

Intimate Partner Violence Perpetrated by Women within the Context of Victimization History

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Abstract:

Using a longitudinal design, the current study explored intimate partner violence perpetration among 1,300 college women within the context of one's history of physical and sexual victimization across 4 years of college. Structural equation modeling indicated that sexual victimization does not predict concurrent use of women's intimate partner violence but does predict subsequent use of women's intimate partner violence during the later years of college. In contrast, physical victimization is associated positively with concurrent use of women's intimate partner violence but is negatively associated with subsequent use of women's intimate partner violence for women. Furthermore, the negative relationship of victimization to subsequent perpetration primarily is due to those with high levels of victimization histories. The present study provides the first model of intimate partner violence within the context of victimization history using longitudinal data. The findings indicate that women's intimate partner violence perpetration is not context-free, but rather is influenced by their own physical and sexual victimization histories.

Keywords: intimate partner violence | IPV | victimization | violence perpetration

Article:

Intimate partner violence has been studied extensively over the last several decades, with the majority of research indicating that both women and men inflict and sustain both verbal and physical violence within intimate relationships (Magdol, Moffitt, Caspi, Newman, & Fagan, 1997; Riggs & O'Leary, 1989, 1996; White & Koss, 1991; White, Merrill, & Koss, 2001). Archer's (2000) recent meta-analysis using the Conflict Tactics Scale (CTS; Straus, 1979) suggested a greater prevalence of physical violence perpetration by women within intimate relationships compared to violence perpetration by men. However, what remain unclear are the developmental correlates of women's intimate partner violence perpetration. Several researchers have argued for the importance of examining women's intimate partner violence perpetration within the context of their own victimization history (Saunders, 2002; Swan & Snow, 2002).

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Thus, the current study explores intimate partner violence perpetration by college women within the context of their own physical and sexual victimization histories using longitudinal data to examine both concurrent and subsequent relationships across 4 years of college.

Intimate partner violence is defined in the current study as those acts of physical aggression occurring between unmarried adolescents and young adults in romantic relationships. Previous research estimates that past-year prevalence rates for intimate partner violence average around 51% when all forms of violence are included (i.e., verbal threats) and 23% for serious violence (i.e., punching, kicking, biting; Fagot & Browne, 1994). It is important to note that aggressive behavior during childhood and adolescence has been identified as a strong predictor of later aggression and violence (Coie, Dodge, & Kupersmidt, 1990; Dahlberg, 1998; White & Koss, 1991). In fact, the early onset of violent tendencies is associated with more serious and chronic violence not only during adolescence but throughout adulthood (Dishion, French, & Patterson, 1995).

In addition to early aggressive behavior, research has indicated that important predictors of women's intimate partner violence perpetration include both physical victimization (Capaldi, Shortt, & Crosby, 2003; White & Widom, 2003) and sexual victimization (Davis & Petretic-Jackson, 2000; DiLillo, Giuffre, & Tremblay, 2001). In terms of physical victimization, several theoretical explanations support the possibility that past physical victimization influences future perpetration of violence. For example, from a social learning perspective, witnessing or experiencing physical violence during childhood or adolescence provides the context for learning how to resolve interpersonal conflict. That is, women who are physically victimized learn that it is acceptable to solve problems through aggressive acts. Based on past research (Commission for the Prevention of Youth Violence, 2000; Dodge, Pettit, Bates, & Valente, 1995; Earls, 1994; Simkins & Katz, 2002; White & Widom, 2003), it is very likely that this pattern of behavior permeates intimate partner relationships as well. For example, White and Widom (2003) reported that, for both men and women, a history of physical abuse prior to the age of 12 significantly increased the likelihood of intimate partner violence in young adulthood. Furthermore, Connor (2002) reported that the prevalence of a history of physical abuse is significantly higher among violent women (42%-62%) than among either violent men (approximately 22.5%) or nonviolent women (approximately 6%), suggesting that physical abuse might be a more salient risk factor for women than for men. Some researchers have posited that women who are physically victimized are not able to develop emotionally, resulting in psychological difficulties that prevent them from developing appropriate coping strategies in response to stressors (Widom, 2000). As a result, many women turn to more antisocial behavior such as alcohol abuse, which also has been identified as a possible mediator of the link between past victimization and perpetration of intimate partner violence (Widom, Ireland, & Glynn, 1995).

There are several reasons why sexual victimization might be linked to women's intimate partner violence perpetration. Some researchers have employed an interpersonal schema theory (e.g., Briere, 1992; Cloitre, 1998; Finkelhor & Browne, 1985), suggesting that the experience of being sexually victimized poses pervasive problems for adult interpersonal functioning, including difficulty with communication and problem-solving ability. As explained by Briere (1992), because being sexually victimized involves an intimate interpersonal violation, it follows

that interpersonal functioning in intimate relationships may be affected. This theoretical perspective has been empirically supported in several studies. For example, Davis and Petretic-Jackson (2000) reported that childhood sexual victimization was linked strongly and positively with women's intimate partner violence perpetration. DiLillo and colleagues (2001) indicated that there is a greater proportion of relationships that involve at least one incident of aggression within the intimate partner relationship when the woman has a history of childhood sexual abuse. Furthermore, women tend to experience sexual abuse at younger ages and for longer periods of time compared to men, which may elevate the negative psychological impact of the experience (Simkins & Katz, 2002).

