < 1, ns$	$F(1, 21) < 1, ns$	$F(1, 21) < 1, ns$
Degradation								
Wife	19	72.8(14.5)	56.3(11.7)	70.1(14.9)	48.2(14.7)	$F(1, 17) = 13.6^{**}$	$F(1, 17) = 1.9, ns$	$F(1, 17) < 1, ns$
Husband	22	55.3(14.6)	52.8(16.7)	55.8(13.1)	49.6(16.6)	$F(1, 20) < 1, ns$	$F(1, 20) < 1, ns$	$F(1, 21) < 1, ns$
Sexual abuse								
Wife	18	11.0 (3.0)	12.3 (4.1)	11.4 (3.7)	10.9 (4.0)	$F(1, 16) < 1, ns$	$F(1, 16) < 1, ns$	$F(1, 16) < 1, ns$
Husband	22	10.1 (1.9)	11.3 (4.2)	9.0 (2.2)	8.6 (1.9)	$F(1, 20) < 1, ns$	$F(1, 20) = 4.2, ns$	$F(1, 20) < 1, ns$
Property damage								
Wife	18	12.1 (3.7)	10.4 (3.9)	12.1 (5.0)	9.4 (4.2)	$F(1, 16) = 1.5, ns$	$F(1, 16) < 1, ns$	$F(1, 16) = 1.6, ns$
Husband	22	8.3 (1.7)	8.5 (2.6)	10.1 (4.7)	8.9 (3.1)	$F(1, 20) < 1, ns$	$F(1, 20) = 2.9, ns$	$F(1, 20) < 1.0, ns$

* $p < .05$. ** $p < .01$.

TABLE 9. Time 1 and Time 2 SPAFF Means and Standard Deviations for Couples Not Decreasing in Domestic Violence (NDDV) and Couples Decreasing in Domestic Violence (DDV)

Scale and Spouse Tested	<i>n</i>	Time 1		Time 2		Effect		
		NDDV Couples <i>M(SD)</i>	DDV Couples <i>M(SD)</i>	NDDV Couples <i>M(SD)</i>	DDV Couples <i>M(SD)</i>	Group <i>F(dfs)</i>	Time <i>F(dfs)</i>	Group × Time <i>F(dfs)</i>
Husband domineering	19	116.3(119.9)	9.1(13.2)	36.7 (37.9)	10.3 (19.2)	$F(1, 17) = 7.7^*$	$F(1, 17) = 3.5, ns$	$F(1, 17) = 3.7, ns$
Husband neutral	19	494.5(164.0)	626.8(82.1)	511.2(178.5)	604.1(121.9)	$F(1, 17) = 5.2^*$	$F(1, 17) < 1, ns$	$F(1, 17) < 1, ns$
Husband global negative affect	19	308.8(104.5)	164.1(66.4)	216.0(105.7)	166.5 (79.8)	$F(1, 17) = 7.4^*$	$F(1, 17) = 3.4, ns$	$F(1, 17) = 3.8, ns$
Husband humor	19	14.5 (17.7)	32.6(37.2)	4.9 (6.6)	6.0 (9.7)	$F(1, 17) = 1.7, ns$	$F(1, 17) = 9.7^{**}$	$F(1, 17) = 2.2, ns$
Wife affection	19	13.9 (17.6)	32.0(36.8)	5.2 (6.0)	8.4 (14.2)	$F(1, 17) = 1.8, ns$	$F(1, 17) = 8.9^{**}$	$F(1, 17) = 1.9, ns$
	19	0.0 (0.0)	0.8 (1.5)	1.4 (2.5)	0.0 (0.0)	$F(1, 17) < 1, ns$	$F(1, 17) < 1, ns$	$F(1, 17) = 4.6^*$

* $p < .05$. ** $p < .01$.

