

Multivariate Models of Men's and Women's Partner Aggression

K. Daniel O'Leary, Amy M. Smith Slep, and Susan G. O'Leary
Stony Brook University, State University of New York

This exploratory study was designed to address how multiple factors drawn from varying focal models and ecological levels of influence might operate relative to each other to predict partner aggression, using data from 453 representatively sampled couples. The resulting cross-validated models predicted approximately 50% of the variance in men's and women's partner aggression. The 3 strongest direct predictors of partner aggression for men and women were dominance/jealousy, marital adjustment, and partner responsibility attributions. Three additional direct paths to aggression for men were exposure to family-of-origin aggression, anger expression, and perceived social support. The 1 additional direct path for women was a history of their own aggression as a child or teenager. Implications for more integrative theories and intervention are discussed.

Keywords: partner abuse, domestic violence, partner aggression, multivariate prediction, risk factors

Aggression against intimate partners has adverse impacts on both individuals and relationships. Nearly 3 decades ago, the negative effects of male partner aggression were described clinically by Walker (1979), and since then the impact of partner aggression against women has been empirically documented in scores of studies. Specifically, partner aggression is associated with major depressive episodes and posttraumatic stress disorder in women (Campbell & Lewandowski, 1997; Cascardi, Langhinrichsen, & Vivian, 1992; Cascardi, O'Leary, & Schlee, 1999). Both women and men are injured by their aggressive partners, but women's injury rates are higher in representative (Stets & Straus, 1990) and marital clinic samples (Cascardi et al., 1992). The adverse effects of partner aggression against men have been much less studied, but longitudinal studies show that physical aggression against men is associated with marital discord and divorce (Lawrence & Bradbury, 2001; O'Leary et al., 1989). Further, a cross-sectional, nationally representative study on partner aggression found it to be associated with poorer health, depressive symptomatology, substance abuse, and injury for both men and women (Coker et al., 2002).

Partner aggression in the context of conflict and arguments has been described (Straus, Hamby, Boney-McCoy, & Sugarman,

1996) as including both verbal/psychological aggression, which ranges from relatively mild instances of yelling and name calling to threats of physical violence and destruction of the partner's property, and physical aggression, which ranges from pushing and shoving to choking and using a lethal weapon. Prevalence of verbal/psychological aggression is quite high, and this type of aggression is present in most relationships at least occasionally (e.g., O'Leary & Williams, 2006; Straus & Gelles, 1990). Prevalence of physical aggression was estimated at approximately 16% in a nationally representative sample of couples of all ages (e.g., Straus & Gelles, 1990) and characterized 49% of the young couples in the representative community sample that is the focus of this study (Slep & O'Leary, 2005). Younger populations report a higher prevalence of aggression than older populations (O'Leary & Woodin, 2005). The construct of partner aggression as used herein is related to but is not synonymous with terms such as *domestic violence*, *intimate partner violence*, and *battering*. Definitions of these terms vary widely (e.g., O'Leary & Jacobson, 1997; Saltzman, Fanslow, McMahon, & Shelley, 1999), and they are reserved by a growing number of investigators for aggression that has, or has a reasonable potential to have, an impact (e.g., fear, distress, injury; see Heyman & Slep, 2006).

Several theories of partner aggression have been influential in shaping public policy as well as research regarding risk factors for partner aggression. The most notable theories are the feminist perspective, in which power and control by men are the dominant constructs (Pence & Paymar, 1993); the dyadic relationship perspective, in which relationship discord and relationship behaviors are central constructs (Riggs & O'Leary, 1996); and the psychopathology perspective, which emphasizes individual problems, such as emotional dysregulation and alcohol abuse (Dutton, 2006; Hamberger & Lohr, 1989). These focal perspectives have led to the empirical validation of many factors associated with partner aggression (see Schumacher, Feldbau-Kohn, Slep, & Heyman, 2001; Stith, Smith, & Penn, 2004, for reviews), but none of the focal perspectives accounts for most of the variance in partner aggression. Further, although research within these theoretical perspectives continues to advance and become more sophisticated,

K. Daniel O'Leary, Amy M. Smith Slep, and Susan G. O'Leary, Department of Psychology, Stony Brook University, State University of New York.

Preparation of this article was supported by National Institute of Mental Health Grant R01MH57985. To obtain measures developed specifically for this study, readers may e-mail Amy M. Smith Slep.

We would like to acknowledge the monumental efforts of all those involved in this project, including Cheryl Van Dyke, Dan O'Leary, Bonnie Rainey, Camilo Ortiz, Michael Lorber, Bob Kelsey, Debbie Leung, Evelyn Flaherty, Patti Fritz, Jeff Snarr, Mat Williams, and Heather Foran. We would also like to thank all of the undergraduate research assistants who worked on the telephone survey and helped with data.

Correspondence concerning this article should be addressed to Amy M. Smith Slep, Department of Psychology, Stony Brook University, State University of New York, Stony Brook, NY 11794-2500. E-mail: amy.slep@stonybrook.edu

this research has resulted in interventions to reduce perpetration of partner aggression that have only very small effects (see Babcock, Green, & Robie, 2004).

Dutton (1985) argued that researchers could improve their understanding of partner aggression by examining a broader range of potential causes that vary in their ecological level of origin and level of influence, with an eye to understanding how these factors fit together. Ecological levels described by Bronfenbrenner (1979) included macrosystem (cultural beliefs and values, societal), exosystem (forces in the system in which a family is embedded, contextual), and microsystem (household or relationship and ontogenetic, or individual) factors. Describing risk factors in terms of such levels does not constitute any particular set of predictions but rather provides a heuristic to guide more specific theorizing. Perhaps cross-perspective integration of many potential causes assessed across multiple ecological levels might be a necessary step in the development of more effective interventions. Some multivariate models have been tested that evaluate how subsets of predictor variables within a focal perspective relate to one another and to partner aggression (Capaldi, Shortt, & Kim, 2005; Leonard & Senchak, 1996; O'Leary, Malone, & Tyree, 1994; Riggs & O'Leary, 1996; White, Merrill, & Koss, 2001). However, to date, overarching, multivariate theories have not been clearly articulated, and little is known about how multiple factors drawn from varying focal perspectives and across different levels of influence operate relative to each other to potentiate partner aggression. The purpose of the present research, therefore, was necessarily exploratory and not designed to pose or test a specific, all-encompassing model of partner aggression. Rather, our goal was to use feminist, dyadic relationship, and psychopathology perspectives and the full range of levels of potential risk factors as the starting point. We then explored how this wide range of variables might together predict variance in men's and women's partner aggression to facilitate the integration of extant focal perspectives and to serve the heuristic purpose of stimulating the development of more cross-perspective theories regarding how risk factors relate to one another to predict partner aggression.

The partner aggression variable that we chose to predict incorporates the variety and frequency of both psychologically and physically aggressive conflict tactics. Psychological and physical aggression were highly correlated ($r_s = .57$ and $.65$ for men and women, respectively) in the current sample. In addition, the omnibus partner aggression variable for both men and women was able to be transformed to a near normal distribution, which facilitated the evaluation of integrative models. We recruited a large sample of community couples who were parents of 3–7-year-old children using a representative sampling frame. We recruited parents so that we could conduct similar work examining risk factors for parental aggression (Slep & O'Leary, in press) and examine how the different types of family aggression relate to each other (Slep & O'Leary, 2005). Evaluating risk factors for partner aggression in a community rather than an aggressive sample should have meaningful implications for prevention and early intervention efforts.

Findings consistently indicate that both men and women engage in partner aggression, especially in community samples (Archer, 2000). Studies in which the aggression of both men and women is predicted have generally found more common predictors of aggression than unique predictors (O'Leary et al., 1994; O'Leary &

Slep, 2003; Riggs & O'Leary, 1996; White et al., 2001), although some important differences exist. For example, Ehrensaft, Moffitt, and Caspi (2004) found that men who engaged in clinically abusive behavior, as compared to nonclinically significant abuse, exhibited long-standing disinhibitory pathology. Comparable physically abusive women did not show similarly extensive pathology. In addition, the consequences to men and women were different in the relationships characterized by clinically abusive behavior. More women than men reported that they needed medical care. Stuart et al. (2006) found few differences between men and women arrested for domestic violence, except that trait anger was associated with relationship discord for men but not for women. Furthermore, the feminist perspective was developed to explain men's partner aggression—emphasizing variables related to power and control—and therefore may be less applicable to women's aggression. White et al. (2001) stated that the most interesting finding of their research with Navy recruits was “the remarkable similarity between the models for men and women” (p. 921). However, they were able to predict somewhat more variance in men's physical aggression than in women's physical aggression. Therefore, they argued that explanatory models should be sensitive to gender differences. To preserve our ability to detect potential gender differences, we chose to develop and test models for men and women separately. We expected the resulting models to be somewhat similar for men and women but likely different in important ways. For example, on the basis of the feminist perspective and data showing that aggressive men are controlling (Tolman, 1989) and that men are more likely than women to murder current and former partners in response to severe jealous feelings (Wilson & Daly, 1993), we thought that dominance/jealousy might play a greater role in the men's model than in the women's model.

