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Abstract

Theories and measures of women's aggression in intimate relationships are only beginning to be developed. This study provides a first step in conceptualizing the measurement of women's aggression by examining how well three widely used measures (i.e., the Revised Conflict Tactics Scales (CTS), the Sexual Experiences Survey [SES], and the Psychological Maltreatment of Women Inventory [PMWI]) perform in assessing women's perpetration of and victimization by aggression in their intimate relationships with men. These constructs were examined in a diverse sample of 412 African American, Latina, and White women who had all recently used physical aggression against a male intimate partner. The factor structures and psychometric properties of perpetration and victimization models using these measures were compared. Results indicate that the factor structure of women's perpetration differs from that of women's victimization in theoretically meaningful ways. In the victimization model, all factors performed well in contributing to the measurement of the latent victimization construct. In contrast, the perpetration model performed well in assessing women's physical and psychological aggression but performed poorly in assessing women's sexual aggression, coercive control, and jealous monitoring. Findings suggest that the power and control model of intimate partner violence (IPV) may apply well to women's victimization but not as well to their perpetration of violence.

Keywords

measurement of women's aggression, women's aggression

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The fact that approximately equal numbers of women and men use physical aggression against their intimate partners has been found in numerous studies and meta-analyses (Archer, 2000). Research indicates, however, that these similar prevalence rates should not be interpreted to mean that women's violence against male partners is the *same phenomenon* as men's violence against women (DeKeseredy, 2006; Swan & Snow, 2006). For example, while frequencies of men's and women's physical aggression against partners are similar, men are more likely to commit sexual aggression (O'Sullivan, Byers, & Finkelman, 1998; Romito & Grassi, 2007; Straus, Hamby, Boney-McCoy, & Sugarman, 1996). The National Violence Against Women Survey found that men were more likely than women to frighten, control, and isolate their partners (Coker et al., 2002). Outcomes of violence differ by gender as well. Men are more likely than women to cause injury (Archer, 2000) and to engender fear in their partners (Hamberger & Guse, 2002; Phelan et al., 2005). Studies also have found that women report more symptoms of posttraumatic stress, anxiety, and depression accompanying intimate partner violence (IPV) victimization than do men (Anderson, 2002; Williams & Frieze, 2005).

Gender differences in types and outcomes of aggressive behaviors raise issues for the measurement of women's aggression against male intimate partners. Measures of IPV typically use the same items to assess perpetration and victimization, implying that victimization and perpetration are the same constructs composed of the same behaviors. However, at least in heterosexual relationships, women's aggression against partners may not be conceptually equivalent to their victimization, as evidenced by different psychometric properties and factor structures for perpetration and victimization using the same items (Jones, Ji, Beck, & Beck, 2002; Lucente, Fals-Stewart, Richards, & Goscha, 2001; Pan, Neidig, & O'Leary, 1994). The present study examines the issue of equivalence between women's perpetration and victimization in IPV by examining the factor structure and other psychometric properties of an omnibus measure of women's aggression toward and victimization from intimate partners. This analysis is conducted with a sample of women who had all used physical aggression against a male intimate partner in the past 6 months.

Because no single measure encompasses all of the dimensions of IPV we were interested in, that is, physical, psychological, and sexual aggression, as well as coercive control, we used three measures of IPV. We assessed physical aggression with the Conflict Tactics Scale (CTS), which has been used in hundreds of studies to measure men's and women's use of psychological and physical aggression toward, and victimization from, intimate partners (Straus, Hamby, & Warren, 2003). We assessed sexual aggression with the very widely used Sexual Experiences Survey (SES; Koss, Gidycz, & Wisniewski, 1987). The SES was designed to assess women's victimization by and men's perpetration of these behaviors. However, some studies have used this measure to assess women's commission of sexually aggressive behaviors (Kelly & Erickson, 2007; O'Sullivan et al., 1998; Reynaud & Byers, 2005; Russell & Oswald, 2001). We assessed coercive control and emotional aggression with the Psychological Maltreatment of Women Inventory (PMWI; Tolman, 1999). The PMWI was also designed to assess women's victimization by and men's perpetration of these behaviors, but it has been used to assess women's aggression (Kernsmith, 2005, 2006; Taft et al., 2006).

The present study used a combined IPV measure composed of items from the CTS2 (Straus et al., 2003), the SES (Koss et al., 1987), and the Short PMWI (S-PMWI; Tolman, 1999). We were not interested in testing any one of these particular measures per se; rather, our purpose was to try to develop a comprehensive measure of women's aggression against male intimate partners by starting with items from several existing measures. We then draw conclusions about what this new omnibus measure does assess well and what its limitations are and then propose directions for future research in the development of measures of women's aggression.

We assumed that a latent model would be the most accurate in conceptualizing the various components of IPV. The latent model assumes that an unobserved construct is the common cause of a set of observed variables (Edwards & Bagozzi, 2000). In the case of IPV, many theorists have assumed that an underlying, latent construct, specifically, an underlying need for enacting power and control over one's partner, is the common cause of the different kinds of aggression that have been identified as IPV, such as physical, psychological, and sexual aggression, and coercive control (Pence & Paymar, 1993). According to this model, physical and sexual violence, as well as emotional abuse and coercive control behaviors such as intimidation, isolation, and threats, are used to maintain control. From a modeling perspective, the latent construct causing the different kinds of aggression and coercive control behaviors is the aggressor's need for enacting power and control over his or her partner. This assumption has typically been proposed for men's aggression toward female partners. It is not clear, however, whether this same latent construct is the underlying cause of women's aggression. If women's aggression toward male partners is not typically driven by power and control motives, this may explain why some examinations of the measurement of women's perpetration of IPV have demonstrated some weaknesses relative to victimization measurement such as weaker factor loadings (Lucente et al., 2001).