Psychophysiology During Nonviolent Arguments. We compared the NDDV and DDV groups on psychophysiological data obtained during the Time 1 nonviolent arguments. A total of 5 ANOVAs (for each partner) were conducted. Men in the NDDV group showed smaller differences in skin conductance level (SCL) from baseline ($M = -.09$, $SD = .53$) than DDV men ($M = .82$, $SD = 1.23$), $F(1, 23) = 5.22$, $p < .05$. The direction of this difference indicates that men in the NDDV group, on average, showed smaller reductions in skin conductance levels as the nonviolent argument commenced than DDV men. As skin conductance is thought to be related to physiological arousal, these findings suggest that NDDV men were less physiologically aroused during the nonviolent argument interactions than DDV men.

DISCUSSION

What does this study tell us about the stability of violent relationships? Overall, our findings offer support to the growing consensus that violent relationships are more likely to end than previously thought. We found that over one third (38%) of the DV couples in our study had separated or divorced by 2-year follow-up. This is an unusually high separation/divorce rate, given the relatively brief 2-year time span of this study. Some might be suspicious of this rate, since it treated separation and divorce as equivalent, when in fact separation can be temporary in those instances when battered women return to their abusive partners. In our sample, we contacted the couples who were separated at Time 2, approximately 3 years later (in 1995). We located 85% of them, and in all cases, either the separated couples were now divorced, or they were still separated. All of the couples divorced at Time 2 remained divorced 3 years later. Moreover, when we interviewed the wives in 1995, and in some cases the ex-husbands, we found that in each and every instance of separation or divorce it was the woman who initiated the separation. In short, this sample suggests that battered women do get out of abusive relationships, an impressively high percentage of them, even when focusing on a relatively brief 2-year time period.

And what about those who remained together? Surprisingly, more than half of the batterers showed substantial decreases in the frequency of violence over the 2-year period. However, there are several reasons why these results are misleading. First, we were unable to contact all of our subjects for Time 2 assessment. It is possible that a substantial number of those men unavailable at Time 2 continued to batter, and therefore the actual rate of men who decreased their violence may be lower. However, we should note that the men unavailable at Time 2 did not differ significantly at Time 1 on any of the variables reported in this paper, including severity of violence and emotional abuse, from those men who were available at Time 2. Second, only 7% ($N = 1$ man) fully desisted from violence, a figure that is considerably lower than in previous studies. Perhaps the discrepancy can be accounted for by the fact that our sample was a severely violent one. For example, when Leonard and his colleagues looked at their severely violent subsample, their rates of desistance were only 13%, not much higher than those found in our study. Third, even though physical abuse decreased in 54% of the batterers who were still with their wives at Time 2, their emotional abuse did not decrease. In fact, there may be an inverse relationship between physical and emotional abuse after the physical abuse has been established: once control is established, actual physical violence might not be as necessary to maintain it (Jacobson & Gottman, in press). Instead, an abusive man's control can be maintained simply by con-

tinuing intermittent threats and more general emotional abuse. It is understandable why batterers would be shaped by natural contingencies into relying increasingly on emotional abuse over time. Physical and sexual abuse are against the law, and thus have both reinforcing (maintaining control) and punishing (legal sanctions) consequences. Emotional abuse, on the other hand, is not against the law. If control can be maintained by emotional abuse alone, with an occasional act of violence, it is not unrealistic to predict a gradual but increasingly exclusive reliance on emotional abuse. For this reason, it is important that, in evaluating treatment programs for batterers, emotional as well as physical abuse be considered in the criteria for recidivism.

We will examine our additional findings according to the two guiding principles stated in the introduction, where applicable. These interpretations should be treated cautiously until they are tested more rigorously. Our principles need to be defined more precisely in order to be tested more definitively, and we cannot be sure that our findings are not affected by the inflated alpha levels. The best we can say at this preliminary stage is that the data are consistent with certain principles and need to be explored further.