Our decisions about which predictor variables to include were guided by the empirical research as it existed when the study was designed in 1996. We selected variables that represented three ecological levels described by Dutton (1985). Societal (exosystem) variables included education, husband's occupational status, age, and income disparity. Other sociological and social network variables included family income, family size, perceived social support, negativity of life events, perceived stress, and family-of-origin exposure to aggression. Relationship (microsystem) variables included marital adjustment (i.e., relationship satisfaction and functioning), dominance/jealousy (i.e., behaving in a jealous or controlling way toward one's partner, not including acts of verbal or physical aggression), perceived power imbalance between the partners, and marital status. Finally, individual (ontogenetic) variables included affective characteristics (i.e., anger expression; anger experience; and flooding, or feeling overwhelmed by a partner's anger), physiological reactivity (parasympathetic and sympathetic peripheral nervous system activation in response to partner conflict), impulsivity, attributions of partner responsibility for unpleasant behavior, depressive symptoms, unrealistic or perfectionistic expectations of the partner, endorsement of attitudes justifying physical partner aggression, childhood history of aggressive behavior, and alcohol problems.

We developed models of partner aggression in one randomly selected portion of the men's and women's samples and cross-validated the final models in the other portion of the samples to help compensate for sample-specific overfitting, which is likely with an exploratory analytic approach. Although we did not seek

to test a formal a priori model, we did have some general expectations about the form of the final model. On the basis of published meta-analyses showing strong effect sizes for relationship-level predictors (e.g., Schumacher et al., 2001; Stith et al., 2004) and the longitudinally predictive power of such variables, we expected variables such as marital/relationship adjustment and dominance/jealousy to figure prominently in a final models (for individual studies supporting our predictions regarding these two constructs, see, e.g., O'Leary & Slep, 2003; Pan, Neidig, & O'Leary, 1994). These two variables are most typically studied within separate focal traditions—marital adjustment within the dyadic perspective and dominance/jealousy within the feminist perspective. Thus, understanding the extent to which the two constructs relate to each other, in addition to partner aggression, should inform future integrative efforts. On the basis of the above-mentioned meta-analyses, we also expected that individual characteristics that could change over time or context, such as anger and responsibility attributions, would appear proximally in the models. We thought family-of-origin aggression and other historical variables might predict partner aggression distally, through relations with more temporally proximal variables. Finally, sociodemographic factors are typically considered markers for, rather than direct causes of, partner aggression. Therefore, we thought they might also exert their effects distally and might share substantial variance with other variables.

Method

Participants

Four hundred fifty-three couples participated in the study. Participants were recruited from 1999 to 2002 through a random digit dialing procedure modeled after those used in the 1985 National Family Violence Survey (Louis Harris & Associates, 1986). Whenever a call reached an adult, the respondent was told that the caller was from the university and was looking for families who might qualify for a study of how families cope with conflict. A brief demographic interview was administered to all willing respondents to determine study eligibility. To be eligible, respondents had to have been living as a couple for at least a year, be

parenting a 3–7-year-old child who was the biological offspring of at least one of the parents, and be able to complete questionnaires in English. Screened respondents who were eligible for the study immediately completed a slightly longer telephone interview about family functioning. Finally, eligible, interested respondents were contacted by a project director, who described the project in more detail and scheduled interested respondents' initial appointments to participate in the main study. The random digit dialing procedure resulted in phone respondents who were fairly representative of the county's population, as determined by comparisons to the 2000 U.S. Census, and in study participants ($N = 453$) who were quite similar to those who qualified for the study but chose not to participate ($n = 1,362$; see Slep, Heyman, Williams, Van Dyke, & O'Leary, 2006; Slep & O'Leary, 2005, for an extensive report on random digit dialing and representativeness evaluations). Sample demographics are detailed in Table 1.

Procedure

Couples came to the office for two 3-hr sessions or one 6-hr session. They were told that the study was designed to learn about how families cope with conflict and why they handle problems in the ways they do. Conducting this study necessitated the collection of self-reports of the full range of partner and, although not reported herein, parent-to-child aggression. Two options were available for collecting such data: (a) Collect data anonymously, or (b) ask aggression questions nonanonymously. After careful consideration, we determined that collecting completely anonymous data was the best option. With anonymity, one can maximize the validity of reports while minimizing risk to participants as a result of their participation. Through procedures detailed below, all participants had access to clinical services. Prioritizing anonymity as we did with this community sample might not be appropriate with high-risk samples or when procedures are used that might increase risk of aggression.

Our anonymity and confidentiality procedures were carefully explained both verbally and in the written consent form approved by the institutional review board. Numbers linking husbands and wives were randomly assigned to them as a couple following

Table 1
Participant Characteristics

Variable	%		<i>M</i>		<i>SD</i>		Range	
	H	W	H	W	H	W	H	W
Age (years)			37	35.1	6.0	5.0	21–57	21–48
Education (years)			14.2	14.3	2.3	2.2	10–20	10–20
Minority	20.8	18.1						
Employed full time	93.2	30.0						
Employed part time	2.4	37.7						
Family income (\$)			81,498		43,099		4,700–500,000	
Married	94.5							
Family size			4.6		1.2		1–10	
Mild psychological aggression	96.5	98.0						
Severe psychological aggression	40.0	42.6						
Mild physical aggression	34.9	42.2						
Severe physical aggression	13.5	19.9						

Note. Prevalences are based on the maximum of self-reported perpetration and partner-reported victimization. H = husband; W = wife.

consent, and no records were made that would link their identity to their data. Participants were told that no one would read their written responses while they were in the office and that after they completed participation, written responses would be anonymous. They were also told that any information they volunteered verbally to the research staff, and not as a written response on a questionnaire, was not anonymous but was confidential and was subject to the normal limits of confidentiality. After consent was obtained, the couple were separated to independently complete questionnaires and to complete other procedures. All participants received a family resource list that included abuse hotlines and other abuse-related services, and couples were paid \$250 for their time.

In the latter half of the protocol, participants were seated in a comfortable chair in a private room and shown four professionally acted videotaped scenes of conflictual interactions between a husband and a wife, each approximately 90 s in length, on a large, color monitor. Two scenes included an African American couple and two a European American couple. Scenes began with a disagreement that escalated, with both partners becoming obviously upset. The scenes ended with the conflicts unresolved. All scenes contained verbal but not physical aggression. Two of the disagreements were initiated by the female partner and two by the male partner; this was counterbalanced with the race of the actors. Conflict topics were based on the literature. Money is the most frequently reported couple conflict topic in parents of young children (Storaasli & Markman, 1990), arguments about the children are the most likely to escalate to violence (Straus, Gelles, & Steinmetz, 1980), and arguments centered on navigating intimacy and autonomy and on disrespect distinguish partner violent and nonviolent men (Browning & Dutton, 1988). When shown the scenes, participants were asked to "put yourself in the position of the (wife/husband) while you watch the scene. Even if you

wouldn't handle things exactly the way (she/he) is, I want you to imagine that you are anyway." Physiological reactivity and anger in response to the vignettes were assessed (detailed below).

Measures

Psychometric characteristics of all measures are described in Tables 1 and 2. Constructs that were based on standardized versions of more than one measure or subscale (i.e., physiological reactivity and alcohol use) are not included in the table. All preexisting measures have evidence of adequate reliability and validity, as documented in the citations provided. Because of space considerations, this information is not repeated herein. Because structural equation modeling is sensitive to violations of multivariate normality (West, Finch, & Curran, 1995), data transformations were considered for variables when the skew and/or kurtosis exceeded four times the standard error (Tabachnick & Fidell, 2001). The least extreme transformation that resulted in improved distributions was used. Transformations are noted in Table 2. Measures developed for the current study may be obtained from Amy M. Smith Slep.

Conflict Tactics Scale—II. The Conflict Tactics Scale—II (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) is a 78-item inventory that assesses the frequency (on scales ranging from 0 = *never* to 6 = *more than 20 times*) of perpetration of and victimization by partner conflict behaviors in the past 12 months. Aggression frequencies on the 8 psychological aggression items (i.e., "insulted or swore," "called partner fat or ugly," "destroyed something of partner's," "shouted or yelled," "stomped out," "accused partner of being a lousy lover," "did something to spite partner," and "threatened to hit or throw something") and the 12 physical aggression items (i.e., "thrown an object that could hurt," "twisted

Table 2
Measure Alphas, Means, and Standard Deviations of Untransformed Scores

Construct	α		<i>M</i>		<i>SD</i>	
	H	W	H	W	H	W
Any aggression ^a			0.7	0.8	0.6	0.6
Experienced anger reactions ^b	.85	.80	2.7	3.9	0.9	0.7
Family-of-origin aggression ^c	.67	.61	0.7	0.7	0.5	0.5
Childhood history of aggression ^c	.84	.88	0.8	0.5	0.6	0.5
Anger expression			22.4	22.3	8.7	8.6
Depressive symptoms ^c	.87	.91	6.7	8.9	5.9	7.8
Impulsivity ^c	.89	.86	0.4	0.4	0.4	0.3
Perceived social support ^a	.86	.83	34.0	35.0	4.8	4.8
Perceived stress	.85	.85	24.4	26.3	7.1	7.4
Negative life events ^d			5.3	6.2	6.4	6.9
Unrealistic expectations of partner	.82	.83	1.4	1.4	0.6	0.6
Attitudes approving of partner aggression ^d	.83	.89	0.7	0.4	0.7	0.3
Marital adjustment ^c	.93	.94	107.5	106.5	16.9	18.8
Emotional flooding by partner ^a	.92	.92	2.0	1.8	0.8	0.8
Dominance ^a	.71	.72	1.3	1.3	0.3	0.3
Jealousy ^a	.74	.81	1.4	1.5	0.5	0.5
Power imbalance ^a	.60	.58	0.4	0.4	0.3	0.3
Partner responsibility attributions ^d	.93	.92	2.6	2.5	1.0	1.0
Husband's occupational prestige			48.0		13.0	
Income disparity ^a			0.2		0.2	

Note. H = husband; W = wife.