Several studies also have demonstrated that past victimization predicts future victimization (Cloitre, Scarvalone, & Difede, 1997; Hines & Saudino, 2003; Messman & Long, 1996). Women who have been sexually victimized as a child or adolescent have an increased risk for being both sexually re-victimized (e.g., Cloitre et al., 1997) and physically victimized (e.g., Briere & Runtz, 1987; Messman & Long, 1996) during adulthood. Within more immediate relationships, Hines and Saudino (2003) found that being concurrently sexually victimized predicted being concurrently physically victimized. Thus, being both previously and concurrently sexually victimized predicted an increased likelihood of being both sexually and physically victimized.

It also is clear that victimization and perpetration often co-occur (Malik, Sorenson, & Anesheusel, 1997), although we do not fully understand these interactive processes. Within concurrent intimate relationships, the best predictor of being violent toward an intimate partner is having a violent partner (Malik et al., 1997; White et al., 2001). Consistent with a social learning perspective, Magdol and colleagues (1997) reported that 41% of women who were perpetrators of intimate partner violence also were victims of intimate partner violence, with victimized women being 10 times more likely to be perpetrators than their nonvictimized counterparts. However, if a woman is sexually victimized, it is less likely that she will reciprocate that same type of victimization. Instead, it is more likely that she will "fight back" using physical violence in response to being sexually victimized. This pattern of responding has found some support (DiLillo et al., 2001), although replication is needed to have more confidence in these links. The possibility is promising, however, that both types of victimization (physical and sexual) have an independent and unique link to women's intimate partner violence perpetration.

To summarize, we know that past victimization increases the risk of future victimization (Cloitre et al., 1997; Hines & Saudino, 2003; Messman & Long, 1996). Additionally, we know that both concurrent and subsequent victimization predicts women's intimate partner violence perpetration (DiLillo et al., 2001; Magdol et al., 1997; Malik et al., 1997; White et al., 2001). The present study expands upon this knowledge base by examining both sexual and physical victimization histories simultaneously to predict both concurrent and subsequent intimate partner violence perpetration by women. Specifically, this study uses a longitudinal design and structural equation modeling (SEM) to examine the relationships among prior physical and sexual victimization during childhood and adolescence, the experience of both physical and sexual victimization during both the current and prior year, frequencies of women's intimate partner violence perpetration, and stability of women's intimate partner violence perpetration across time. Because schemas for relationship functioning are constructed during early adolescent and college dating experiences, and because college women are at particularly high risk for intimate partner

violence (Humphrey & Kahn, 2000), the current study explores intimate partner violence perpetration among college women.

Although theoretically rich discussions of women's intimate partner violence perpetration within the context of their own victimization histories are relatively rare in the literature, sound theory should act as the foundation of any SEM (McDonald & Ho, 2002). Based on the existing literature, the hypothesized relationships between the relevant measures are shown in Figure 1. Consistent with numerous studies (Davis & Petretic-Jackson, 2000; DiLillo et al., 2001; Capaldi et al., 2003; White & Widom, 2003), the model posits that childhood physical victimization and childhood sexual victimization would predict an increase in women's intimate partner violence perpetration during adolescence (hypothesis 1), and that women's past intimate partner violence perpetration would predict future intimate partner violence perpetration (hypothesis 2). It is also hypothesized that both sexual and physical victimization would be positively linked to subsequent intimate partner violence perpetration beyond adolescence at each time point throughout the college years (hypothesis 3). The model also recognizes the reciprocal nature of intimate partner violence (White et al., 2001; White & Koss, 1991) by including direct paths between both physical and sexual victimization in each year of the study and concurrent perpetration of women's intimate partner violence (hypothesis 4). Finally, given its stronger similarity, it is hypothesized that physical victimization would be a stronger positive predictor of women's intimate partner violence perpetration than would sexual victimization, but that even after controlling for physical victimization, sexual victimization would remain a significant predictor (hypothesis 5).

METHOD

Participants

Participants were 1,580 undergraduate women age 18–19 drawn from two incoming freshman classes attending a medium sized university in a semi-urban setting in the Southeastern United States. Only women who had graduated from high school the spring prior to their freshman year were included in the study. Thus, the sample consisted of “traditional” students only. Participants completed all surveys as part of a larger 5-year longitudinal project (White & Humphrey, 1997). The data are available to the public online at www.icpsr.umich.edu. To eliminate the possible confound of sexual orientation, we took a conservative approach by including in the analyses only those participants who identified their sexual orientation as heterosexual (in contrast to bisexual, lesbian, or not sure) at each of the five waves of the study. Thus, the final sample size was 1,300 (the specific sample sizes across time are provided in Table 1).¹ Successive retention rates for each follow-up were approximately 89%, 86%, 80%, and 78% (47.9% of the original sample participated in the entire project; this number is only slightly lower than the percentage of students who remained in the university during a 5-year period, 55%).² The majority of

¹The SEM was run on both the full sample ($N = 1,540$) and the smaller sample of those who identified as being heterosexual across each of the 5 years of the study ($N = 1,300$). The directions of the relationships in the model were the same although the magnitude of the relations differed in some cases.

