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The Continuation of Intimate Partner Violence From Adolescence to Young Adulthood

Little attention has been paid to whether violence in adolescent romantic relationships is associated with relationship violence later in young adulthood. This study examined the continuation of intimate partner violence (IPV) from adolescence to young adulthood. Using data from the National Longitudinal Study of Adolescent Health, results from negative binomial models and propensity score models showed that being victimized by relationship partners in adolescence was significantly associated with both perpetration and victimization in romantic relationships in young adulthood. Women reported higher levels of perpetration and lower levels of victimization than men did. Those who were living together (married or cohabiting) reported higher levels of victimization and perpetration than those who were dating. Further, such associations existed beyond the effects of parent-child violence and general aggression tendencies, suggesting the continuation of relationship-specific

violence. Finally, these patterns persisted after controlling for participants' age, race and ethnicity, parental education, and family structure.

Establishing and maintaining romantic relationships are central developmental tasks for young adults (Conger, Cui, Bryant, & Elder, 2000). One particularly important behavior in relationships is intimate partner violence (IPV), which has been associated with a variety of negative developmental outcomes, such as anxiety and depression (e.g., Holt & Espelage, 2005; Makepeace, 1983; Silverman, Raj, Mucci, & Hathaway, 2001). Further, IPV is a major impediment not only to healthy individual development, but also to public health. It is estimated that IPV costs \$5.8 billion each year for injury treatment, counseling, and intervention programs (Arias & Corso, 2005). Understanding IPV among young adults is particularly important because such understanding could provide information for prevention and intervention programs geared towards reducing IPV.

Research has focused on the influence of family of origin as the major precursor of IPV in young adulthood (e.g., Cui, Durtschi, Lorenz, Donnellan, & Conger, 2010). Even though these studies have established an association between violence in the family of origin and IPV in later adulthood, little attention has been paid to the effect of a more proximal factor—IPV in earlier romantic relationships during adolescence. As a result, little evidence

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This article was edited by Cheryl Buehler.

Key Words: adolescence, intimate partner violence, young adulthood.

is available about the effect of an individual's previous experiences of relationship violence on current relationship violence (Halpern, Spriggs, Martin, & Kupper, 2009; Meier & Allen, 2009; Williams, Craig, Connolly, Pepler, & Laporte, 2008). As Spriggs, Halpern, and Martin (2009) noted, researchers know very little about the longitudinal course of relationship violence from adolescence to adulthood. In contrast to research efforts focusing on violence in the family of origin and IPV later in young adulthood, few studies have examined IPV as it emerges in adolescence and is potentially maintained into young adulthood (Williams et al.).

One reason for the lack of studies in this area is that romantic relationships in adolescence have been regarded as trivial and transitory; therefore, the topic of adolescent romance itself has been ignored until the last several decades (Furman, Brown, & Feiring, 1999). Further, most studies are cross-sectional and do not follow individuals from adolescence to young adulthood. In the few longitudinal studies that do exist, the time period was often not long enough to capture the full range of young adulthood (Williams et al., 2008). Finally, because analyses have usually been based on college students or other rather homogeneous samples, knowledge reflecting the broader population is limited (see Cleveland, Herrera, & Stuewig, 2003; Halpern et al., 2009). To fill the gap in the current literature, this study uses a large, nationally representative, longitudinal sample to examine the long-term effects of IPV in adolescence on IPV in young adulthood.

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IPV is defined in the current study as verbal (e.g., verbal threats) and physical (e.g., hitting, slapping) violence toward one's romantic partner. Social learning theory (Bandura, 1977) proposes that behaviors are learned, reinforced, and cumulated through prior experiences such as dyadic interactions in relationship contexts. Adolescents who have experienced violence in previous relationships may regard such behaviors as acceptable and allow such behaviors in future relationships (Gómez, 2011; Graves, Sechrist, White, & Paradise, 2005). Therefore, being a victim in a violent relationship is likely to lead to being a victim and also a perpetrator in current relationships as well as in future relationships. Consistent with social learning theory, the life

course perspective (Elder & Giele, 2009) also proposes that adolescent romantic relationships hold developmental currency for relationships in later adulthood and that adolescents could reinforce and reciprocate violent behaviors in relationships, further leading to more violence victimization and perpetration in future relationships. In addition, the life course perspective emphasizes "cumulative disadvantage," and thus earlier victimization could have influence on subsequent relationships cumulatively and negatively over the life course. Despite these theoretical predictions, there is scant empirical evidence linking adolescent IPV to young adult IPV (Meier & Allen, 2009). The present study addresses this issue. Based on social learning theory and the life course perspective, continuity in relationship violence from adolescence to young adulthood is expected.