In the present study, two confirmatory factor analyses (CFAs)—one of women's perpetration and the other of women's victimization—were conducted. Structural equation modeling was used to examine the two factor models. Because the development of a specific measure of women's IPV aggression is new (as opposed to measures originally developed to assess women's victimization that were later used to assess women's perpetration, or measures designed to be gender neutral), we believed that a reasonable starting point was to use well-established and widely used measures of victimization and perpetration. The next sections review what is known about the psychometric properties of each scale, particularly in the assessment of women's perpetration against male intimate partners.

The CTS2

The CTS2 (Straus et al., 2003) was developed with a sample of college students, but its reliability, validity, and factor structure also have been investigated with noncollege samples, including postpartum teenage mothers and incarcerated women (Jones et al., 2002; Lucente et al., 2001; Newton, Connelly, & Landsverk, 2001). When used with female samples, the Physical Victimization scale of the CTS2 has demonstrated adequate reliability (Lucente et al., 2001; Newton et al., 2001) and construct validity (Jones et al., 2002;

Straus et al., 2003). The Psychological Perpetration scale, however, shows adequate reliability in some studies (Lucente et al., 2001; Newton et al., 2001) but poor reliability in another (Ro & Lawrence, 2007). The CTS2 was designed to assess Sexual Aggression as well; however, this subscale has been problematic in assessing women's use of sexual aggression (Jones et al., 2002). Thus, we chose to utilize the older and more widely used SES to measure sexual aggression (Koss et al., 1987).

Factor analyses of the CTS2 (Straus et al., 2003) with female samples have resulted in varied findings (Connelly, Newton, & Aarons, 2005; Jones et al., 2002; Newton et al., 2001). Straus et al. (1996) conceptualize some physical and psychological factors as severe and others as minor. In a factor analysis of perpetration data collected from a sample of postpartum women, model fit was improved by dividing Psychological and Physical scales into severe and minor factors, rather than leaving the scales whole (Newton et al., 2001). In contrast, another factor analysis of the CTS2 with incarcerated women found the best fit when severe and minor physical and psychological items were collapsed into one "general assault" scale (Jones et al., 2002). A third factor analysis, conducted with a Latina sample, was unable to fit a model replicating the factor structure that Newton et al. found (Connelly et al., 2005). Furthermore, each factor analysis resulted in the removal of at least three items due to low or double loadings across different factor analyses; these items differed from study to study (Jones et al., 2002; Lucente et al., 2001; Newton et al., 2001). The various factor analyses also found that items removed from Perpetration scales differed from items removed from Victimization scales, indicating that female aggression and female victimization may not be the same constructs. Additionally, perpetration items frequently had smaller factor loadings and effect sizes than victimization items, and perpetration models did not fit the data as well as victimization models (Lucente et al., 2001; Newton et al., 2001). In sum, factor analyses of the CTS2 suggest that women's aggression may differ in important ways from their victimization.

The S-PMWI

The S-PMWI (Tolman, 1999) consists of two subscales: an Emotional/Verbal Abuse subscale including verbal attacks, demeaning behavior, and emotional unresponsiveness, and a Dominance/Isolation subscale consisting of coercive control behaviors such as isolating one's partner from social networks, withholding financial resources, and demanding subservience. As a measure of women's victimization, the S-PMWI has demonstrated good convergent and discriminate validity and excellent internal consistency with a mixed sample of community women (Tolman, 1999). The S-PMWI also successfully distinguished between service-seeking battered women and nonbattered women (Tolman, 1999).

We used both the S-PMWI (Tolman, 1999) and the CTS2 Psychological Aggression scale (Straus et al., 2003) to assess women's perpetration and victimization of psychological aggression for several reasons: (a) We were interested in women's perpetration of and victimization from coercive control; the Dominance/Isolation subscale of the S-PMWI assesses this construct; (b) given psychometric problems with the CTS2 Psychological

Aggression subscale (Lucente et al., 2001; Ro & Lawrence, 2007), combining the CTS2 Psychological subscale and the S-PMWI was expected to provide a more psychometrically sound measure; (c) previous studies have utilized the CTS2 and the PMWI as a composite scale to assess women's aggression (Kernsmith, 2005, 2006; Sullivan, Meese, Swan, Mazure, & Snow, 2005; Taft et al., 2006). No study using the PMWI that we are aware of has focused on measurement issues in assessing women's aggression.

The SES

The SES (Koss et al., 1987) assesses experiences of unwanted sexual behaviors, including unwanted sexual contact, sexual coercion, attempted rape, and rape. The SES was developed to assess men's perpetration and women's victimization in college populations (Koss & Oros, 1982; Koss et al., 1987) and with a sample of community women (Testa, VanZile-Tamsen, Livingston, & Koss, 2004). The SES demonstrated adequate reliability, good test-retest reliability, and fair to good rater-responder agreement in both college and community samples in measuring women's victimization (Koss & Oros, 1982; Testa et al., 2004). Construct validity was demonstrated via correlations between traumatic symptoms and severity of sexually coercive or assaultive experiences (Testa et al., 2004).

Like the PMWI, the SES (Koss et al., 1987) was not designed to measure women's perpetration, though it has been used for this purpose (O'Sullivan et al., 1998; Reynaud & Byers, 2005; Russell & Oswald, 2001; Ryan, 1998; Ryan & Mohr, 2005). No study that we are aware of using the SES focuses on measurement issues in assessing women's sexual aggression. We did find one study that examined the reliability of the SES in assessing women's use of sexual aggression; reliability was adequate (Cronbach's $\alpha = .70$; Russell & Oswald, 2001). Koss et al. (2007) have questioned the appropriateness of Cronbach's α in assessing the reliability of the SES; we will return to this issue in the discussion.