^a Inverse transformed. ^b Log transformed (women). ^c Square root transformed. ^d Log transformed.

arm or hair," "pushed or shoved," "grabbed," "slapped," "beat up," "burned or scalded on purpose," "kicked," "slammed against a wall," "choked," "punched or hit with a object that could hurt", and "used a knife or gun") were used to determine a participant's aggression score, which was based on both self-report of perpetration and partner report of victimization (e.g., how many times the husband said he pushed or shoved his wife and how many times the wife said her husband pushed or shoved her). As is typically done when data from both partners are available (e.g., Schafer, Caetano, & Clark, 1998), if the husband and the wife differed in their ratings on a particular item (e.g., how frequently the husband pushed the wife), then the higher rating prevailed. We averaged these maximum scores across all 20 aggression items using the 7-point scales to yield an extent of any aggression score. This scoring strategy, initially proposed by Straus (1990), was chosen over converting ratings to frequencies of acts and summing over items, because (a) the 7-point scales incorporate both the variety and the frequency of aggressive acts in a more balanced way, coming closer to the construct of extent; (b) the frequency approach results in substantially more skewed distributions, making correlational analyses less appropriate; and (c) the two scoring approaches correlated greater than or equal to .90 for husband and wife aggression in the current sample.

Physiological reactivity. Coulbourn Instruments (Allentown, PA) LabLinc V series equipment was used to obtain skin conductance frequency and heart interbeat interval, which was transformed into heart rate per minute. Diastolic and systolic blood pressure readings were obtained with a Johnson & Johnson (New Brunswick, NJ) Dinamap unit. These measures were chosen because they capture related but not identical aspects of peripheral autonomic nervous system arousal and have all been related to family violence (see Lorber, 2004; Slep & O'Leary, 2001). An 8-min rest period occurred before participants viewed the partner conflict video vignettes. Baseline physiology was recorded for the final 4 min of an 8-min rest period that occurred immediately prior to the presentation of the conflict scenes. Reactivity scores for the video vignettes were the differences of the mean of each physiological measure across the last 60 s of each scene and the mean of the 4-min baseline. The last 60 s of each scene were chosen for the computation of reactivity scores because conflict was more intense during these sections of the scenes. Skin conductance reactivity required a square root transformation. The four physiological reactivity measures were subjected to exploratory factor analyses separately for husbands and wives. On the basis of these analyses and the relatively high bivariate correlations, all four measures were standardized and averaged, given that at least three measures were available for a participant. High scores indicate increases in the measure relative to baseline.

Experienced anger. At the end of each of the four conflict scenes and prior to the beginning of the next scene, participants were asked to rate "how you would have felt if you were the (wife) in that situation" on three 5-point scales assessing their subjective affective experience of anger, irritation, and annoyance (1 = *not at all* to 5 = *very strongly*). Ratings were averaged across items and across scenes.

Family-of-origin aggression. Using a modified version of the scale developed by Rosenbaum and O'Leary (1981), we asked participants 5 questions each about aggression directed toward them by their mothers, fathers, and siblings (if they had any) when

they were growing up as well as 7 questions about similar behaviors between their parents. These 22 items were rated on scales from 1 = *never* to 5 = *very often*. The means of each of these four subscales were averaged.

Childhood history of aggression. Participants were asked 12 questions (Riggs, O'Leary, & Breslin, 1990) about the frequency with which they physically fought with siblings, classmates, and friends during grade school; siblings, classmates, friends, and parents during junior high school; and siblings, classmates, friends, parents, and dating partners during high school on scales from 0 = *never* to 4 = *often*.

Expressed anger. The Anger Expression Index from the State-Trait Anger Expression Inventory (Spielberger, 1988) was computed from the Anger Expression—In, Anger Expression—Out, and Anger Control subscales, which involve 24 items that are rated from 1 = *almost never* to 4 = *almost always*.

Depressive symptoms. The sum of the 21 items on the Beck Depression Inventory—II (Beck, Steer, & Brown, 1996) is a widely used measure of depressive symptoms.

Impulsivity. We averaged the 20-item impulsivity axis of the Hyperactive—Impulsive subscale of the Adult Attention Deficit Disorders Evaluation Scales (McCarney & Anderson, 1996), rated 0 = *do not engage in this behavior* to 4 = *one to several times per hour*.

Perceived social support. The Interpersonal Support Evaluation List (S. Cohen, Mermelstein, Kamarck, & Hoberman, 1985) contains 40 items that are rated true or false. The number of items indicating presence of social support was tallied.

Perceived stress. The Perceived Stress Scale (S. Cohen, Kamarck, & Mermelstein, 1983) contains 14 items that are rated on scales from 1 = *never* to 5 = *very often*.

Negative life events. Negative intensity scores on the 47-item Life Experiences Survey (Sarason, Johnson, & Siegel, 1978) were summed.

Alcohol misuse and abuse. This construct was assessed with the 10-item Alcohol Use Disorders Identification Test (Allen, Litten, Fertig, & Babor, 1997) and an 8-item scale developed for this study that focuses on binge drinking and its sequelae in addition to alcohol dependence, which is the focus of the Alcohol Use Disorders Identification Test. Each measure was rated on 5-point scales with various anchors. Because the two scales were highly correlated ($r_s = .76$ and $.72$ for husbands and wives, respectively), the means for each measure were standardized and averaged. The summary score was log transformed.

Unrealistic expectations of the partner. Designed for this study (Foran & Slep, in press), the Relationship Expectations Scale consists of 13 items with minor differences between husband and wife versions. Both scales consist of items assessing mind reading (e.g., "Husbands should sense all their wives' moods"), sexual expectations (e.g., "Husbands in good relationships can always please their wives sexually"), disagreement expectations (e.g., "Arguing should not be tolerated"), and household responsibility expectations (e.g., "Wives in good relationships always get their chores done on time"). One item was gender specific and did not have identical content in the other gender's scale. The 13 items were subjected to psychometric analyses, and 10 and 9 items, rated from 1 = *strongly disagree* to 5 = *strongly agree*, were retained and averaged for wives and husbands, respectively.

Attitudes approving of partner aggression. Attitudes were assessed with the adult version of the Attitudes About Aggression in Dating Situations Scale (Slep, Cascardi, Avery-Leaf, & O'Leary, 2001). The 10-item scale asks respondents to rate their agreement, from 1 = *strongly disagree* to 6 = *strongly agree*, with an underlined physically aggressive action taken in the context of a dyadic conflict (e.g., "Gina calls Anthony a loser in front of their friends. Anthony slaps her").

Marital adjustment. The Dyadic Adjustment Scale (Spanier, 1976) is a widely used 32-item measure that assesses perceptions of marital satisfaction.

Flooding. Designed for this study (Heyman & Slep, 1998), the scale assesses a construct proposed by Gottman (1999), which he thought might be particularly relevant to men's conflict behaviors. Theoretically, when one is overwhelmed by another's negative emotions, one's abilities to cope are compromised, higher order cognitive processing suffers, and ending the aversive experience becomes paramount. Items assess feeling overwhelmed by the partner's anger (e.g., "I get so stressed when my husband blows up at me that I shut down"). This 15-item scale was subjected to psychometric evaluation. Nine items, rated 1 = *never* to 5 = *almost always*, were retained. The scale has concurrent validity, as evidenced by this article and Foran and Slep (in press).

Dominance/jealousy. A scale based on Kasian and Painter's (1992) factor analysis of the Psychological Maltreatment of Women Scale (Tolman, 1989) and used by Slep et al. (2001) assesses controlling and jealous behaviors perpetrated by and experienced by each partner (as is done with the Conflict Tactics Scale-II). One pair of items was dropped from the jealousy scale because participants clearly misread them. Of the remaining item pairs, 11 tap dominance, and 6 tap jealousy. Items were rated from 1 = *never* to 5 = *almost always*. We computed mean dominance and jealousy scores by averaging across self- and partner reports of the same activity with the same perpetrator. Because dominance and jealousy were strongly correlated ($r_s = .67$ and $.66$ for husbands and wives, respectively), the subscale scores were standardized and averaged to produce a combined dominance/jealousy score.

Power imbalance. A six-item scale developed by Blood and Wolfe (1960) assessed perceived power imbalance in the marital relationship. Each item asks "who has the final say" regarding six types of family decisions (e.g., having children). Response choices include *husband only*, *husband more than wife*, *husband and wife exactly the same*, *wife more than husband*, and *wife only*. Responses are scored as the absolute difference from the egalitarian response, with high scores reflecting a power imbalance.