What sets the 62% of couples who remained together apart from the 38% who split up? Wives were more likely to leave husbands who were more emotionally abusive (whether measured by questionnaires, e.g., isolation and degradation, or observed in the laboratory, e.g., husband contempt and general negativity), generally antisocial, and who showed greater physiological arousal in nonviolent arguments (which may have indicated alarm or perceived threat.) They were also more inclined to leave the higher their own marital dissatisfaction and the more they defended themselves in an assertive manner (i.e., defensiveness in marital interactions; higher levels of violence reported by husbands). Our basis for these inferences will be explained below. Similarly, for those couples who stayed together, violence was likely to remain high to the extent that the husbands were high on emotional abuse, domineering, and defensive behavior during arguments. However, neither wife dissatisfaction nor her defending herself was associated with the level of violence at Time 2. In other words, it mattered very much how dissatisfied the women were, and how they defended themselves, when they ended up leaving. But it appears that only husband's behavior is related to level of violence for couples who continued to live together.

Our first principle, that the more abusive the husbands, the greater the likelihood that the women would leave, was partially supported by our findings. Wives were more likely to leave husbands who were more emotionally abusive, especially when the husbands attempted to isolate them from the outside world. The increased emotional abuse was also evident in the observational data, where separated or divorced husbands had been more globally negative and particularly contemptuous toward their wives at Time 1. Their abusiveness may be related to a more general antisocial personality style, as suggested by the MCMI-II differences between separated/divorced and still-together men. At the very least, we found that the more general the violence and antisocial behavior, the more likely that the women would leave. Interestingly, physical abuse did not discriminate between women who left and women who did not. Thus, in some ways, severity of emotional abuse may be a better marker for the demise of an abusive relationship than frequency of physical abuse. This notion is consistent with our earlier observation, that over time, emotional abuse can take on as much or even greater aversive control than physical abuse. Finally, it should be noted that marital satisfaction was highly correlated with emotional abuse (with r 's ranging from .47-.66) but not significantly correlated with physical abuse ($r = .18$). This provides further evidence that, over time, emotional abuse is a more important factor than physical abuse in contributing to wives' marital dissatisfaction, and in driving them out of the marriage.

Our second principle, that women who manifested intolerance of violence (by defending themselves during laboratory arguments or by responding with violence of their own at home) would be more likely to leave, was also consistent with our findings. Women who were no longer in violent relationships at Time 2 had been much more dissatisfied with their marriages and more likely to physically defend themselves and/or retaliate against their abusive husbands than women who remained in violent relationships. The latter conclusion is derived from the predictive power of wife violence, based on husband reports. This measure was significantly correlated ($r = .38$) with wife reports of their own violence, thus suggesting that husbands were at least in part giving us accurate information. More important, the observational data suggested that the women who left were more likely to defend themselves assertively during arguments than women who stayed in abusive relationships.

This interpretation requires some elaboration. Wife defensiveness on the SPAFF proved to be a strong predictor of separation/divorce. We were curious about what wife behaviors this code was capturing, and turned directly to our videotaped interactions for answers. We discovered that the coding of defensiveness reflected women resisting and responding assertively, but not aggressively, to their partners' criticism, contempt, belligerence, and dominance. These women stuck to their points of view, but without being contemptuous or belligerent. They reacted quickly, assertively, and without humor toward their abusive partners. "Defensiveness" has a different meaning in an abusive relationship that it does in other relationships: women who defend themselves in nonviolent relationships are not taking risks, whereas in abusive relationships verbal defensiveness is courageous. This defensiveness code would be more aptly titled "defending oneself assertively."¹¹

A portrait of those couples whose violent marriages end begins to emerge. The wives were intolerant of the abuse and defended themselves despite the potential risks. The husbands were the most emotionally abusive and antisocial. The women who left the relationships were more dissatisfied with their marriages and more upset during the arguments (as evidenced by their higher levels of physiological arousal) than the women who stayed.