Analysis Strategy and Hypotheses

First, we conducted descriptive analyses comparing women's perpetration and victimization for each of the aggression items. Then, we conducted model analyses. In the first stage of model analyses, a CFA was conducted with the baseline omnibus perpetration and victimization models, each consisting of four factors: physical aggression (CTS2; Straus et al., 2003), psychological aggression (CTS2 and S-PMWI; Tolman, 1999), coercive control (S-PMWI), and sexual aggression (SES; Koss et al., 1987). These baseline models served as a test of how well these three widely used measures would function in assessing women's perpetration and victimization. In the next stage, a conceptual examination of the items was conducted to improve upon the fit of the baseline models by removing low-prevalence items; items that were poorly worded, unclear, or ambiguous; and items that had been shown to be problematic in previous studies of female aggression. We then conducted a second CFA with the revised models. We predicted that, in the second CFA, factor structures would differ between women's perpetration and victimization. We

expected that the perpetration model would have more measurement problems than the victimization model, as indicated by the number of items removed and lower factor loadings. We expected the perpetration model to be most problematic with the sexual coercion and coercive control factors.

Method

Sample and Procedures

The general purpose of the study was to examine women's aggression against male intimate partners; therefore, a community sample of 412 women, all of whom had used aggression against a male partner, participated in the study. Participants were recruited via posters and brochures posted in multiple locations throughout a Northeastern city, including health care clinics, churches, shops, libraries, community kiosks, restaurants, grocery stores, laundromats, and other locations. All recruitment materials were written in English and Spanish. Women interested in the study were given a 10-minute telephone screen to assess whether they met study criteria. Questions on the screen included demographic items and aggression items from the Revised Conflict Tactics Scales (CTS-2; Straus et al., 1996). Participants had to self-identify as African American, White, or Latina; have a yearly family income of no more than US\$50,000 (to reduce income disparities between racial/ethnic groups); and have committed at least one act of physical aggression against a male intimate partner in the last 6 months. Women who met the screening criteria were interviewed individually by female interviewers of the same ethnicity. Latina participants were interviewed by a bilingual/bicultural interviewer and had the option of being interviewed in Spanish. A bilingual/bicultural research associate translated the survey instruments and recruiting materials as necessary; back-translation procedures were employed (Bullinger et al., 1998). Seventy-four of the 150 Latina participants completed the interview in Spanish. The surveys were administered on laptop computers using Questionnaire Development System software (NOVA Research Company, 2003). Participants were compensated US\$50.

Participants were 36% African American ($n = 150$), 36% Latina ($n = 150$), and 27% Caucasian ($n = 112$) and were in the age range of 18 to 65 years, with a mean age of 36.6 years. Twenty-four percent of participants were married, and 43% were unmarried and living with their partner at the time of the survey; 26% were dating but not living together, and 7% were no longer with their partners. The average reported relationship length was 4 to 5 years, with relationship lengths ranging from 4 months to more than 20 years. Most of the sample participants (77%) had at least one child, with a mean of 1.96 children. Twenty-eight percent of participants did not complete high school; 41% had a high school diploma or GED; 23% attended some college or vocational training and 8% reported earning a college or advanced degree. The sample was primarily low-income. Forty-three percent of the sample reported household incomes of less than US\$10,000 annually, while 28% earned between US\$10,000 and US\$20,000, and 17% earned between US\$20,000 and US\$30,000 a year. Only 12% of the sample reported annual

household incomes exceeding US\$30,000. The majority of women in the sample (64%) were unemployed at the time of the study. Twenty percent worked part-time, 14% had full-time jobs, and 2% were students.

Measures and Coding

Physical Assault and Psychological Aggression subscales from the CTS2 were included to measure physically and psychologically aggressive behaviors. One item from the CTS2 Psychological Aggression scale, "shouted or yelled at you," was excluded due to similarity with an included S-PMWI item, "yelled and screamed at you." The S-PMWI (Tolman, 1999) was used to assess psychologically aggressive and coercively controlling behaviors. Thirteen of the 14 items of the S-PMWI were included in the study. One item, "My partner swore at me," was dropped because of similarity to an included CTS2 item, "Did your partner insult or swear at you?" Due to error, one item from the full S-PMWI (Tolman, 1989), "Did your partner try to keep you from seeing or talking to your family?," was included among the 13 PMWI items, while the comparable S-PMWI item, "Did your partner interfere in your relationships with other family members?," was omitted. All items are shown in Table 1.

All 10 items regarding the occurrence of specific sexually coercive or assaultive acts from the SES were included in the study (Koss et al., 1987). The SES has been used primarily with college populations and requires a fairly high reading level. Item wording was simplified based on concerns that the measure would be difficult to understand for many participants, similar to another study published soon after our data collection (Testa et al., 2004). Also, because the SES was originally designed to measure women's experiences of sexual victimization by any man, items were altered in order to collect information specifically regarding sexual aggression between partners. Ten items were added to assess women's perpetration of sexually aggressive behaviors (see Table 1).

Consistent with the design of the CTS2 (Straus et al., 2003), for each item participants were asked to indicate the number of times they had committed a particular behavior against their male partner (perpetration) and the number of times their partner had committed the same behavior against them (victimization) in the past 6 months. Response options for items derived from all three scales were based on CTS2 response options: 0 (*never*), 1 (*once in the past 6 months*), 2 (*twice in the past 6 months*), 3 (*3-5 times in the past 6 months*), 4 (*6-10 times in the past 6 months*), 5 (*more than 10 times in the past 6 months*), and 6 (*not in the past 6 months but it happened before*). Category 6 was recoded as 0 to limit the assessment to occurrences in the past 6 months.