² Although those who dropped out of college were not followed, a series of univariate ANOVAs and chi-square analyses indicated no significant differences in any of the victimization or perpetration variables at any of the years between participants who remained in the study for all 5 years and those who dropped out across various assessment periods (e.g., all participants compared to those who dropped out at Year 1, all participants compared to those who

respondents were Caucasian (75.1%, $n = 957$). The remainder of the sample consisted of African American (21.5%, $n = 274$), Native American (0.9%, $n = 11$), Hispanic (1.2%, $n = 15$), and Asian (1.4%, $n = 18$) women; 2.0% ($n = 25$) did not indicate their race.

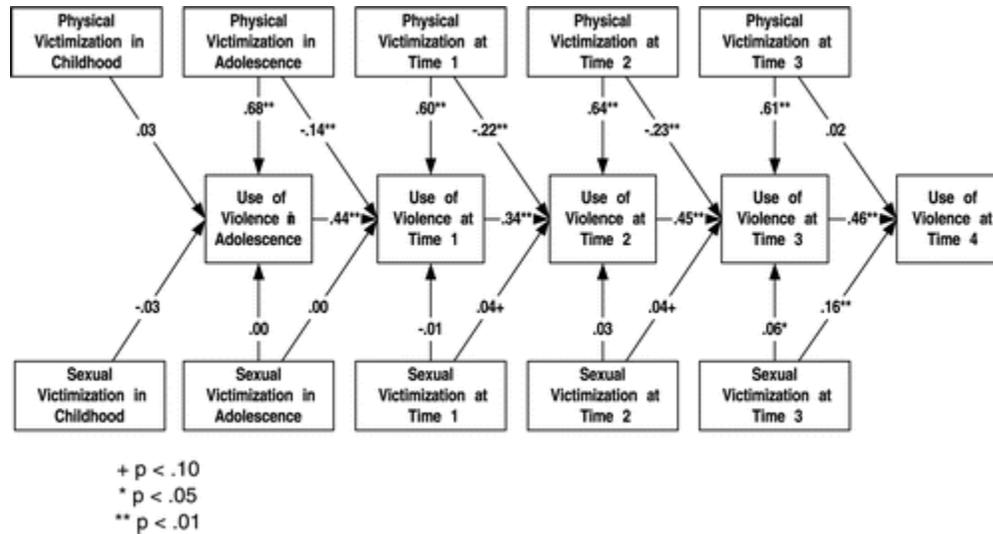


Figure 1. Hypothesized model including standardized path coefficients and estimates of significance.

Table 1. Mean Scores, Standard Deviations, and Percentages for Experiences of Being Victimized and Use of Violence in Each Year

Variable	Adolescence	Year 1	Year 2	Year 3	Year 4
Physically victimized					
<i>M</i>	4.25	1.89	2.01	1.16	1.44
<i>SD</i>	9.13	5.41	6.37	3.89	4.54
Percentage physically victimized	49.6	31.4	30.1	26.4	22.1
Sexually victimized					
<i>M</i>	1.28	1.13	.95	1.12	1.15
<i>SD</i>	3.27	3.71	3.25	3.77	4.07
Percentage sexually victimized	28.4	18.92	14.7	15.9	15.3
Use of violence					
<i>M</i>	4.22	2.47	2.22	1.60	1.60
<i>SD</i>	9.10	6.70	5.85	4.87	4.90
Percentage who used violence	51.4	35.4	34.9	31.6	25.5

Note. *N*: Adolescence, 1,281–1,299; Year 1, 1,137–1,151; Year 2, 954–968; Year 3, 743–787; Year 4, 600–615.

Procedures

Participants gave informed consent to be in the study and completed the study questionnaires in a group testing situation. Data collection began during the first week of the first semester of the women's freshman year at student orientation and was followed by further data collection at the end of their freshman, sophomore, junior, and senior years. At Year 1, 84% of the entering class of college women completed the survey. All surveys were administered by trained graduate and undergraduate students. To help track participants at follow-up, contact information for a person

dropped out at Year 2, etc.). Thus, the patterns of missing data are not systematic and eliminate the problem of differential attrition.

who would know their whereabouts during subsequent years of the study was obtained. To permit matching across time and to ensure confidentiality, contact information sheets and surveys were given random numbers and kept in a locked safe, accessible only to co-investigators and the data manager. A Certificate of Confidentiality was obtained from the National Institute of Mental Health to further ensure confidentiality of the data. Participants were given \$15 upon completion of each follow-up.

Measures

The first survey, administered at the beginning of participants' freshman year of college, assessed variables from childhood and adolescence as well as basic demographic information. Childhood referred to experiences prior to the age of 14. Adolescence referred to the age of 14 up to the point of the first survey administration. Subsequent administrations asked participants about the previous year's experiences in college only. Measures relevant to the present study asked about violence in the family of origin, number of dating and sexual partners in adolescence and during each year in college, sexual victimization experiences in adolescence and during each year in college, and experiences as both victim and perpetrator of intimate partner violence during adolescence and during each year in college. To obtain general information on the number of dating and sexual partners among the participants upon entry to the study, women were asked, "How many different males did you date during high school?" and "How many different males did you have sexual intercourse with during high school?" Similar questions were asked at each follow-up year regarding the number of dating and sexual partners during the past year.