Partner responsibility attributions. Constructed for this project, 10 of 30 items on the Partner Cognition Scale, rated on 6-point scales from 1 = *always true* to 6 = *never true*, assess the degree to which the participant attributes responsibility for his or her partner's undesirable or unpleasant behaviors to the partner (i.e., the partner has control over the behavior, is acting with a negative intent; e.g., "My husband tries to get me angry," "My husband is very demanding"). Items were reverse scored so that high scores indicated greater partner responsibility attributions. The scale has strong evidence of reliability and concurrent validity (Foran & Slep, in press).

Age. This variable was based on self-reported years of age.

Marital status. Marital status was coded dichotomously, as married = 1 and living together = 2.

Education. Participants' education was scored on a 6-point scale from 10th grade or less through doctoral degrees.

Family income. Family income was computed as the sum of the husband's and wife's self-reported personal income, log transformed.

Husband's occupational prestige. Husbands' occupational prestige was coded on the basis of Nakao and Treas (1994) with a 0 (*low prestige*) to 100 (*high prestige*) scale and was used in both the husband and the wife models because 70% of the wives were either unemployed or working part time, probably because of the young age of the children.

Family size. Family size was the number of individuals living in the household and was inverse transformed.

Income disparity. We calculated income disparity by dividing the wife's self-reported income by family income. Low scores indicate that the husband contributed more of the family income than the wife.

Results

Prior to conducting analyses, we examined all data for completeness and normality. At the item level, we used mean substitution to replace missing values as long as more than half of the items for a variable were available. We then examined all instances of related predictor variables to determine whether the level of interrelation and conceptual overlap was sufficient to support combining measures. All variables with interrelations of $r > .49$ were considered for combining. Because of conceptual dissimilarity, we chose to leave the constructs of perceived stress and depressive symptoms separate, as well as marital adjustment and dominance/jealousy. Other, more conceptually related variables were not sufficiently associated to support combining them into one construct. We were able to combine separate indexes of physiological reactivity, two measures of problematic alcohol use, and dominance and jealousy. After performing transformations, we examined all variables for the presence of outliers (i.e., scores more than four standard deviations above the mean). Clearly aberrant scores were deleted. Including these deletions, and at the variable level, fewer than 0.1% of the data were missing. The estimation maximization procedure in the SPSS Missing Values module was implemented to replace missing variable values. Zero-order intercorrelations of potential predictor variables and correlations of predictor variables with partner aggression are in Table 3.

Modeling Strategy

All analyses were conducted separately for men and women. To offer protection against our exploratory analytic strategy, we randomly divided our men's and women's samples each into two subsamples. This allowed us to develop the models in one subsample and then test the resulting model as an a priori hypothesis in the independent holdout sample. Given the likely complexity of the models, we chose to include more participants in our development samples, where decisions about which specific relations to include in the models were made (i.e., where individual parameters were the focus), and fewer participants in our cross-validation

Table 3
Correlations Among Transformed Variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. AGG	—	.08	-.18**	-.10*	-.05	-.04	-.09	.32**	.25**	.40**	.30**	.21**
2. NMAR	.09	—	-.11*	-.13**	.04	-.22**	-.18**	.09	.16**	.10*	.13**	.08
3. AGE	-.17**	-.21**	—	.18**	.02	.23**	.06	-.01	-.19**	-.10*	-.02	-.10*
4. EDU	-.14**	-.15**	.12**	—	.01	.36**	.49**	.01	-.06	-.08	.03	-.03
5. FSIZE	-.06	.03	.04	-.12*	—	-.08	.04	.03	-.05	-.05	-.04	-.08
6. FINC	-.05	-.20**	.30**	.29**	-.10*	—	.30**	-.04	-.09	-.11*	-.07	-.09
7. OCCP	-.07	-.18**	.10*	.16**	.04	.27**	—	-.06	-.11*	-.04	-.15**	-.08
8. STRS	.32**	.08	-.09	-.11*	.01	-.06	-.02	—	.19**	.47**	.56**	.15**
9. HIST	.21**	.16**	-.14**	-.10*	-.01	-.11*	-.01	.10*	—	.31**	.13**	.39**
10. ANG	.32**	.02	-.14**	-.05	-.07	-.08	-.07	.40**	.16**	—	.39**	.21**
11. DEP	.35**	.12**	-.18**	-.15**	.02	-.09	-.05	.68**	.20**	.37**	—	.17**
12. EXP	.19**	.07	-.06	-.07	-.06	.02	-.02	.17**	.49**	.15**	.24**	—
13. IMP	.21**	.13**	-.13**	.02	-.02	-.04	-.08	.32**	.27**	.42**	.35**	.17**
14. SOCS	-.20**	-.08	.05	.16**	-.02	.17**	.09	-.30**	-.18**	-.27**	-.36**	-.13**
15. NLIF	.22**	.14**	-.04	.03	-.03	-.09	-.06	.37**	.19**	.21**	.37**	.19**
16. ALC	.11*	-.01	.03	.02	.06	.07	.00	.06	.06	.12**	.04	.06
17. UNRX	.14**	.02	-.08	-.14**	.01	-.06	-.03	.00	.02	.00	.03	.01
18. APPR	.22**	.11*	-.20**	-.10*	.05	-.13**	-.16**	.17**	.20**	.24**	.17**	.07
19. SAT	-.58**	-.10*	.07	.07	.00	.00	.07	-.43**	-.14**	-.28**	-.41**	-.15**
20. ATTR	.56**	.10*	-.07	-.07	.06	-.05	-.02	.35**	-.07	.25**	.37**	.12**
21. PHYS	-.13**	-.13**	.10*	.08	.00	.05	.01	-.06	-.17**	-.10*	-.08	-.04
22. FLD	.41**	.08	-.04	.02	.06	-.01	-.05	.39**	.08	.26**	.38**	.13**
23. VANG	.03	-.01	.02	-.03	-.03	-.02	.00	.15**	-.06	.16**	.09	-.05
24. DOMJ	.65**	.13**	-.16**	-.08	-.06	-.06	-.03	.35**	.13**	.26**	.38**	.17**
25. INCD	.04	.15**	-.04	.22*	-.14**	.14**	-.21**	.04	-.01	.00	.01	.03
26. PIMB	.20**	.02	.00	-.01	.08	.00	.00	.22**	.03	.12*	.22**	.06

Note. Wives' correlations are below the diagonal; husbands' correlations are above the diagonal. All *Ns* = 453. AGG = any aggression; NMAR = not married; AGE = age; EDU = education; FSIZE = family size; FINC = family income; OCCP = occupational prestige; STRS = perceived stress; HIST = personal history of aggression; ANG = anger total; DEP = depressive symptoms; EXP = exposure to aggression; IMP = impulsivity; SOCS = perceived social support; NLIF = negative life events; ALC = alcohol use; UNRX = unrealistic expectations of partner; APPR = approval of partner aggression; SAT = partner satisfaction; ATTR = partner responsible attributions; PHYS = physiological reactivity; FLD = flooding; VANG = anger to partner videos; DOMJ = dominance and jealousy; INCD = income disparity; PIMB = power imbalance. * *p* < .05. ** *p* < .01, two-tailed.

samples, where the primary focus was on whether the proposed model fitted the data. Thus, our development samples included 278 men or women, and our cross-validation, or holdout, samples included 175 individuals. Development and cross-validation samples were compared on all potential predictor variables and the dependent variables with independent samples *t* tests. No significant differences were found for either men or women.

To allow us to begin structural equation modeling with the simplest model containing only variables uniquely and significantly predictive of aggression, we conducted a backward, stepwise regression analysis in which the dependent variable was husband-to-wife or wife-to-husband aggression and all predictors were entered on the first step. Backward, rather than forward, stepwise regression was selected because backward elimination is less sensitive to suppressor effects among predictors (J. Cohen, Cohen, West, & Aiken, 2003). The resulting predictors were used as the direct predictors in the initial stages of model development. For men, the variables retained in the regression equation were age, anger expression, marital adjustment, aggression in family of origin, perceived social support, partner responsibility attributions, perceived power imbalance, and dominance/jealousy. For women, the variables retained in the regression were education, history of aggression during childhood, anger expression, marital adjustment, partner responsibility attributions, and dominance/jealousy.

It is worthwhile to note that not all of these variables remained direct predictors of aggression in the final models.