A third principle has emerged from our empirical findings, primarily as grist for the future research mill. Our data are consistent with the hypothesis that batterers who are particularly threatened by challenges to their control are more likely to lose their wives. Husbands who were separated or divorced showed more dissatisfaction with the marriages, and greater alarm reactions during the verbal arguments than the husbands whose marriages continued. The alarm response, measured by finger pulse amplitude, suggests preparation for battle, and that the alarmed party is responding to a perceived threat. When combined with the "defensiveness" data, we think that men who are particularly concerned about losing control are more likely to act in ways which in turn lead to their wives ending the relationships. This hypothesis is further strengthened by the predictive power of men's perceptions that the wives are violent. Even though their perceptions appear to be somewhat accurate, the correlations with wife reports of their own violence are small in magnitude. This suggests that men are either reporting violence that they know is not occurring, in order to rationalize their own violence, or interpreting their wives' behavior as violent when in fact it is merely assertive.

What can this study say about changes in violence among those couples who remain together? Overall, we saw that the course of violence and emotional abuse is remarkably variable among still-together couples. Roughly half of our sample continued to have essentially the same frequency of violence over a 2-year period, while the other half substantially reduced their frequency over that same period. This decrease is worth understanding, despite the almost complete absence of desistance and the continued high rates of emotional

abuse. Our data are consistent with the principle that the men who maintained high levels of violence were particularly 'bad apples' within an already rotten group. They were more likely to have used degrading forms of emotional abuse. In our laboratory interactions, these men were significantly more domineering, belligerent, and contemptuous toward their wives at both time points. In short, the men who continued high rates of physical violence were more verbally aggressive than those whose violence decreased. We found no wife behaviors that influenced the longitudinal course of violence in the marriages that remained intact; only the husband's level of global negative affect and degrading emotional abuse related to continued high rates of violence. It may be that the only reliable pathway that women have for cessation of violence is to leave the relationship. Some form of physical violence continued in almost all of the still-together couples. Even if we tentatively consider de-escalation of violence as an intermediate positive outcome, women appear to have little influence on whether violence continues or de-escalates. Our findings confirm the widespread notion, supported in our own previous research, that there is little, if anything, that women can do to diffuse their partner's violent behavior (Jacobson et al., 1994).

Because of the exploratory, hypothesis-generating nature of this study, our findings must be interpreted with caution. There are important limitations to this study. First, our sample size was small, which means that few cases, which may be unrepresentative, could have an inordinate influence on the findings. Second, there are several variables that have been shown in previous work to predict wife leaving (e.g., wife's resources, attitudes toward violence) that were not directly measured for this study. Future research that includes such variables would provide a more complete picture of the processes by which women get out of abusive relationships. Third, we were limited by the number of variables we could include in our discriminant function analysis. Even though we selected variables for theoretical and empirical reasons, results may have been different if we had selected a different subset of variables. Fourth, although only a small percentage (18%) of batterers in this study were currently in treatment, it is possible that treatment may have been an influence.

We looked more carefully at the relationship between therapy and our 2 criterion variables, decreases in violence and marital status, to better understand what role, if any, therapy played. We did not find a significant relationship between husbands (or wives) being in therapy and decreases in husband violence. Those who decreased their violence across time were no more likely to be in therapy (30.8%) than those who did not decrease their violence (33.3%). Only 1 of these batterers was in gender-specific treatment for violence, and that subject continued to be severely violent at Time 2. Therefore, therapy is not a compelling explanation for changes in violence in our sample. When we examined therapy and the likelihood of separation/divorce, we were somewhat alarmed to find that treatment was significantly related to women staying in abusive relationships: 30% of husbands in the still-together group were in therapy compared to 0% in the separated/divorced group. It may be that a moderate percentage (roughly one third) of the women who stayed in abusive relationships felt that a husband in therapy was a good prognostic sign. Unfortunately, only about half of these men actually decreased their violence and only one desisted from violence altogether. Further, psychological abuse did not decrease, on average, for any of these men. These findings support previous research suggesting that battered women are more likely to remain with husbands in treatment (Gondolf, 1988), even though therapy may not be helpful for many batterers (Rosenfeld, 1992). However, caution should be used in interpreting these findings: with only 18% of husbands in our sample in any form of therapy, treatment cannot substantially account for our results.