Childhood physical abuse. Childhood physical abuse was assessed with two items (the same items were used by Koss, Gidycz, and Wisniewski [1987] to assess childhood experiences). One item measured witnessing domestic violence between parental figures before the age of 14 and the other item measured experiencing parental physical punishment before the age of 14. Both witnessing domestic violence and experiencing parental physical punishment were assessed during an average month in childhood because research suggests it is the cumulative effects that produce the most negative outcomes, rather than a single occurrence, or even a few occurrences, throughout childhood (Repetti, Taylor, & Seeman, 2001; Turner & Finkelhor, 1996). Witnessing domestic violence was measured by having participants indicate how often during an average month in childhood their parents delivered physical blows to one another. Physical blows were defined by acts such as hitting, kicking, and throwing someone down. Experiencing parental physical violence was measured by asking participants how often in an average month in childhood their parents used physical blows against them. Responses for both witnessing domestic violence and experiencing parental physical violence were given on the following 5-point Likert scale: 1 = never, 2 = one to five times, 3 = 6 to 10 times, 4 = 11 to 20 times, and 5 = over 20 times. Responses to the scale were recoded to a continuous scale to more accurately reflect the frequency of witnessing and experiencing parental violence. The recoded continuous scores were as follows: 1 = never, 2 = three times, 3 = eight times, 4 = 16 times, and 5 = 21 times. Frequency of witnessing domestic violence and experiencing parental physical violence were summed to create a childhood physical abuse score ($\alpha = .46$). Although the Cronbach's alpha is relatively low, this scale contains only two items, and low alphas are not uncommon among small item scales (Cronbach, 1951). The mean for childhood physical abuse was 1.80 ($SD = 4.32$).

Childhood sexual abuse. Childhood sexual abuse was measured with four items (the same items were used by Koss et al., [1987] to assess childhood sexual abuse). Participants were asked to indicate how often as children (a) someone exposed their sex organs to them or asked the participants to expose theirs; (b) another person fondled or touched them in a sexual way or asked the participants to fondle or touch them; (c) a male attempted sexual intercourse, but penetration did not occur; and (d) a male had intercourse with them. To assess the frequency of childhood sexual abuse experiences, responses were given on the following 5-point Likert scale: 1 = never, 2 = one time, 3 = two times, 4 = three to five times, and 5 = more than five times. Responses were then recoded to continuous scores to more accurately indicate the number of times these experiences occurred as follows: 1 = never, 2 = one time, 3 = two times, 4 = four times, and 5 = six times. Respondents also were asked who committed that act and whether coercion was used. An experience was labeled as childhood sexual abuse if the perpetrator was an adult, regardless of whether coercion was used. For a sexual encounter with a person about the same age or a similarly aged other (in contrast to an older person), the perpetrator had to use a coercive strategy. The reliability coefficient for the childhood sexual abuse scale was $\alpha = .77$. The mean for childhood sexual abuse was 1.93 ($SD = 3.85$).

Sexual Victimization. The Sexual Experience Survey (Koss et al., 1987) was used to assess sexual victimization that occurred beyond childhood. Respondents were asked the number of times 11 coercive sexual behaviors had been perpetrated against them. Sexually coercive behaviors included unwanted contact (i.e., forced fondling, kissing, but no attempted intercourse); verbal coercion (verbally pressured intercourse, excluding the threat of force); attempted rape (using force or threat of force, but intercourse did not occur); or rape (completed intercourse or oral or anal sex using force or threat of force). Responses were given on the following 5-point Likert scale: 1 = never, 2 = one time, 3 = two times, 4 = three to five times, and 5 = more than five times. The responses were recoded to continuous scores to more accurately reflect the frequency of occurrence as follows: 1 = never, 2 = one time, 3 = two times, 4 = four times, and 5 = eight times. See White, Donat, and Humphrey (1996) for the reliability of this scoring method. Frequencies for each behavior were summed to get a total score for each year. During the first survey administration, participants were asked about sexual victimization since the age of 14 to get a total for adolescent sexual abuse. On subsequent administrations, participants were asked to report how many times each sexually coercive behavior had been perpetrated against them over the past year to get sums for sexual abuse in the first, second, third, and fourth years of college.

Physical Victimization. Physical victimization by an intimate partner was assessed using a modified version of the CTS (Straus, 1979). Using the six items that pertain to physical violence, participants responded to the number of times their partner: hit them or attempted to hit them; hit them with something hard; pushed, grabbed, or shoved them; threatened to hit or throw something at them; threw something at them; and threw something but not at them. Responses were reported on the following 5-point Likert scale: 1 = never, 2 = one time, 3 = two to five times, 4 = 6 to 10 times, and 5 = more than 10 times. The CTS was recoded to a frequency scale. However, the frequency distribution was very skewed (values ranged from 4 to 7) with a large variance; therefore, in accord with the original guidelines for the measure, we retained categorical scores for analyses (Straus, 1979). Responses were summed for the six items to get a

total index score for physical victimization in each year under investigation. It should be noted that the scores for physical victimization reported in Table 1 are means and standard deviations for recoded continuous scores which more accurately reflect the frequency of physical victimization experiences. The first survey administration asked respondents about adolescent physical abuse since the age of 14. Survey administrations at the end of each subsequent year of college asked respondents about physical victimization in the previous year of college only. Reliability coefficients for the CTS were $\alpha = .85$ for adolescence, $\alpha = .83$ for Year 1, $\alpha = .86$ for Year 2, $\alpha = .90$ for Year 3, and $\alpha = .81$ for Year 4.