Because of the number of hypothesized interrelations among the variables predicting partner aggression, we began structural equation modeling analyses by testing the direct prediction model, as informed by the stepwise regression analyses in the development samples. Beginning with the core model of direct predictors, we then added each additional predictor to the model. On the basis of the overarching notions detailed earlier in the article, the variables each predictor is known to relate to (e.g., stress and social support) were used to inform the initial placement of each predictor and initially model relations with other predictors. All other variables were initially placed as operating through at least one of the predictors already included in the model, consistent with the regression results. We examined modification indexes (i.e., Wald and Lagrange multiplier tests) when incorporating these more distal predictors; however, the plausibility and parsimony of relations were paramount while we were building the models. If the predictor was supported as having a path to at least one other predictor or the dependent variable in the model, it was retained. If no conceptually plausible predictive relations were found, the variable was set aside until later in the process. In other words, if the only plausible way variables related to other variables in the model was by being predicted by another predictor or by being

Table 3 (continued)

13	14	15	16	17	18	19	20	21	22	23	24	25	26
.21**	-.09*	.19**	.17**	.14**	.13**	-.50**	.46**	-.14**	.38**	.05	.65**	.10*	.10*
.00	-.20**	.16**	.10*	.04	.06	-.11*	.09	-.07	.03	-.06	.11*	.15**	.03
-.08	-.02	-.01	-.14**	-.05	-.07	-.01	-.01	.07	.08	.00	-.12**	.04	-.02
.19**	-.01	.06	.00	.02	-.02	-.02	.05	.01	.13**	.08	-.07	-.08	.13**
-.03	-.03	-.04	-.05	.02	.14**	.09	-.08	-.07	-.08	-.05	-.04	-.16**	.03
.03	.10*	-.11*	.10*	-.01	-.02	-.07	.03	.06	.04	.06	-.07	.12*	.01
.04	.05	-.05	.00	.01	.00	.01	.01	-.01	.02	.07	-.08	-.21**	.10*
.30**	-.31**	.30**	.21**	.15**	.07	-.39**	.29**	-.05	.42**	.18**	.34**	.08	.12**
.13**	-.06	.12**	.14**	.04	.11	-.24**	.15**	-.06	.13**	.02	.18**	-.02	.07
.43**	-.19**	.18**	.25**	.24**	.26**	-.38**	.36**	-.10	.32**	.23**	.39**	.12**	.16**
.33**	-.37**	.42**	.13**	.15**	.05	-.42**	.36**	-.01	.34**	.10*	.32**	.22**	.16**
.14**	-.09	.17**	.11*	-.06	.09	-.14**	.08	.01	.07	.03	.15**	.14**	-.03
—	-.16**	.19**	.27**	.10*	.16**	-.24**	.29**	.00	.34**	.21**	.26**	.06	.16**
-.14**	—	-.19**	.00	-.19**	-.13**	.32**	-.32**	.06	-.30**	-.05	-.21**	-.03	-.26**
.25**	-.10*	—	.18**	.03	.05	-.26**	.25**	.00	.22**	-.01	.25**	.13*	.14**
.13**	.14**	.14**	—	.13**	.23**	-.19**	.17**	.02	.17**	.13**	.25**	.04	.13**
-.05	-.03	-.05	-.01	—	.23**	-.14**	.14**	-.29**	.13**	.10*	.15**	.00	.18**
.12*	-.20**	.07	.11*	.04	—	-.13**	.22**	-.06	.16**	.14**	.20**	.10*	.18**
-.20**	.29**	-.31**	-.02	-.04	-.17**	—	-.61**	.06	-.49**	-.09	-.51**	-.08	-.29**
.18**	-.31**	.22**	.07	.08	.19**	-.66**	—	-.06	.61**	.10*	.46**	.11*	.26**
-.10*	.10*	-.02	-.07	.02	-.04	.05	-.03	—	-.12**	.07	-.08	-.02	-.01
.25**	-.29**	.20**	.10*	.01	.17**	-.53**	.62**	-.03	—	.12**	.35**	-.07	.19**
.02	-.06	.06	-.04	-.03	.02	-.07	.05	.05	.04	—	.04	.06	.09
.22**	-.21**	.31**	.13**	.12*	.18**	-.56**	.49**	-.12*	.43**	-.02	—	.14**	.18**
.05	.01	.12*	.09*	.01	.06	-.13**	.10*	-.09	.11*	.04	.11*	—	-.13**
.09	-.21**	.23**	.08	.02	.11*	-.33**	.29**	-.04	.14**	.03	.25**	-.02	—

associated with another predictor, with no pathway to aggression, they were set aside.

After all hypothesized predictors had been tested for possible inclusion in the final models, variables that had not been retained in the models were reexamined. We entered variables to determine whether their inclusion as predictors of any of the variables already included or of the dependent variable (i.e., partner aggression) received any support. To maintain maximum power for testing the models, we omitted from the final models variables that were only plausibly related correlationally (e.g., alcohol problems was positively related with social support but could not be thought of as predicting social support) or were related as an exogenous variable with no connection to aggression (e.g., age predicted family income, but family income did not predict any other variables in the model). Because of the complexity of our models, fully constrained multigroup analyses could not be conducted, as EQS 6.1 (Bentler, 2005) evidenced insurmountable convergence problems with the number of constraints necessary. Therefore, cross-validation of the models in the holdout samples was conducted in independent analyses.

All models were estimated with maximum likelihood robust techniques in EQS 6.1 (Bentler, 2005). Several fit indexes were used to evaluate model fit, including the root-mean-square error of approximation (RMSEA), the comparative fit index (CFI), Bollen's fit index (BL), and the average off-diagonal absolute stan-

dardized residuals (SR). Hu and Bentler (1998) suggested that values close to .95 for the BL and CFI and a value close to .06 for the RMSEA indicate good fit between the proposed model and the observed data. SRs with values less than .10 are considered to indicate good fit (Kline, 1998). The RMSEA should not be evaluated when sample size is less than or equal to 250 (Hu & Bentler, 1998). Therefore, RMSEA values in our cross-validation samples ($n = 175$) should be interpreted with caution.

Husbands' Partner Aggression

The final model of husbands' partner aggression from the development sample is presented in Figure 1. The parameter estimates in the figure are based on the full sample to ensure the most stable estimates possible. This model proved to be a good fit to the data in the development sample ($n = 278$; RMSEA = .05; CFI = .94; BL = .94; SR = .08). All freed parameters were significant. This model was then tested in the cross-validation sample ($n = 175$). The model proved to be a good fit to the data in this independent sample (RMSEA = .06; CFI = .93; BL = .93; SR = .08). It is important to note that the following variables were tested for inclusion in the model but were not retained: alcohol misuse/abuse, childhood history of aggression, experienced anger, physiological reactivity, family income, family size, income disparity, husband's age, attitudes approving of partner aggression, and

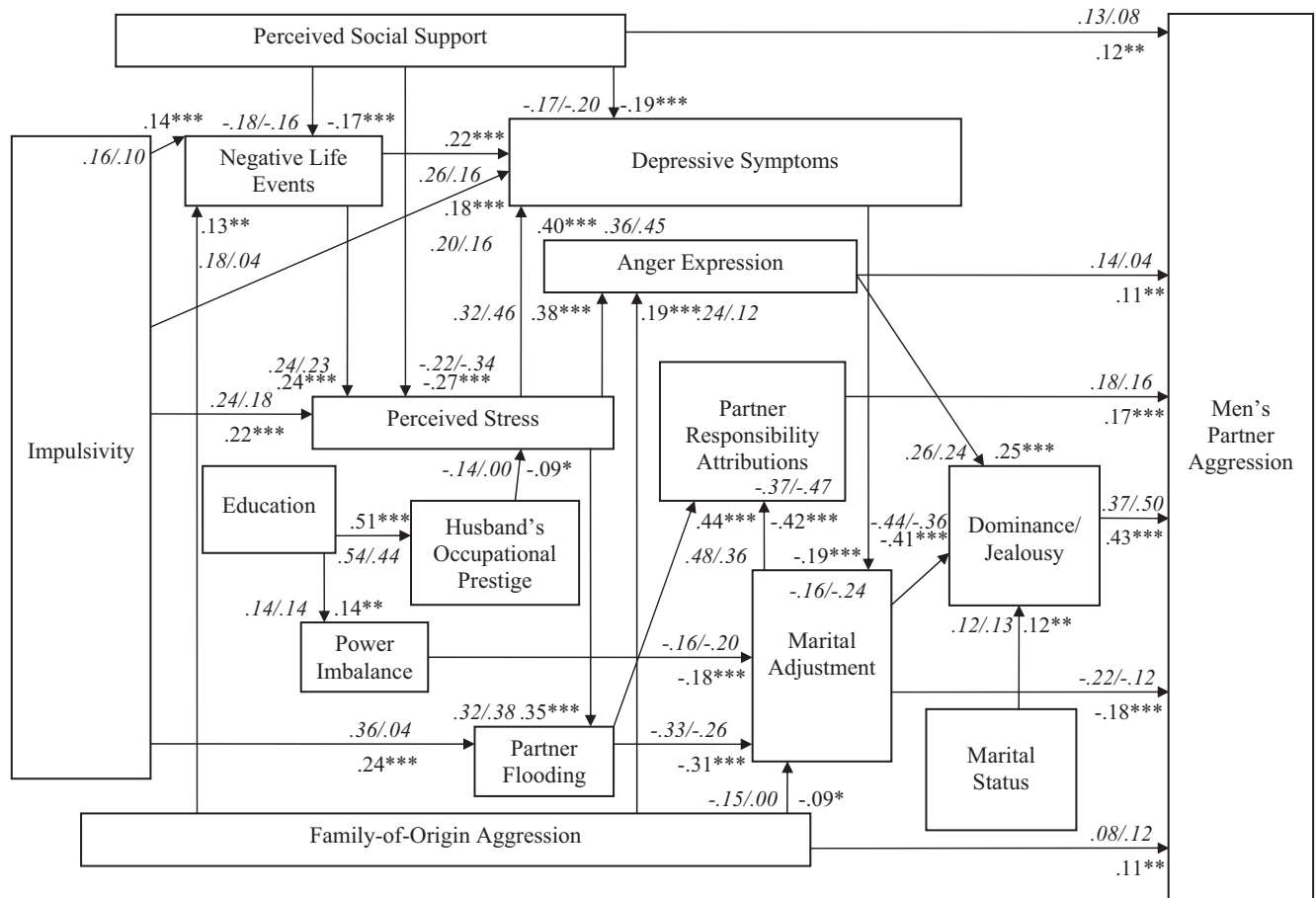


Figure 1. Final model of men's aggression. Nonitalicized path coefficients are based on the full sample ($N = 453$). Standardized path coefficients for the development ($n = 278$) and cross-validation ($n = 175$) samples appear in italics and are separated with a slash (development/cross-validation). In addition to the paths, the following variables and/or residuals were free to correlate: perceived social support and power imbalance, education and anger expression, anger expression and partner flooding, perceived social support and marital adjustment, impulsivity and anger expression, impulsivity and family-of-origin aggression, perceived stress and marital adjustment. * $p < .05$. ** $p < .01$. *** $p < .001$.

unrealistic relationship expectations. The final model accounted for 47% of the variance in husbands' partner aggression in the past year in the full data set.