Analyses

Women's aggressive behaviors (perpetration) and their partner's aggressive behaviors toward them (victimization) were analyzed separately in three steps. First, items were removed if they were endorsed by less than 10% of the respondents. Deleting such low-prevalence items has been recommended in psychometric analyses of scales as these

Table 1. Percentage, Mean, and Standard Deviation of Perpetration and Victimization (Significant Mean Differences in Perpetration and Victimization Are Shown)

Revised Conflict Tactics Scale (CTS-2)	Perpetration			Victimization			t
	%	M	SD	%	M	SD	
Physical assault (Bonferroni-corrected p value = .004)							
Throw something at	73.3	1.75	1.57	44.2	1.16	1.58	7.11***
Beat up	29.9	0.68	1.26	29.6	0.75	1.38	-0.94
Push or shove	91.0	2.34	1.43	75.5	2.06	1.64	3.84***
Punch/hit with object	63.1	1.40	1.51	44.7	1.16	1.60	3.09***
Choke	14.1	0.27	.78	30.6	0.59	1.13	-6.00***
Use knife or gun	10.9	0.20	0.67	9.0	0.18	0.66	0.582
Slap	67.2	1.56	1.59	49.5	1.22	1.58	3.89***
Twist arm or hair	26.5	0.57	1.17	45.6	1.08	1.49	-6.89***
Slam against a wall	33.5	0.60	1.04	46.1	0.99	1.36	-5.58***
Grab	68.2	1.67	1.57	66.3	1.74	1.65	-0.98
Burn/scald on purpose	3.2	0.05	0.34	1.7	0.03	0.26	1.41
Kick	37.9	0.90	1.43	25.7	0.64	1.29	4.04***
Psychological aggression (Bonferroni-corrected p value = .007)							
Insult or swear	96.1	3.90	1.41	91.5	3.78	1.59	1.70
Destroy something	59.5	1.38	1.55	49.0	1.29	1.63	0.97
Threaten to hit/throw something	76.0	2.39	1.87	61.9	2.02	1.95	3.87***
Stomp out	85.4	3.00	1.76	80.3	2.89	1.84	1.07
Do something to spite	61.2	1.60	1.67	68.1	1.98	1.77	-4.03***
Call fat or ugly	37.5	1.18	1.72	47.6	1.45	1.80	-2.93***
Accuse of being lousy lover	30.3	0.78	1.42	19.2	0.52	1.23	3.61***
Short Psychological Maltreatment of Women Inventory (S-PMWI)							
Emotional/verbal abuse (Bonferroni-corrected p value = .008)							
Call names	91.3	3.54	1.63	83.7	3.24	1.85	3.47***
Yell and scream	99.0	4.13	1.27	94.7	3.92	1.48	2.88***
Treat like an inferior	37.3	1.02	1.59	52.2	1.72	1.95	-5.95***
Tell feelings were crazy	75.5	2.74	1.97	70.6	2.64	2.04	1.01
Try to make feel crazy	31.6	0.88	1.54	55.3	1.85	1.96	-9.42***
Blame for problems	62.4	1.99	1.87	63.1	2.14	1.99	-1.44
Dominance/isolation (Bonferroni-corrected p value = .007)							
Use joint money without talking	32.6	0.79	1.40	42.1	1.23	1.72	-4.49***
Jealous/suspicious of friends	62.1	2.13	1.98	78.6	3.00	1.96	-6.89***
Restrict use of telephone	18.4	0.45	1.11	23.0	1.04	1.66	-6.58***
Monitor time/make account for where was	67.7	2.42	1.99	77.2	2.94	1.97	-4.29***
Try to keep from helping self	4.9	0.12	0.62	32.8	1.04	1.69	-10.78***
Accuse of an affair	58.0	1.72	1.83	58.0	1.97	2.04	-2.27
Try to keep from family	16.0	0.48	1.24	27.9	0.92	1.68	-4.49***

(continued)

Table 1. (continued)

	Perpetration			Victimization			t
	%	M	SD	%	M	SD	
Sexual Experiences Survey (SES)—sexual aggression (Bonferroni-corrected p value = .005)							
Kiss/pet by pressuring/arguing	21.6	0.44	0.99	36.9	0.89	1.39	5.96***
Kiss/pet by claiming authority	18.0	0.37	0.91	30.7	0.73	1.32	5.38***
Kiss/pet by force/threatening	8.3	0.13	0.51	18.0	0.42	1.02	5.57***
Try to make have sex by force/ threatening	7.3	0.13	0.53	18.5	0.41	1.00	5.14***
Try to make have sex by giving drugs/alcohol	5.1	0.13	0.62	14.1	0.34	0.98	4.67***
Try to make have sex by pressuring/ arguing	15.1	0.27	0.76	36.5	0.85	1.38	8.24***
Try to make have sex by claiming authority/owes you	13.1	0.26	0.80	24.1	0.61	1.30	5.30***
Made have sex by giving drugs/ alcohol	5.6	0.12	0.57	11.9	0.29	0.91	4.18***
Made have sex by using/ threatening force	6.8	0.11	0.48	16.1	0.39	1.05	5.32***
Made do other sexual things by using/threatening force	2.7	0.04	0.25	12.2	0.27	0.82	5.43***

Note: Scale: 0 (*never*), 1 (*once in past 6 months*), 2 (*twice in past 6 months*), 3 (*3-5 times in past 6 months*), 4 (*6-10 times in past 6 months*), 5 (*more than 10 times in the past 6 months*).

*** p < Bonferroni-corrected p value

items provide little information about the construct and tend to distort parameter estimates (see Van Horn, Bellis, & Snyder, 2001). Second, a conceptual examination of the items was conducted. During this stage, items that were poorly worded and thus unclear were removed. Often, these items had been found to be problematic in previous studies assessing women's perpetration of aggression (Jones et al., 2002; Lucente et al., 2001; Newton et al., 2001). Some items were also moved to different factors during this stage, as described below.

In the third step, second-order CFAs were conducted using the Mplus statistical package (Muthen & Muthen, 1999-2004). The Mean and Variance-adjusted Weighted Least Square (WLSMV) estimator was chosen because of its superior ability to run structural equation models with skewed and ordinal data (Muthen, du Toit, & Spisic, 1997). CFAs were conducted using full information maximum likelihood estimations for missing data (only 3% of the sample had missing data). The first CFAs were conducted with the baseline models, that is, the separate perpetration and victimization models using the original subscales from the CTS2 (Straus et al., 2003), S-PMWI (Tolman, 1999) and SES (Koss et al., 1987). Each baseline model consisted of a total of 42 items with 4 factors: a physical aggression factor with 12 items from the CTS2, a psychological aggression factor with 7 items from the Psychological Aggression subscale of the CTS2 and 6 items from the

Emotional/Verbal Abuse subscale of the S-PMWI, a coercive control factor with 7 items from the Dominance/Isolation subscale of the S-PMWI, and a sexual aggression factor with 10 items from the SES. CFAs were then conducted with the modified models. Items were removed during this stage if their factor loading on the scale was less than 0.40 (conservatively exceeding the 0.30 criteria suggested by Briggs & MacCallum, 2003) or if the items caused the model to fit poorly. The fit statistics of the final models were then compared to the fit statistics of the original models using the complete scales.