Physical violence. Similarly, the modified 6-item version of the CTS was used to measure participants' use of violence against an intimate partner and asked participants to indicate the number of times they: hit or tried to hit their partner; hit their partner with something hard; pushed, grabbed, or shoved their partner; threatened to hit or throw something at their partner; threw something but not at their partner; and threw something at their partner. Responses were given on the following 5-point Likert scale: 1 = never, 2 = one time, 3 = two to five times, 4 = 6 to 10 times, and 5 = more than 10 times. Responses were recoded to a continuous score to more accurately reflect the frequency with which participants engaged in each behavior as follows: 1 = never, 2 = one time, 3 = five times, 4 = nine times, and 5 = 12 times. Responses were summed for the six items to get an index score for use of physical violence for each year under investigation. Again, the first survey administration asked participants about their use of violence in adolescence since the age of 14. Subsequent survey administrations asked respondents about their use of violence in the previous year of college only. Reliability coefficients were $\alpha = .87$ for adolescence, $\alpha = .87$ for Year 1, $\alpha = .86$ for Year 2, $\alpha = .88$ for Year 3, and $\alpha = .84$ for Year 4.

RESULTS

Descriptive Statistics and Preliminary Analyses

Of the total sample, 99.3% ($n = 1,291$) provided data about their childhood abuse history. Of those, 44.2% ($n = 576$) experienced no childhood abuse of any kind, 13.6% ($n = 177$) experienced childhood physical abuse only, 25.8% ($n = 335$) experienced childhood sexual abuse only, and 15.6% ($n = 203$) experienced both childhood physical abuse and childhood sexual abuse. Participants averaged 5.86 different dating partners and 2.67 different sexual partners during adolescence. During each year of college, women averaged approximately three different dating partners and two different sexual partners. Note that dating partners and sexual partners were not necessarily the same people. Furthermore, 98% of women reported dating at least one person during every year of the study.

The percentages of women experiencing physical and sexual victimization in each year are presented in Table 1 as well as the percentage of women who reported using intimate partner violence in each year of the study. The mean frequencies of physical and sexual victimization, as well as physical aggression, also are reported. Smith, White, and Holland (2003) have previously reported on physical and sexual victimization within this sample. During adolescence, 10.8% of the sample experienced both physical and sexual victimization. Comparable figures for the 4 years of college are 25.5%, 6.6%, 4.9%, and 3.3%, respectively. Smith and colleagues also reported that by the end of the fourth year of college, over 80% of participants had experienced

physical victimization at least once, and most had experienced sexual victimization at least once. Also, by the end of the fourth year of college, 88% of the sample had experienced at least one incident of physical or sexual victimization and 63.5% experienced both physical and sexual victimization; only 12% of the sample reported having never been physically or sexually victimized over the 5-year study. Furthermore, across time, the relative risk of being re-victimized increased, indicating that by the fourth year of college, most victims had had a prior victimization experience.

Zero-order correlations for all hypothesized relationships were examined. Childhood physical abuse (but not childhood sexual abuse) was related to adolescent intimate partner violence ($r = .11, p < .001$). Across the 4 years of college, sexual and physical victimization in one year were significantly correlated with intimate partner violence perpetration the following year (r ranged from .15 to .40, $p < .001$). Additionally, physical aggression in one year consistently correlated with intimate partner violence perpetration in the following year (r ranged from .39 to .59, $p < .001$). Also, within each year, both physical and sexual victimization were consistently significantly correlated with intimate partner violence, with the correlations between physical victimization and intimate partner violence (r ranged from .67 to .72, $p < .001$) being significantly higher than the correlations between sexual victimization and intimate partner violence (r ranged from .18 to .33, $p < .001$), based on Hotelling's method for comparing nonindependent correlations (Howell, 1982).

Hypothesis Testing

To test the current hypotheses, a SEM was fit to the data ($N = 1,300$) to examine the hypothesized relationships among physical and sexual victimization and intimate partner violence perpetration as shown in Figure 1. Data were analyzed using LISREL 8.54 (Joreskog & Sorbom, 2002), and the goodness-of-fit index (GFI), comparative fit index (CFI), and normed fit index (NFI), and root mean square error of approximation (RMSEA) are reported as representative and commonly used measures of model fit. Because the GFI, in particular, can be strongly influenced by sample size, it is imperative to use multiple fit indices. For example, the CFI is an incremental fit index that is less affected by sample size. As a rule, values in the .90s on these indicators represent good fit to the data (Kline, 1998) and represent the proportion in the improvement of the overall fit of the model relative to the null model. Thus, a value of CFI = .90 indicates that the relative overall fit of the model is 90% better than that of the null model estimated with the same sample data. The NFI indicates the percentage improvement in fit over the baseline independence model, with values exceeding 0.90 indicating a good fit. Thus, an NFI of .90 means that the model is a 90% better fit than the null model (Kelloway, 1998). The RMSEA index also takes into account model complexity. A major advantage of the RMSEA index is that it is relatively independent of sample size, and is a function of the discrepancy between the observed co-variances in the data and the corresponding covariances predicted by the model. As the discrepancy increases, so does the value of RMSEA. RMSEA values of less than .10 are generally thought to indicate that the model is a reasonable approximation of the data (Kline, 1998; Steiger, 1990).