Wives' Partner Aggression

The final model of wives' partner aggression from the development sample is presented in Figure 2. This model proved to be a good fit to the data in the development sample ($n = 278$; RMSEA = .05; CFI = .95; BL = .96; SR = .08). All estimated parameters were significant. This model was then tested in the cross-validation sample ($n = 175$). The model proved to be a good fit to the data in this independent sample (RMSEA = .06; CFI = .94; BL = .95; SR = .08). We reran the cross-validated model on the full sample of wives ($n = 453$) to obtain the most stable parameter estimates possible with these data. These estimates are included in Figure 2. It is important to note that the following variables were tested for inclusion in the model but were not retained: alcohol misuse/abuse, education, impulsivity, attitudes

approving of partner aggression, unrealistic partner expectations, experienced anger, husbands' occupational prestige, family size, income disparity, family income, marital status, and anger expression. The final model accounted for 50% of the variance in wives' partner aggression in the past year in the full data set.

Discussion

Our goal herein was to develop and test multivariate models of partner aggression in a representative community sample to stimulate efforts to integrate the more focal perspectives that have characterized this field. In the service of this goal, risk factors based on literature reviews conducted at the inception of this study were selected from the main focal perspectives regarding partner aggression. In addition to demographic predictors of partner aggression, risk factors were drawn from feminist, dyadic, and psychopathological perspectives. All focal perspectives and ecological levels were represented in the final models, and variables from different focal perspectives had complex interrelations and did not

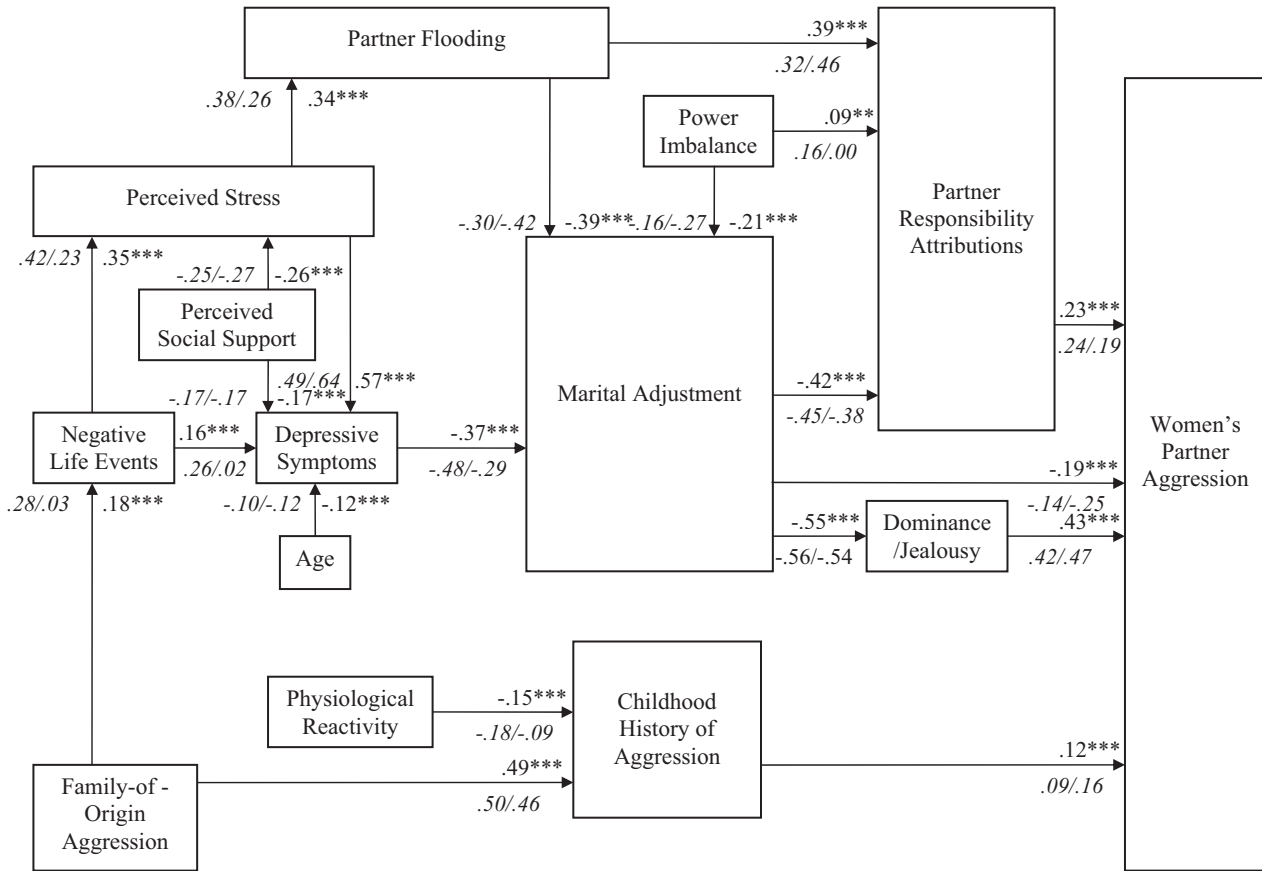


Figure 2. Final model of women's aggression. Nonitalicized path coefficients are based on the full sample ($N = 453$). Standardized path coefficients for the development ($n = 278$) and cross-validation ($n = 175$) samples appear in italics and are separated with a slash (development/cross-validation). In addition to the paths, the following variables and/or residuals were free to correlate: partner flooding and perceived social support, perceived social support and power imbalance, negative life events and power imbalance, depressive symptoms and marital adjustment. * $p < .05$. ** $p < .01$. *** $p < .001$.

operate in neatly contained, nested pockets of variables. Our expectations about how predictors might be arranged in the models were generally supported—relationship and individual variables were proximal, and some social network variables, such as negative life events, operated through other variables for both men and women. Sociodemographic variables were rarely retained in the models. This suggests that it seems appropriate to conceptualize such variables as risk markers that likely relate to partner aggression via relations with other, causal variables.

The strongest case for the importance of all three major focal perspectives is perhaps found in the constructs that predicted the extent of both male and female partner aggression. Dominance/jealousy, drawn from the feminist perspective and distinguishable from verbal aggression as defined herein, had strong direct paths in the models for both men and women. The finding that dominance/jealousy was a strong direct predictor for men is clearly in accord with feminist views, although it was also very important in predicting women's aggression. Similarly, power imbalance was retained in both men's and women's models. Marital adjustment, the primary construct from the dyadic perspective, also had strong and direct paths to partner aggression for men and women. Depressive

symptoms and flooding are relevant to the psychopathology perspective and remained in both men's and women's models. These results suggest that some integration of feminist, dyadic, and psychopathology models is possible and necessary if one is to maximize predictive power.

Men's and women's models were also different in some ways. One variable that had a unique direct path to partner aggression for women but was dropped from the men's model was having a history of being aggressive as a child or teenager. These results replicate the findings of O'Leary et al. (1994). Exposure to aggression in one's family of origin had a direct path to partner aggression for men herein but an indirect path for women, and that result was also found by O'Leary et al. (1994). In a meta-analytic review of the literature on observation of parental violence and its relation to physical aggression against a partner, Stith et al. (2000) concluded that the effects of observing parental violence were small and similar for men and women. This conclusion is consistent with our results. However, the pathways through which this relation operates may not be identical for men and women. Anger expression uniquely predicted men's partner aggression, replicating Norlander and Eckhardt's (2005) meta-analytic results, but

dropped out of the women's model entirely, despite a significant bivariate association with partner aggression. More research on the relation between women's anger and partner aggression is needed, as indicated by the fact that Stith et al. (2004) did not include women's anger in their meta-analysis. Finally, perceived social support uniquely predicted only men's partner aggression, such that the more social support a man had, the more likely he was to engage in physical aggression. This relation may seem counterintuitive, but Levendosky, Huth-Bocks, and Semel (2002) found that more social support from peers was related to male dating aggression in teens from more violent families. Thus, it may be that men are drawn to friends whose approval or disapproval of partner aggression behavior matches their own.