Results

Prevalence of Perpetration and Victimization: Descriptive Findings

Ninety-two percent of the women experienced some form of physical and/or sexual victimization from their male partners. High rates of victimization were not surprising, given that the sample consisted of women who had all used aggression against their partners, and there is strong co-occurrence between IPV perpetration and victimization (Moffitt et al., 1997). Percentages and mean perpetration and victimization scores are shown for each item in Table 1. Significant differences between women's perpetration and victimization are theoretically consistent with gender differences in aggressive behavior. Although women reported pushing, slapping, kicking, punching and hitting with objects, and throwing something at their partners more often than their partners did the same to them, women were more likely to be victimized than they were to perpetrate behaviors requiring greater physical strength than their partners, including choking, slamming against the wall, and twisting the partner's arm. Participants reported that they were victimized by all but one of the coercive control (dominance/isolation) items significantly more often than they perpetrated them. For sexual aggression, participants reported being victimized by all items significantly more often than they perpetrated them. All sexual aggression behaviors were used at least 2 times more frequently to victimize the women than by women to victimize their male partners.

First Stage of Analysis: CFA of Original Models

The original models, including all 42 items with 4 factors (psychological, physical, and sexual aggression, and coercive control) from the CTS2, the S-PMWI, and the SES, provided a fit to the data that definitely could be improved. Fit statistics for the original perpetration model were $\chi^2 = 321.740$, $p < .00$, $df = 111$, comparative fit index (CFI) = .930, Tucker-Lewis Index (TLI) = .948, root mean square error of approximation (RMSEA) = .068, $\chi^2/df = 2.90$. Fit statistics for the original victimization model were $\chi^2 = 503.196$, $p < .00$, $df = 124$, CFI = .913, TLI = .965, RMSEA = .086, $\chi^2/df = 4.06$. Hu and Bentler (1999) recommend CFI indices closer to 1 and RMSEA values close to or less than .06 to conclude that there is good fit. Therefore, we proceeded to the next stage of analysis to try to improve model fit.

Second Stage of Analysis: Removal of Items Due to Low Prevalence and Conceptual Analysis

Eight perpetration items were removed due to less than 10% prevalence. These included the CTS2 physical assault item, "Did you burn or scald your partner on purpose?" (3% endorsement) and an S-PMWI (Tolman, 1999) item, "Did you try to keep your partner from doing things to help himself?" (5% endorsement). Six of the 10 sexual aggression perpetration items were removed due to less than 10% prevalence. In contrast, only one victimization item was removed due to an endorsement of less than 10% of the sample. Two percent of women responded affirmatively to the CTS2 (Straus et al., 2003) physical assault item, "Did your partner burn or scald you on purpose?" One additional CTS2 physical assault item, "Did your partner use a knife or gun?" was endorsed by 9% of the sample. Although this is below the desired prevalence of 10%, this item provides the only assessment of weapon use. We chose to retain this item due to the important and unique information it provides regarding extreme violence (Graham-Kevan & Archer, 2005, retained this same item in their study, despite its low prevalence, for similar reasons).

Four items were removed from the Perpetration and Victimization scales during the conceptual examination of the items. A CTS2 psychological aggression item, "Did you (your partner) stomp out of the room, house, or yard during a disagreement?" was removed, as leaving during an argument has ambiguous intent and outcome. Leaving may be intended not as aggression, but to de-escalate a highly charged interaction that is on its way to becoming physically violent. For example, many curricula for batterer intervention programs recommend taking a "time out" to de-escalate situations before individuals become violent (e.g., Donnelly, Mederos, Nyquist, Williams, & Wilson, 2002). This item was also removed due to problematic psychometric properties in Jones et al.'s (2002) analysis of the CTS2. "Did you (your partner) accuse him (you) of being a lousy lover?," a CTS2 psychological aggression item, was found in other studies to be a weak item (Lucente et al., 2001; Newton et al., 2001; Straus et al., 1996). "Did you (your partner) twist his (your) arm or hair?," a CTS2 physical assault item, was removed due to poor wording resulting in a lack of clarity in item meaning ("twisting hair" does not make sense); Lucente et al. also found this item to be problematic. Finally, "Did you (your partner) tell him (you) that his (your) feelings were irrational or crazy?," an S-PMWI (Tolman, 1999) emotional abuse item, was removed due to the possibility, raised by some participants, that the intent may be honest communication about a partner's mental illness rather than maliciousness. (In fact, a number of women in the study reported that they and/or their partners were receiving treatment for mental health issues.) Also, the authors felt that another retained S-PMWI item, "Did your partner try to make you feel crazy?," better captured abusive intent and behavior related to decreasing a partner's self-confidence.

Jealous monitoring factor. During the conceptual stage of scale evaluation, three S-PMWI (Tolman, 1999) dominance/isolation items were combined to create a new factor, jealous monitoring. The decision to create the separate factor was based on an exploratory factor analysis of the S-PMWI conducted by Kasian and Painter (1992), in which three coercive

control items emerged as a unique and separate factor. The three items are (a) Was your partner (were you) jealous or suspicious of your (partner's) friends? (b) Did your partner (did you) monitor your (your partner's) time and make you (him) account for where you were (he was)? (c) Did your partner (you) accuse you (him) of having an affair? These jealous monitoring behaviors differ conceptually from other coercive control items that describe active attempts to control and limit the partners' behavior (i.e., Did your partner restrict your use of the telephone/try to keep you from seeing or talking to your family/try to keep you from doing things to help yourself?).