The “impute missing values” (i.e., multiple imputation) function available in LISREL 8.54 was used to estimate substitute values in the limited number of cases where missing data were

present. Multiple imputation approaches use patterns of similarity between cases that include missing values and those with nonmissing data to estimate values for specific missing data points prior to conducting SEM analyses. An extensive literature indicates that traditional strategies for dealing with missing data such as pairwise or list-wise deletion result in unnecessary data loss (Marcoulides & Moustaki, 2002), and may generate biased parameter estimates when the patterns of missing data are systematic (McDonald & Ho, 2002). In contrast, multiple imputation (sometimes referred to as “pattern matching”) replaces only those variables with missing observations with estimated scores from individuals with similar profiles of scores across other variables to impute only those individual variables that are missing (rather than the whole case). In contrast to list-wise deletion (which requires data to be missing completely at random), multiple imputation assumes data to be missing at random and is the recommended method of handling missing data in SEM (Kline, 1998). In the present SEM, the pattern of missing data was approximately 19.48%, a percentage deemed acceptable based on previous research by Arbuckle (1996) and McArdle (1994) (as cited in Kline, 1998).

The relatively large sample size included in the present study ($N = 1,300$) precludes the use of the chi-square as a measure of overall model fit. Nonetheless, other fit indices demonstrated that the hypothesized model was consistent with the data (GFI = .96, CFI = .96, NFI = .96, RMSEA = .06). Thus, the current model has a 96% better fit to the data than the null model. With respect to the parameter estimates for individual paths, the standardized coefficients and significance levels are included in Figure 1. It is important to note that the current model does not include the possible autoregressive effects of being victimized (either physically or sexually) over time because the focus of the current study is not on the causes of abuse, but on the predictive ability of past abuse toward women's intimate partner violence perpetration (Kline, 2005). See Humphrey and White (2000) and Smith and colleagues (2003) for a description of patterns of being re-victimized across time.

The first hypothesis was disconfirmed as neither childhood physical abuse nor childhood sexual abuse were linked with increased women's intimate partner violence perpetration during adolescence despite the significant zero-order correlations reported above. This finding suggests that when adolescent victimization is controlled for, the effect of childhood victimization is eliminated. In contrast, the second hypothesis, that women's past perpetration of intimate partner violence would predict future perpetration of women's intimate partner violence, was strongly supported (weights ranged from .34 to .46, $p < .001$), indicating stability in the perpetration of intimate partner violence over time. In partial support of the third hypothesis, that past victimization would predict future perpetration, we found a positive relationship between sexual victimization in each of the first 3 years of college and women's intimate partner violence perpetration in each subsequent year. However, the nature of the relationship between past physical victimization and subsequent intimate partner violence perpetration (from adolescence to Year 1, Year 1 to Year 2, Year 2 to Year 3) was negative, rather than the predicted positive relationship. There was no relationship for Year 3 to Year 4. The fourth hypothesis, that there would be significant concurrent relationships among women's intimate partner violence perpetration and physical and sexual victimization, was supported at each point in time for physical victimization only; sexual victimization and women's intimate partner violence perpetration were significantly related only in Year 3. The fifth hypothesis, that physical victimization would be a stronger predictor of women's concurrent intimate partner violence

perpetration than sexual victimization, was supported (weights ranged from .60 to .68, $p < .001$). This hypothesis was also supported by the pattern of correlations reported above. Furthermore, physical victimization was more strongly related to subsequent women's intimate partner violence perpetration (although in the opposite direction from what was predicted as described above; significant weights ranged from -.14 to -.23, $p < .01$) than was sexual victimization (significant weights ranged from .04 to .16, $p < .05$).

Additional analyses were conducted to more fully explore the unexpected negative relationships between physical victimization and women's subsequent intimate partner violence perpetration. For each year of data collection, women were categorized into one of three groups according to their level of victimization. For physical victimization, the groups were none (zero experiences), low level (one or two experiences), and high level (three or more experiences); for sexual victimization, the groups were none (zero experiences), low level (one experience), and high level (two or more experiences). Four mixed $3 \times 3 \times 2$ analyses of variance (ANOVA) examined the use of intimate partner violence using these two categorical variables (sexual and physical victimization), each with three levels of the between-subject variable, and time as the within-subject variable (with the two levels being current year and next year). The first analysis examined changes in the frequency of women's intimate partner violence perpetration from adolescence to the first year in college as a function of level of sexual and physical victimization in the previous year. The second analysis similarly examined changes from Year 1 to Year 2; the third analysis, Year 2 to Year 3; and the fourth analysis, Year 3 to Year 4. In each analysis, levels of sexual and physical victimization in the previous year were the between-subjects variables. Given the large number of comparisons resulting from these analyses, and the large sample size, the alpha was set at .01.

Consistent across all analyses, women with high levels of physical and sexual victimization reported more intimate partner violence perpetration the next year than did women with low levels or no victimization. Women with low levels of victimization reported more intimate partner violence perpetration than women with no victimization, though not always significantly more. Across all analyses, the physical victimization by time interaction was significant ($p < .001$; except for Year 2 to Year 3, $p = .07$). The Games-Howell procedure for post hoc analyses indicated that in each case, women who experienced a low level of physical victimization did not show any significant change in their perpetration of intimate partner violence from year to year. In contrast, women who experienced high levels of physical victimization consistently lowered their frequency of intimate partner violence perpetration from one year to the next. In the analysis of change from Year 1 to Year 2, there was a three-way interaction: experiences of physical victimization by experiences of sexual victimization by time, $p = .005$. In this analysis, women with a high level of physical victimization, but not sexual victimization, reduced their level of intimate partner violence perpetration less than did women with a low or high level of sexual victimization.