It is also interesting to note the risk factors that were not retained in either model. These were variables that did not predict aggression, even indirectly through variables already in the model. Perhaps the most surprising of these omitted variables are alcohol misuse/abuse, which has been repeatedly linked with partner aggression (Stith et al., 2004), and attitudes approving of partner aggression, which is also a consistently documented risk factor (Stith et al., 2004) and is often a target of intervention. In interpreting the meaning of these variables falling out of the models, the multivariate context within which they were tested must be considered. An examination of Table 3 reveals some significant bivariate correlations of these variables with aggression, and these correlations are not noticeably weaker (across all dropped predictors) than those involving variables that were retained. Thus, the variables not included in the models are not necessarily unimportant correlates of aggression. Rather, when tested in the context of all of the variables that remained in the models, they did not account for unique variance in partner aggression or the other predictor variables in this community sample. These variables may, however, play more pivotal roles in clinical samples.

The cross-validation of the models of partner aggression developed on one subset of the sample in the other, independent subsample provides some initial evidence that the models developed herein have replicability. That said, the model development was explicitly exploratory. The resulting models should not be considered tested and confirmed. Rather, they provide some initial empirical support for how to begin seriously taking on the task of developing integrative theories and conducting cross-perspective research. With 25 predictors, replication by others would certainly yield somewhat different multivariate models. Thus, although the general results of the models are likely to hold true, caution should be exercised in drawing definitive conclusions, especially about fine-grained aspects of the results.

In addition to this caution, several limitations should be noted. First, many of the measures were questionnaires, and most variables were based on self-reports, although the aggression and dominance/jealousy measures were based on responses from both partners. However, single reporter bias is unlikely to account for the specific pattern of relations found in the models, which, by their nature, hold the majority of relations to zero. Of course, some influence of self-reporting biases cannot be ruled out, and replicating our findings with multimethod data would be a worthwhile pursuit. Second, although we cross-validated our models on independent holdout samples, these samples were drawn from the same population at the same time. A relatively exploratory approach was used in the development samples. Also, despite our large sample

size, our participant-to-parameter ratios were small. Nonetheless, the similarities between the men's and women's models bolster confidence in the general pattern of relations in the models. Third, our sample, although quite representative for a study that required extended in-office participation, was certainly not perfectly representative of the population from which it was drawn. Although representativeness analyses (Slep et al., 2006) did not suggest self-selection bias, it could be that this bias could not be detected with the variables included in the phone interview and therefore could limit the generalizability of our results. The sample comprised English-speaking couples who had been living together for at least a year and who had a 3–7-year-old child. Thus, our findings should not be generalized to couples who do not fit within these parameters. The dynamics in newly partnered couples and older couples with no children in their homes, as well as couples receiving interventions for domestic violence, may be quite different from those in a community sample. By extension, these results do not speak to partner aggression in same-sex couples, newly dating couples, couples without telephones, or couples in very different cultures. Fourth, partner aggression, our dependent measure, was a composite of psychological and physical aggression, and it is unclear how well these results generalize to physical aggression, especially severe physical aggression. Finally, as is true of all cross-sectional, correlational data, causality cannot be inferred from these results.

Finally, our models are limited to considering only main effects, not possible moderation among risk factors. Thus, one cannot rule out the possibility that alcohol problems, for example, might interact with other predictor variables to confer risk for partner aggression. In fact, in this sample of men, alcohol use, jealousy, and low anger control interacted to predict partner aggression (Foran & O'Leary, in press). Because all of the variables included in this study were suggested by theory or previous research as risk factors for aggression, the multivariate results of our study should not be interpreted as speaking to a variable's importance as a risk factor, rather only to its role in a multivariate model tested with a community sample.

Although the models are exploratory, some initial clinical implications seem warranted. Many different variables significantly related to partner aggression; however, a small number of variables were the direct pathways to partner aggression from these different variables. From a clinical standpoint, these proximal predictors may be those on which treatment programs should focus: dominance/jealousy, marital discord, and partner responsibility attributions. Perhaps more important, given that treatment efforts guided by individual focal perspectives have been minimally efficacious (Babcock et al., 2004), our results suggest that an integration of focal perspectives might be more fruitful. Future research, testing hypotheses about the mechanisms that might account for the varied pathways through which diverse risk factors for partner aggression operate, would likely result in much more powerful interventions.

The theoretical conceptualization of researchers influences the variables they study, and practical realities limit the variables that can be examined in any one study. However, given the theoretical diversity that exists with respect to the etiology of partner aggression, it is also critical that we begin to build bridges among theories and develop an empirical basis for a more integrated approach to the phenomenon. We hope that this initial attempt to

test a biopsychosocial, ecological model of partner aggression for both men and women will contribute to that effort.

References

- Allen, J. P., Litten, R. Z., Fertig, J. B., & Babor, T. F. (1997). A review of research on the Alcohol Use Disorders Identification Test (AUDIT). *Alcoholism: Clinical and Experimental Research*, *21*, 613–619.
- Archer, J. (2000). Sex differences in aggression between heterosexual partners: A meta-analytic review. *Psychological Bulletin*, *126*, 651–680.
- Babcock, J. C., Green, C. E., & Robie, C. (2004). Does batterers' treatment work? A meta-analytic review of domestic violence treatment. *Clinical Psychology Review*, *23*, 1023–1053.
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Beck Depression Inventory—2 Manual*. San Antonio, TX: Harcourt Brace Jovanovich.
- Bentler, P. M. (2005). *EQS: Structural Equation Program manual*. Encino, CA: Multivariate Software, Inc.
- Blood, R. O., & Wolfe, D. M. (1960). *Husbands and wives*. Glencoe, IL: Free Press.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by design and nature*. Cambridge, MA: Harvard University Press.
- Browning, J. J., & Dutton, D. G. (1988). Power struggles and intimacy anxieties as causative factors of wife assault. In G. W. Russell (Ed.), *Violence in intimate relationships* (pp. 163–175). Costa Mesa, CA: PMA Publishing.
- Campbell, J. C., & Lewandowski, L. A. (1997). Mental and physical effects of intimate partner violence on women and children. *Psychiatric Clinics of North America*, *20*, 353–374.
- Capaldi, D. M., Shortt, J. W., & Kim, H. K. (2005). A life span developmental system perspective on aggression toward a partner. In W. M. Pinsoff & J. L. Lebow (Eds.), *Family psychology: The art of the science* (pp. 141–167). New York: Oxford University Press.
- Cascardi, M., Langhinrichsen, J., & Vivian, D. (1992). Marital aggression, impact, injury, and health correlates for husbands and wives. *Archives of Internal Medicine*, *152*, 1178–1184.
- Cascardi, M., O'Leary, K. D., & Schlee, K. A. (1999). Co-occurrence and correlates of post traumatic stress disorder and major depression in physically abused women. *Journal of Family Psychology*, *14*, 227–249.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Erlbaum.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, *24*, 385–396.
- Cohen, S., Mermelstein, R. J., Kamarck, T., & Hoberman, H. M. (1985). Measuring the functional components of social support. In G. Sarason & B. Sarason (Eds.), *Social support: Theory, research, and applications* (pp. 73–94). The Hague, Holland: Martinus Nijhoff.
- Coker, A. L., Davis, K. E., Arias, I., Desai, S., Sanderson, M., Brandt, H. S., & Smith, P. H. (2002). Physical and mental health effects of intimate partner violence for men and women. *American Journal of Preventive Medicine*, *24*, 260–268.
- Dutton, D. G. (1985). An ecologically nested theory of male violence toward intimates. *International Journal of Women's Studies*, *8*, 404–413.
- Dutton, D. G. (2006). *The abusive partner*. New York: Guilford Press.
- Ehrensaft, M. K., Moffitt, T. E., & Caspi, A. (2004). Clinically abusive relationships in an unselected birth cohort: Men's and women's participation and developmental antecedents. *Journal of Abnormal Psychology*, *113*, 258–271.
- Foran, H., & O'Leary, K. D. (in press). Problem drinking, jealousy, and anger control: Variables predicting physical aggression against a partner. *Journal of Family Violence*.
- Foran, H., & Slep, A. M. S. (in press). Validation of a self-report measure of unrealistic expectations. *Psychological Assessment*.
- Gottman, J. M. (1999). *The marriage clinic: A scientifically based marital therapy*. New York: Norton.
- Hamberger, L. K., & Lohr, J. M. (1989). Proximal cause of spouse abuse: A theoretical analysis for cognitive behavioral interventions. In P. L. Caesar & L. K. Hamberger (Eds.), *Treating men who batter: Theory, practice, and programs* (pp. 53–100). New York: Springer.
- Heyman, R. E., & Slep, A. M. S. (1998). *Partner Flooding Scale*. Unpublished manuscript, Stony Brook University, State University of New York.
- Heyman, R. E., & Slep, A. M. S. (2006). Creating and field-testing diagnostic criteria for partner and child maltreatment. *Journal of Family Psychology*, *20*, 397–408.
- Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized misspecification. *Psychological Methods*, *3*, 424–453.
- Kasian, M., & Painter, S. L. (1992). Frequency and severity of psychological aggression in a dating population. *Journal of Interpersonal Violence*, *7*, 350–364.
- Kline, R. B. (1998). *Principles and practice of structural equation modeling*. New York: Guilford Press.
- Lawrence, E., & Bradbury, T. N. (2001). Physical aggression as a predictor of marital dysfunction: A longitudinal analysis. *Journal of Family Psychology*, *15*, 135–154.
- Leonard, K. E., & Senchak, M. (1996). Prospective prediction of husband marital aggression within newlywed couples. *Journal of Abnormal Psychology*, *105*, 369–380.
- Levendosky, A. A., Huth-Bocks, A., & Semel, M. A. (2002). Adolescent peer relationships and mental health functioning in families with domestic violence. *Journal of Clinical Child and Adolescent Psychology*, *31*, 206–218.
- Lorber, M. F. (2004). Psychophysiology of aggression, psychopathy, and conduct problems: A meta-analysis. *Psychological Bulletin*, *130*, 531–552.
- Louis Harris & Associates. (1986). *Second national family violence survey: Survey methodology*. Unpublished technical report. (Available from the Family Research Laboratory, University of New Hampshire, 126 Horton Social Science Center, Durham, NH 03824.)
- McCarney, S. B., & Anderson, P. D. (1996). *Adult Attention Deficit Disorders Evaluation Scale*. Columbia, MO: Hawthorne Educational Services.
- Nakao, K., & Treas, J. (1994). Updating occupational prestige and socioeconomic scores: How the new measures measure up. *Sociological Methodology*, *24*, 1–72.
- Norlander, B., & Eckhardt, C. (2005). Anger, hostility, and male perpetrators of intimate partner violence: A meta-analytic review. *Clinical Psychology Review*, *25*, 119–152.
- O'Leary, K. D., Barling, J., Arias, I., Rosenbaum, A., Malone, J., & Tyree, A. (1989). Prevalence and stability of marital aggression between spouses: A longitudinal analysis. *Journal of Consulting and Clinical Psychology*, *57*, 263–268.
- O'Leary, K. D., & Jacobson, N. S. (1997). *Partner relational problems with physical abuse: DSM-IV sourcebook* (pp. 673–692). Washington, DC: American Psychiatric Association.
- O'Leary, K. D., Malone, J. E., & Tyree, A. (1994). Physical aggression in early marriage: Pre-relationship and relationship effects. *Journal of Consulting and Clinical Psychology*, *62*, 594–602.
- O'Leary, K. D., & Slep, A. M. S. (2003). A dyadic longitudinal model of adolescent dating aggression. *Journal of Clinical Child and Adolescent Psychology*, *32*, 314–327.
- O'Leary, K. D., & Williams, M. C. (2006). Agreement about acts of physical aggression in marriage. *Journal of Family Psychology*, *20*, 656–662.
- O'Leary, K. D., & Woodin, E. M. (2005). Partner aggression and problem