Finally, one dominance/isolation item, "Did you make important financial decisions or use your and your partner's money without talking to him about it?," was moved from the coercive control factor to the psychological aggression factor in the perpetration model only. We reasoned that for the perpetration model, women's use of this behavior is likely to constitute the goal of emotional injury rather than economic control of partner. This was based on anecdotal evidence that few women in the study (most of whom were very poor) actually had financial control over their partners.

Third Stage of Analysis: CFA With Revised Models

The final stage of the analyses was to conduct CFAs with the revised models to see whether these models had improved fit as compared to the original models.

Victimization factors. During the second-order CFA of the victimization model, eight items were removed because they caused the model to fit poorly, with modification indices suggesting that the items were highly related to other factors. Two CTS2 (Straus et al., 2003) Psychological Aggression items, "Did your partner destroy something belonging to you?," and "Did your partner threaten to hit or throw something at you?," were removed because modification indices showed that they were highly related to physical aggression items. Lucente et al. (2001) also found that these items double loaded on physical and psychological aggression factors. Two PWMI (Tolman, 1999) emotional abuse items were also removed due to modification indices suggesting that they were strongly related to other factors. "Did your partner call you names?" was highly related to sexual aggression items, and "Did your partner treat you like an inferior?" was highly related to coercive control items. Four SES (Koss et al., 1987) items also were removed during this phase because they were detrimental to model fit, including "Did you partner fondle, kiss, or pet you when you didn't want to by pressuring or arguing with you?" It is unclear why this item detracted from model fit, as modification indices did not indicate that the item was related to other factors. Three other items—"Did your partner make you have sex when you didn't want to by giving you alcohol or drugs?," "Did your partner make you have sex when you didn't want to by using force?," and "Did your partner try to make you have sex by giving you alcohol or drugs?"—all had modification indices that suggested that the items were highly related to physical abuse. In addition, the latter item also was highly related to the jealous monitoring factor according to modification indices.

Model fit. The final victimization model, shown in Figure 1, consisted of 29 items with 5 factors, and demonstrated much improved fit ($\chi^2 = 249.193, p < .00, df = 109, CFI = .956,$

TLI = .985, RMSEA = .056, $\chi^2/df = 2.29$). Factor loadings indicated that each factor in the final model loaded highly onto the latent victimization variable. Loadings ranged from 0.71 (jealous monitoring) to 0.86 (psychological aggression), indicating that each subtype of victimization contributed highly to the measurement of a latent victimization construct. High factor loadings indicated that each type of aggression, as measured by the final model, contributed substantially to the overall construct of women's victimization in intimate partnerships. Cronbach's alpha reliabilities using polychoric correlations were all acceptable (psychological victimization, $\alpha = .79$; sexual victimization, $\alpha = .95$; coercive control, $\alpha = .77$; jealous monitoring, $\alpha = .81$; physical victimization, $\alpha = .95$). Polychoric correlations can be used to calculate Cronbach's alpha when variables are ordinal, but are assumed to reflect underlying continuous variables. That is, polychoric correlations extrapolate what the categorical variables' distributions would be if continuous, adding tails to the distribution (Drasgow, 1988).

Perpetration model. As predicted, the perpetration model differed from the victimization model. During the second-order CFA, seven additional items were removed. Four perpetration items, all from the S-PMWI (Tolman, 1999), were removed due to factor loadings less than 0.40, indicating that the items are not good indicators of the underlying construct. The items were: "Did you treat your partner like an inferior?" "Did you try to make your partner feel like he was crazy?" "Did you blame your partner for your problems?" "Did you try to keep your partner from seeing or talking to his family?"

Three additional items were removed because they caused the model to fit poorly, with modification indices and residuals suggesting that the items were highly related to other factors. One CTS2 (Straus et al., 2003) psychological aggression item, "Did you insult or swear at your partner?," was removed because modification indices showed that it was highly related to the overall perpetration factor. This item was also removed due to problematic psychometric properties in Jones et al.'s (2002) analysis of the CTS2. One S-PMWI (Tolman, 1999) emotional/verbal abuse item, "Did you yell and scream at your partner?," was removed due to modification indices suggesting that the item is highly related to sexual aggression items. Finally, modification indices for "Did you restrict your partner's use of the telephone?" indicated that the item was related to the psychological and physical aggression factors as well as the overall perpetration factor.

Notably, the final perpetration model does not include a coercive control factor, as all four of the items comprising this factor were dropped due to low endorsement or because they caused the model to fit poorly, and one item ("use your and your partner's money without talking to him about it") was moved to the psychological aggression factor.

Model fit. The final perpetration model consisted of 23 items and demonstrated a much improved fit ($\chi^2 = 179.534$, $p < .00$, $df = 84$, CFI = .959, TLI = .978, RMSEA = .053, $\chi^2/df = 2.14$). The final perpetration model is depicted in Figure 2.

In contrast to the victimization model in which each factor loaded highly onto the latent victimization variable, the perpetration model had high factor loadings for physical and psychological aggression factors (0.89 and 0.95, respectively), but not the other two factors, jealous monitoring and sexual aggression. These factors showed relatively low loadings on the latent perpetration construct (0.40 and 0.44, respectively). Thus, Physical and