DISCUSSION

The objective of the present study was to extend research on women's intimate partner violence perpetration. Specifically, this study explored intimate partner violence perpetration by 1,300 college women within the context of physical and sexual victimization histories across 4 years of

college. To date, this study is the first to examine women's intimate partner violence perpetration within the context of their own victimization history using longitudinal data. Preliminary analyses indicated a decline in the frequency of both physical and sexual victimization as well as a decline in the frequency of women's intimate partner violence perpetration across their college years. Additionally, both concurrent and subsequent links between victimization and intimate partner violence perpetration differed depending upon the type of abuse (i.e., physical vs. sexual), emphasizing the need to examine women's violence within the context of both types of victimization.

Related to the first hypothesis, several researchers (e.g., Gwartney-Gibbs, Stockard, & Bohmer, 1987; Malone, Tyree, & O'Leary, 1989) have posited that, over time, the effects of violence in the family of origin decline and concurrent factors become more important when predicting the frequency of intimate partner violence. The current findings are consistent with a temporal ordering of influences on intimate partner violence, with concurrent physical victimization more strongly linked to women's intimate partner violence perpetration during the college years compared to physical victimization during the prior year. However, both childhood physical and sexual victimization were not linked directly to frequencies of women's intimate partner violence perpetration during adolescence, seemingly in contradiction of numerous studies documenting a positive relationship (Capaldi et al., 2003; DiLillo et al., 2001; White & Widom, 2003). However, the majority of these prior studies were cross-sectional and defined experiences of being victimized in childhood as any such experience that occurs prior to the age of 18. In the current study, we separated childhood (prior to 14 years) and adolescent (14 to 18 years) influences so that we could examine possible links between previous victimization at different time points throughout development and its influence on intimate violence perpetration during young adulthood. Previous research (Humphrey & White, 2000; Smith et al., 2003) using the same data has documented that when those time frames are separated, the relationship between childhood victimization and later perpetration of intimate partner violence is mediated by adolescent victimization experiences. Thus, there appear to be lingering influences of childhood victimization in which childhood victimization increases the risk for adolescent victimization (as shown by Smith et al., 2003), which in turn increases the risk for intimate partner violence perpetration.

Although strong support was found for the second hypothesis that women's intimate partner violence perpetration is stable over time, only partial support was found for the third and fourth hypotheses. Specifically, the findings indicated that although physical victimization was linked positively to concurrent intimate partner violence, physical victimization was linked negatively to subsequent intimate partner violence perpetration one year later. Explanations for this consistent pattern across the 4 years of college were not immediately clear, but follow-up analyses indicated that women who had higher levels (i.e., greater frequency) of physical victimization were more likely to reduce their perpetration of intimate partner violence across time. However, this pattern was not the case for women who had lower levels of physical victimization or no such experiences at all. These women showed no change in the frequency with which they used intimate partner violence across time. These different patterns may have something to do with the dynamics of the intimate relationship. For example, women who experience more frequent victimization may initially respond by "fighting back" within the intimate relationship. However, with repeated victimization, they learn that retaliation does not

stop the physical victimization by their intimate partner, and thus, decrease their own use of violence because it either did not serve the intended purpose of ending their own physical victimization or resulted in escalation. Alternatively, perhaps if an initial relationship was high in conflict and aggression, women may end that relationship and change partners with the intent of securing a safer relationship.³ In contrast, it is possible that women with no or infrequent victimization continue to aggress against their intimate partners because they perceive it as “safe” to do so. That is, women might perceive a low likelihood that their partner will be injured or that they will be punished for their behavior either by the intimate partner in the form of physical violence or from an outside source (i.e., police). This explanation has been termed the “rational choice” theory, in which women view partner violence as being more rational than men because of fewer perceived consequences (Becker, 1968; Cornish & Clarke, 1986). Although these alternative hypotheses cannot be tested with the current data, future research should test these possibilities.

Partial support was found for the fifth hypothesis that physical victimization would be a stronger predictor of women's intimate partner violence perpetration than would sexual victimization, but that even after controlling for physical victimization, sexual victimization would remain a significant predictor. Specifically, the findings indicated that although sexual victimization did not predict the frequency of concurrent use of women's intimate partner violence, sexual victimization was linked positively and consistently with the frequency of subsequent use of women's intimate partner violence, but only among the later college years. It is possible that a sexual victimization experience at one point in time may make women more wary of men in the future, perhaps lowering their threshold for perceiving a threat (i.e., creating hypervigilance) and thereby increasing the likelihood of engaging in physical aggression (Hammock, 1997). However, in the follow-up analyses (for Year 1 and Year 2), it was found that women with a high level of physical victimization, but no experiences of sexual victimization, reduced their level of intimate partner violence perpetration less than did women with a low or high level of sexual victimization. It is possible that this finding was a statistical fluke, but it may be an indication that women who are repeatedly victimized both physically and sexually develop different retaliatory strategies compared to women who experience only one type of abuse (either physical or sexual).