- drinking across the lifespan: How much do they decline? *Clinical Psychology Review*, 25, 877–894.
- Pan, H. S., Neidig, P. H., & O'Leary, K. D. (1994). Predicting mild and severe husband-to-wife physical aggression. *Journal of Consulting and Clinical Psychology*, 62, 975–981.
- Pence, E., & Paymar, M. (1993). *Education groups for men who batter: The Deluth model*. New York: Springer.
- Riggs, D. S., & O'Leary, K. D. (1996). Aggression between heterosexual dating partners: An examination of a causal model of courtship aggression. *Journal of Interpersonal Violence*, 11, 519–540.
- Riggs, D. S., O'Leary, K. D., & Breslin, F. C. (1990). Multiple correlates of physical aggression in dating couples. *Journal of Interpersonal Violence*, 5, 61–73.
- Rosenbaum, A., & O'Leary, K. D. (1981). Marital violence: Characteristics of abusive couples. *Journal of Consulting and Clinical Psychology*, 49, 63–71.
- Saltzman, L. E., Fanslow, J. L., McMahon, P. M., & Shelley, G. A. (1999). *Intimate partner violence surveillance: Uniform definitions and recommended data elements* (Version 1.0). Atlanta, GA: Centers for Disease Control and Prevention.
- Sarason, L. G., Johnson, J. H., & Siegel, J. M. (1978). Assessing the impact of life changes: Development of the Life Experiences Survey. *Journal of Consulting and Clinical Psychology*, 46, 932–946.
- Schafer, J., Caetano, R., & Clark, C. L. (1998). Rates of intimate partner violence in the United States. *American Journal of Public Health*, 88, 1702–1704.
- Schumacher, J. A., Feldbau-Kohn, S., Slep, A. M. S., & Heyman, R. E. (2001). Risk factors for male-to-female partner physical abuse. *Aggression and Violent Behavior*, 6, 281–352.
- Slep, A. M. S., Cascardi, M., Avery-Leaf, S., & O'Leary, K. D. (2001). Two new measures of attitudes about the acceptability of teen dating aggression. *Psychological Assessment*, 13, 306–318.
- Slep, A. M. S., Heyman, R. E., Williams, M., Van Dyke, C., & O'Leary, S. G. (2006). Using random telephone sampling to recruit generalizable samples for family violence studies. *Journal of Family Psychology*, 20, 680–689.
- Slep, A. M. S., & O'Leary, S. G. (2001). Examining partner and child abuse: Are we ready for a more integrated approach to family violence? *Clinical Child and Family Psychology Review*, 4, 87–107.
- Slep, A. M. S., & O'Leary, S. G. (2005). Parent and partner violence in families with young children: Rates, patterns, and connections. *Journal of Consulting and Clinical Psychology*, 73, 435–444.
- Slep, A. M. S., & O'Leary, S. G. (2007). Multivariate models of mothers' and fathers' aggression toward their children. *Journal of Consulting and Clinical Psychology*, 739–751.
- Spanier, G. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family*, 38, 15–26.
- Spielberger, C. D. (1988). *Manual for the State-Trait Anger Expression Inventory*. Odessa, FL: Psychological Assessment Resources.
- Stets, J. E., & Straus, M. A. (1990). Gender differences in reporting marital violence and its medical and psychological consequences. In M. A. Straus & R. J. Gelles (Eds.), *Physical violence in American families* (pp. 151–165). New Brunswick, NJ: Transaction.
- Stith, S. M., Rosen, K. H., Middleton, K. A., Busch, A. L., Lundeberg, K., & Carlton, R. P. (2000). The intergenerational transmission of spouse abuse: A meta-analysis. *Journal of Marriage and the Family*, 62, 640–654.
- Stith, S. M., Smith, D. B., & Penn, C. E. (2004). Intimate partner physical abuse perpetration and victimization risk factors: A meta-analytic review. *Aggression and Violent Behavior*, 10, 65–98.
- Storaasli, R. D., & Markman, H. J. (1990). Relationship problems in early marriage: A longitudinal investigation. *Journal of Family Psychology*, 4, 80–98.
- Straus, M. A. (1990). The Conflict Tactics Scales and its critics: An evaluation and new data on validity and reliability. In M. A. Straus & R. J. Gelles (Eds.), *Physical violence in American families: Risk factors and adaptation to violence in 8,145 families* (pp. 3–16). New Brunswick, NJ: Transaction.
- Straus, M. A., & Gelles, R. J. (1990). Societal change and change in family violence from 1975 to 1985 as revealed by two national surveys. In M. A. Straus & R. J. Gelles (Eds.), *Physical violence in American families: Risk factors and adaptation to violence in 8,145 families* (pp. 113–131). New Brunswick, NJ: Transaction.
- Straus, M. A., Gelles, R. J., & Steinmetz, S. K. (1980). *Behind closed doors: Violence in the American family*. Garden City, NY: Doubleday.
- Straus, M. A., Hamby, S. L., Boney-McCoy, S., & Sugarman, D. B. (1996). The revised Conflict Tactics Scales (CTS2): Development and preliminary psychometric data. *Journal of Family Issues*, 17, 283–316.
- Stuart, G. L., Meehan, J., Moore, T. M., Morean, M., Hellmuth, J., & Follansbee, K. (2006). Examining a conceptual framework of intimate partner violence in men and women arrested for domestic violence. *Journal of Studies on Alcohol*, 67, 102–112.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Boston: Allyn & Bacon.
- Tolman, R. M. (1989). The development of a measure of psychological maltreatment of women by their male partners. *Violence and Victims*, 4, 159–177.
- Walker, L. E. (1979). *The battered woman*. New York: Harper and Row.
- West, S. G., Finch, J. F., & Curran, P. J. (1995). Structural equation models with nonnormal variables: Problems and remedies. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 56–75). Thousand Oaks, CA: Sage.
- White, J. W., Merrill, L. L., & Koss, M. P. (2001). Prediction of premilitary courtship violence in a Navy recruit sample. *Journal of Interpersonal Violence*, 16, 910–927.
- Wilson, M., & Daly, M. (1993). An evolutionary psychological perspective on male sexual proprietariness and violence against wives. *Violence and Victims*, 8, 271–294.

Received November 10, 2006

Revision received June 5, 2007

Accepted June 6, 2007 ■