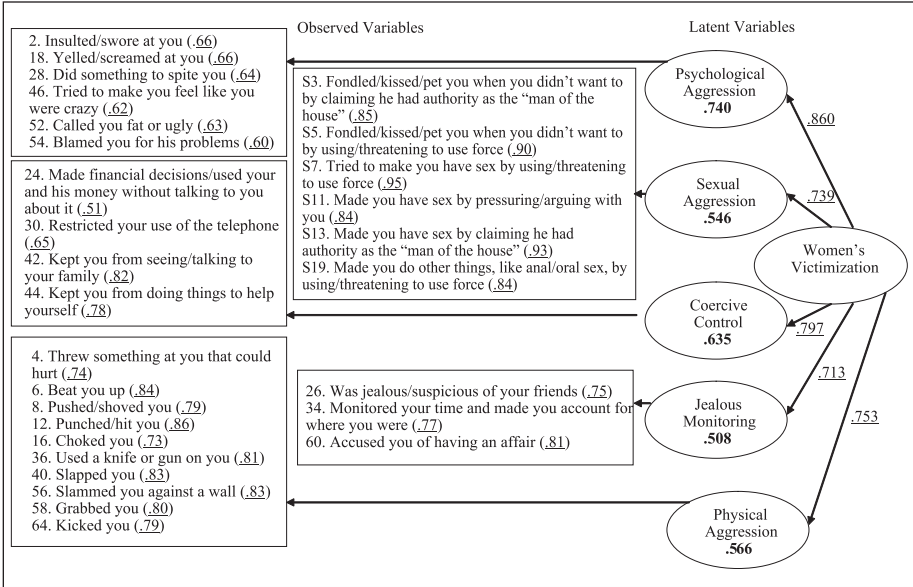


Figure 1. Final Victimization Confirmatory Factor Analysis Model

Note: **bold** = R2; underlined = standardized factor loadings.

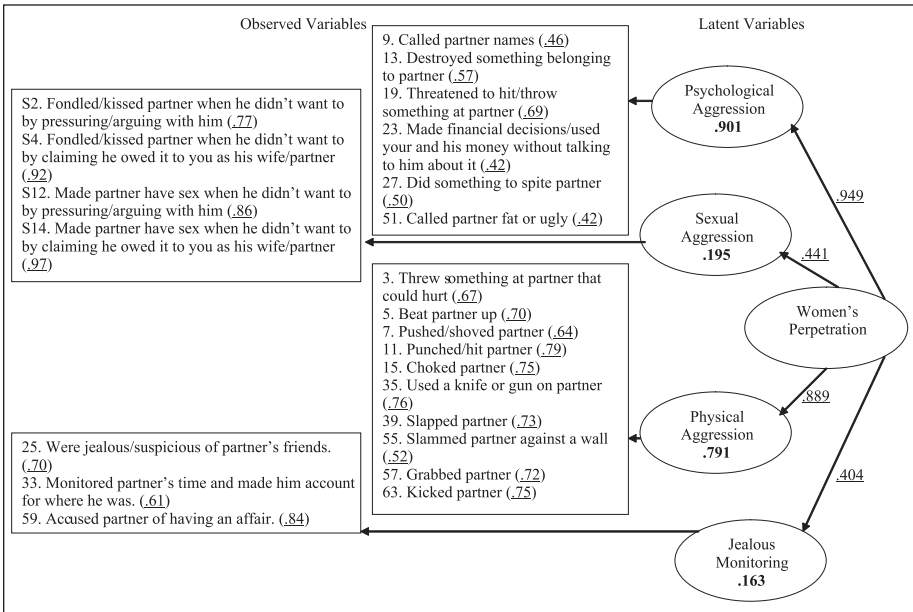


Figure 2. Final Perpetration Confirmatory Factor Analysis Model

Note: **bold** = R2; underlined = standardized factor loadings.

Psychological Perpetration subscales contributed highly to the measurement of a latent perpetration construct, while jealous monitoring and sexual aggression only modestly contributed to an overarching construct of women's perpetration of aggression. Cronbach's alpha reliabilities were as follows: psychological aggression, $\alpha = .68$; jealous monitoring, $\alpha = .74$; sexual aggression, $\alpha = .93$; physical aggression, $\alpha = .91$. Victimization scales, in all cases, were more reliable than the corresponding Perpetration scales.

Discussion

The findings presented here support the argument that women's aggression is not the same phenomenon as women's victimization, consistent with gendered theories of IPV (Dasgupta, 1999). A comparison of the frequencies of women's perpetration and victimization of different types of aggression supports a theory of gendered aggression. These participants, all of whom had used physical aggression against male partners, reported greater victimization than perpetration of aggression requiring greater physical strength, such as choking and slamming one's partner against a wall. In contrast, women reported greater perpetration than victimization of behaviors that do not require the aggressor to be physically stronger than her partner (e.g., throwing something at him, slapping him). Consistent with theories of men's greater social and physical power (Ridgeway & Smith-Lovin, 1999; Stark, 2006), victimization occurred significantly more frequently than perpetration for all of the sexual aggression behaviors and all but one of the coercive control behaviors. Although this study was conducted only with women reporting on their perpetration and victimization, the findings are consistent with other studies that compare men's and women's aggression in intimate relationships (Coker et al., 2002; Harned, 2001; Romito & Grassi, 2007; Straus et al., 1996).

The factor analyses provide further support for nonequivalence between women's perpetration and victimization consistent with a gendered approach to intimate partner aggression. Taken as a whole, results suggest that the measures utilized in this study are more consistent with the construct of women's victimization than women's perpetration. For example, only one item was removed from the victimization factor due to endorsement of less than 10% of the sample, as compared to eight items that were removed from the perpetration factor because of low endorsement. In the victimization model, all five factors performed well in assessing the latent victimization construct, with 51% to 74% of the variance accounted for in each factor by the latent victimization variable. In contrast, the perpetration model performed well in assessing women's physical and psychological aggression, but performed poorly in assessing women's sexual aggression and jealous monitoring. The latent perpetration variable accounted for only 20% of the variance in sexual aggression and 16% of the variance in jealous monitoring. Furthermore, while the coercive control factor fit well in the victimization model, it completely dropped out of the perpetration model due to problematic psychometric properties of the items. Thus, the perpetration model was heavily determined by physical and psychological aggression. Jealous monitoring and sexual aggression loaded only modestly and do not seem to be central contributors to the construct of women's aggression.

How do we interpret the low loadings of sexual aggression and jealous monitoring in the perpetration model? Low endorsement of some of the perpetration items may account for some of these findings, particularly for sexual coercion behaviors. However, low endorsement is not the entire explanation, as well over half of the women endorsed the jealous monitoring items. Rather, these behaviors appear to have only a limited role in women's aggression toward their partners. The perpetration model also had lower reliabilities on all factors compared to the victimization model, consistent with other studies that have found women's victimization to be more reliable than women's perpetration (Duggan et al., 1999, cited in Straus et al., 2003; Lucente et al., 2001; Ro & Lawrence, 2007; Russell & Oswald, 2001).