As expected, current intimate relationships explained more variance in perpetration toward one's partner than previous victimization, but only for physical victimization histories. Thus, additional support is provided for the argument that intimate partner violence is reciprocal (Gwartney-Gibbs et al., 1987; White et al., 2001). However, the present findings clearly indicate that a cycle of violence can only partially explain women's patterns of intimate partner violence across time

³ Although we have data on the number of dating and sexual partners across the five waves of data, they do not give insight into whether women changed relationships as a function of level of prior victimization. Importantly, a woman could change partners from one point in time to another without any increase in the number of subsequent partners. Examination of changes in the number of dating and sexual partners as a function of the prior year's level of being physically victimized yielded no consistent patterns across time. Overall, women with a higher level of physical victimization in one year consistently were more likely to have significantly more sexual partners in the subsequent year ($p < .001$); however, results were more variable for number of dating partners. Women with a higher level of physical victimization in one year tended to have more dating partners the next year (except for Year 3), but the differences between those with no or a low level of past physical victimization were not always statistically significant.

as evidenced by the stronger subsequent links between sexual victimization and intimate partner violence (rather than concurrent links). Understanding women's use of intimate partner violence must include acknowledging experiences with past and current physical and sexual victimization because both types of victimization histories uniquely predict women's intimate partner violence perpetration during the college years.

There are several strengths to this study, with the strongest being the longitudinal examination of intimate partner violence perpetration within the context of both physical and sexual victimization history. The sparse research base thus far has examined intimate partner violence only within the context of physical victimization, leaving the influence of sexual victimization on partner violence largely unexplored. Furthermore, the research that has been conducted examining both physical and sexual victimization to predict intimate partner violence has been conducted with a solely male sample (Dutton & Holtzworth, 1997). The differences found in the current study between the influences of physical versus sexual victimization as predictors of women's intimate partner violence perpetration demonstrate the need to examine different types of victimization to delineate comprehensively the factors associated with women's intimate partner violence. An additional strength of the present study is that it provides the first longitudinal model of women's intimate partner violence perpetration over 5 years. However, although several significant paths were identified, betas were of small magnitude, which suggests the need to find better measures of the variables and/or to identify other variables in the model. Other researchers are encouraged to test the model using additional measures in an effort to replicate and improve the model and to illuminate further the differences between physical versus sexual victimization in terms of their links with intimate partner violence across time.

One possible limitation to the present study is that it is unknown whether the victimization and intimate partner violence reported by participants occurred within the context of the same relationship or across multiple relationships during the college years. It is likely that women experience victimization and intimate partner violence across multiple relationships; developmental research posits that the college years are a time of dating and searching for a lifelong partner (Erikson, 1963), which is consistent with the pattern of dating found in the present study. It is argued that the influence of previous victimization on intimate partner violence perpetration is not specific to one particular relationship but to women's experiences within intimate relationships more generally. The dating pattern reported in the present study (approximately three dating partners and two sexual partners during each year of college) also increases the likelihood that intimate partner violence is not specific to one relationship. Furthermore, the negative relationships found between physical victimization and subsequent women's intimate partner violence perpetrations suggests that women in violent relationships are more likely to terminate their relationships, a pattern that has been supported in other research (Testa & Leonard, 2001). However, future research similar to Capaldi and colleagues (2003) might focus on examining the number of relationships women experience as well as victimization and perpetration patterns among couples that stay together versus new relationships. Additionally, there is a need to consider the nature of the partner's aggression type (physical or sexual) and the frequency with which victimization occurs.

An additional limitation to this study is the reliance on women's self-reports of victimization and perpetration. The current study utilized the CTS, a scale for which underreporting is not unusual

(Straus, 1979). Thus, the current estimates of intimate partner violence perpetrated by women might be conservative. Additionally, the CTS does not differentiate intimate partner violence that is exhibited as self-defense (reactive aggression) from intimate partner violence that is more planful (proactive aggression). Although the present study examines violence within intimate relationships, it is not known who initiated the violence or whether the violence occurred within one relationship or across multiple relationships. Thus, further research is needed to explore the motives for aggression, the sequencing of behaviors (i.e., who does what first, second, etc.), the severity of behaviors used, and contextual issues such as violence in one versus multiple relationships. Utilizing measures of violence other than the CTS might prove helpful to understanding violence within a particular context. Furthermore, although attrition analyses indicated no significant differences, the relatively low retention rate might have limited the strength of the findings. It is possible that those who dropped out might have done so for a systematic reason (such as victimization that might have been experienced between the last time we surveyed them and when they dropped out).

Despite the limitations, the information in the present study contributes to the literature on women's intimate partner violence perpetration in that it is the first study to examine the frequency of intimate partner violence within the context of both physical and sexual victimization histories across time. A developmental model was proposed that delineates the impact of physical and sexual victimization at different developmental time periods on women's intimate partner violence perpetration. Future research is encouraged that expands, replicates, and improves on the current model to advance the conceptual knowledge base for examining women's intimate partner violence perpetration within the context of victimization history. For example, variables that research has indicated are linked to violence more generally, such as depression (i.e., Crick, Geiger, & Zimmer-Gembeck, 2003), locus of control (i.e., Clements, Sabourin, & Spiby, 2004), posttraumatic stress disorder (Simkins & Katz, 2002), or rejection sensitivity (i.e., Purdie & Downey, 2000), might be candidates for possible mediators of the links between past victimization and women's intimate partner violence. Capaldi and colleagues (2003) also reported that social support, level of education, and unemployment play an important role in predicting women's intimate partner violence. Clearly, women's intimate partner violence perpetration is not context-free, but rather is influenced by women's victimization histories. Examination of mediators, which might alter the context of the relationship, should be the next focus of research on intimate partner violence. At the same time, it is imperative that both sexual and physical victimization histories are taken into account if one wishes to understand fully why women aggress toward their intimate partners.

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