We intend to replicate these findings, using a prospective design with clearly operationalized predictor variables, including a structured interview. Each of our 3 principles will be defined before, rather than after, the fact, and we intend to examine them with a larger, more representative sample of batterers.

Our findings do not have immediate clinical implications. Even if these and other principles are confirmed by future research, they do not easily translate into advice for battered women. There are important differences between “markers” of divorce or continued violence, on the one hand, and clinical strategies, on the other hand. We have tentatively identified markers of change in marital status as well as violence, but they are simply correlations. They do not imply that battered women who are taught to defend themselves will be more likely to leave an abusive relationship safely. In fact, it could prove risky to give battered women such advice, since the possibility of assault can increase when women try to get out of violent marriages. Not only are rigorous longitudinal replications necessary, but so are experimental designs. No matter how many markers we can reliably identify, until we can isolate causal connections between any of our predictors and the criteria, they should not be considered in treatment planning or in criminal proceedings against batterers.

NOTES

¹Several analyses have smaller numbers due to either missing data at Time1 or unavailability of subjects at 2-year follow-up.

²We used wife reports to classify husbands as DV for the following reasons: (a) We were primarily interested in husband-to-wife violence; (b) we expected many of the husbands to deny that they were violent; (c) we reasoned that if we only chose couples whose husbands acknowledge that they were violent, we would end up with a very unrepresentative sample. As it turned out, husbands' CTS scores of their own behavior were within the moderate to severe range on domestic violence, and 54 of 57 husbands in the DV condition admitted to at least some violence toward their wives.

³Although couples were instructed to engage in problem discussions, all discussions resulted in nonviolent arguments. Therefore, although traditionally referred to as “marital problem discussions,” we have chosen the label “nonviolent argument,” as it most accurately reflects the true nature of the interaction. Given the potential risk of these nonviolent arguments to escalate to general violence in these relationships, we implemented extensive debriefing and safety procedures. These procedures are detailed in Gottman et al. (1995).

⁴For analyses where the number of statistical tests is greater than that reported in results tables, we indicate the total number of analyses performed at the beginning of each subsection.

⁵The two subscales that differentiated the groups were highly correlated in this sample: the isolation and degradation scales correlated .80.

⁶Since contempt is included in this GNA variable, this analysis overlaps with the comparison of contempt between groups, which yielded a significant result. To ensure that the differences between groups on overall negative affect were not simply the result of differences between groups on contempt, we subtracted contempt from the GNA variable (leaving belligerence, defensiveness, and domineering) and then compared groups on this variable. The husbands from the separated/divorced group continued to show higher levels of global negative affect, even when contempt was removed from the variable. Further, in support of our hypothesis that the finding of low neutrality among separated/divorced men was related to high levels of global negative affect, we found that our global negative affect variable correlated $-.89$ with the neutrality code across both groups.

⁷The antisocial and narcissistic scales for DV men correlated .72.

⁸See Method section for elaboration on study's domestic violence criteria. Note that since the CTS measures violence over the past year, our domestic violence criteria at 2-year follow-up do not

encapsulate the entire 2-year period from initial (Time 1) assessment. That is, we only collected reports of violence occurring in the year prior to the follow-up assessment.

⁹Wife and husband age were not significantly correlated with any of our criterion variables.

¹⁰The only codes that correlated significantly with wife defensiveness were wife domineering (-.30) and wife neutrality (.68).

¹¹This SPAFF defensiveness code differs from the code reported in Gottman et al. (1995). The SPAFF codes reported in this paper were obtained from a new, more reliable version of the SPAFF. The 'new' wife defensiveness code is uncorrelated to the old code.

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Acknowledgment. This research was supported by a Research Scientist Award and a Research Career Development Award, Level II.

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