In sum, the scales used in the study appear to adequately measure the victimization construct. Their assessment of psychological and physical perpetration is also adequate. However, their measurement of the perpetration of sexual aggression, coercive control, and jealous monitoring is problematic. The findings suggest that women's physically and psychologically aggressive behaviors are driven by an underlying construct of aggression, but their sexual aggression, coercive control, and jealous monitoring behaviors are largely unrelated to this construct.

These findings make sense when one applies a gendered analysis to the theory that IPV is driven by the root cause of exerting power and control over one's partner (Pence & Paymar, 1993). This theory may be an accurate portrayal of women's experiences of victimization from male partners, at least in *intimate terrorism* relationships (Johnson, 2006). However, it may not accurately depict women's aggression against male partners in most cases. In fact, studies suggest that women are typically not the perpetrators of intimate terrorism (Johnson, 2006), and even when women are intimate terrorists, one study found that they are not as violent or controlling as male intimate terrorists (Graham-Kevan & Archer, 2008). Perhaps in most cases, the root cause of women's aggression is not the need to exert power and control over partners, but instead, the need to exert control in a particular *situation*. This type of IPV has been labeled *situational couple violence* (Johnson, 2006) and has been found to be more common than intimate terrorism and to occur at roughly equal rates among women and men (Johnson, 2006). Women may also be more likely to commit IPV to fend off the domination of a partner who is trying to control them. This type of IPV has been characterized as *violent resistance* and has been found to be almost exclusively a female form of violence (Graham-Kevan & Archer, 2008; Johnson, 2006). Perhaps a situational couple violence/violent resistance model, with items suited to assessing those constructs, would perform better in assessing women's aggression.

If the root cause of women's aggression is *not*, generally speaking, the need to exert power and control over partners, this might explain why the coercive control items dropped out of the perpetration model and why jealous monitoring and sexual aggression had low factor loadings. Coercive control, jealous monitoring, and sexual aggression have been found to be key tools used by intimate terrorists to maintain power and dominance over partners (Johnson, 2006; Pence & Paymar, 1993).

Another aspect of the social construction of gender as it affects aggression is that men usually have more power to directly assert dominance and control in relationships than

women, who typically are of lower status (Ridgeway & Smith-Lovin, 1999). Aggression committed by low-status people is often *indirect* (White, Smith, Koss, & Figueredo, 2000). A curriculum developed for women who have been court-mandated to receive treatment for their domestically violent behavior illustrates the gendered nature of aggression in a discussion of the contrast between “his violence” and “her violence” and portrays the often indirect nature of women’s aggression: “He uses his physical power, she uses her verbal power; he pounds on the table, she refuses to talk or answer; he keeps her from working, she takes money from his wallet; he controls her spending, she runs up his credit cards; he quizzes the kids about her, she denies visitation; he cheats sexually, she withholds sex” (Koonin & Cabarcas, 2000, p. 6). The indirect forms of aggression that women are described as using in this example are largely absent from measures of IPV. However, indirect aggression is a fruitful future direction in developing measures that assess relationship aggression (e.g., see Linder, Crick, & Collins, 2002).

It is important to keep in mind that two of the measures used in the study, the S-PMWI (Tolman, 1999) and the SES (Koss et al., 1987), were not designed to assess women’s perpetration. Furthermore, the three measures were developed by three different researchers and were not designed to be factor analyzed together. However, given that no comprehensive measure of intimate partner aggression that fully captures all elements of aggression exists, we reasoned that these three widely used measures would be a valid place to start. Note also that Koss et al. (2007) have argued against using Cronbach’s alpha to assess internal consistency for the SES. However, we chose to use Cronbach’s alpha in this study for all subscales, reasoning that it did not make sense to report alpha reliability for other subscales but not the SES. Interestingly, Cronbach’s alphas for the SES victimization and perpetration were very high in this study (.93 for sexual perpetration and .95 for sexual victimization). Perhaps given the very high rates of violence in this particular sample, the assumption of Cronbach’s alpha—that is, that items on a measure are interrelated such that if one has endorsed one SES item, one is more likely to endorse others—holds true for this sample. This assumption may not hold for other samples with lower rates of violence.

This study has its limitations and is offered as a first step upon which future research examining women’s aggression can build. A limitation of the victimization and perpetration models is that they were developed and tested on the same sample. The models may not fit when tested with a different sample. Findings from this particular sample, women who had used physical aggression against male partners in heterosexual relationships, may not generalize to other populations. In particular, IPV in lesbian relationships may show different patterns. Another limitation is that data from interviews conducted in Spanish and English are combined; however, Connelly and colleagues (2005) found that the factor structure of the CTS2 differed between Latinas who spoke Spanish and those who spoke English. Clearly, the results of this study are preliminary; future studies need to be conducted with other samples to see whether the models replicate.

To further develop our understanding of women’s aggression against intimate partners, IPV researchers need instruments that adequately measure this construct. We conclude that the tools needed to comprehensively assess the full range of women’s aggressive behaviors do not yet exist. Understanding women’s aggression and violence against intimate partners

has become increasingly important because of domestic violence legislation and practice. Since mandatory arrest in cases of domestic violence became law in most communities, a sizable percentage of individuals charged with domestic violence are female (Hirschel, Buzawa, Pattavina, Faggiani, & Reuland, 2007). These women are often court-mandated to treatment programs designed for male offenders, based on a male model of IPV (Malloy, McCloskey, Grigsby, & Gardner, 2003). To advance theoretical understandings of IPV, we must apply a gendered context to understanding women's aggression. A better understanding of both men's and women's aggression will allow the field to develop effective strategies for the prevention and treatment of IPV. The development of a comprehensive measure of women's aggression is needed to advance these goals.

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Bios

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