With the current literature mainly focusing on the intergenerational transmission of violence (e.g., Cui et al., 2010), the more proximal and potentially more powerful effect of IPV experienced in earlier romantic relationships in adolescent years has not received the attention it deserves (Halpern et al., 2009). In a short-term longitudinal study, O'Leary and Slep (2003) followed adolescents who remained in a relationship for 3 months and found that physical aggression was highly stable. Even though the findings from this study demonstrated short-term continuity in relationship violence, studies on continuity across relationships and over longer periods (i.e., extending beyond the adolescent years into young adulthood) are much needed. Only a few studies to date have examined the continuation of IPV from adolescence to young adulthood. These studies have shown that IPV experienced in a previous relationship was a major predictor of violence in one's current relationship (e.g., Bookwala, Frieze, Smith, & Ryan, 1992; Cano, Avery-Leaf, Cascardi, & O'Leary, 1998; Gómez, 2011; O'Leary et al., 1989). Specifically, some studies have found continued violence victimization from adolescence to young adulthood (Graves et al., 2005; Halpern et al., 2009; Spriggs et al., 2009). For example, a study by Smith, White, and Holland (2003) examined physical dating violence from high school through college. They found that women who were physically assaulted in romantic relationships as adolescents were more likely to experience victimization in romantic relationships in college.

Even though these studies have examined IPV from adolescence to young adulthood, they display several limitations. First, many studies focused on violence prevalence (Brown et al., 2009; Cleveland et al., 2003; Halpern et al., 2009). Focusing on violence prevalence is important, but it tends to overlook the level of violence, which is equally important, especially when one wants to examine variations in the degree of violence among individuals. In order to complement previous studies on prevalence, this study examines relationship violence on a continuum. Second, some studies have not differentiated victim and perpetrator roles and have only measured a general violence level (e.g., Fusco, 2010). Such studies are useful when looking at violence at the couple level, but differentiating individual level violence by victimization and perpetration is important to examine violence initiation, interaction, and other potential differences, such as gender difference (Kimmel, 2002). Some studies have differentiated victimization and perpetration but only investigated one but not both (e.g., Spriggs et al., 2009). To gain more information on both victimization and perpetration, this study includes both victimization and perpetration in young adult relationships. Third, when examining the association between relationship violence in adolescence and in young adulthood, some studies used cross-sectional data based on retrospective reports of adolescent experiences (Cano et al., 1998). Cross-sectional studies using retrospective accounts are subject to numerous cognitive heuristics (e.g., availability and accessibility heuristics) and are unlikely to estimate the association accurately. Further, the vast majority of relationship violence research has used college samples (see Cleveland et al.). Findings from such samples cannot be generalized to the larger population. Taken together, cross-sectional and nonrepresentative samples are not well suited for studying a problem with such important public health implications. Several studies have extended earlier findings by using large, nationally representative, and longitudinal samples (Brown et al., 2009; Gómez, 2011; Halpern et al., 2009; Spriggs et al., 2009). These studies, however, only used samples of young adults in their mid-20s (e.g., ages 18 to 27). With the trend of delaying marriage until mid- and late 20s (Cherlin, 2010), such samples may only cover relatively early marriages, which may affect the implication of the findings. To capture the full

range of young adulthood and explore various types of relationships, this study used longitudinal data based on a large, nationally representative sample to examine relationship violence among young adults in their mid-20s to mid-30s.

Gender Differences, Relationship Type, and Other Factors Related to IPV

Social role theory has been used to explain gender difference in behaviors (Eagly, 1987). It proposes that gender differences in IPV are the result of gender-role expectancy. Specific to IPV, Archer (2006) proposes that there are an equal number of or more male victims relative to female victims in relationships because of increases in women's power, especially in Western societies. This is consistent with the gender symmetry approach found in family conflict theory (Straus, 2009; also see White, 2009), which proposes equal or higher rates of IPV by women. Indeed, several recent studies on gender differences in IPV have found overall higher rates of female perpetration and lower rates of female victimization (e.g., Archer, 2006; Cui et al., 2010; Cunradi, 2007). Such findings apply to severe violence such as kicking, choking, and causing injuries as well as to minor violence (see Straus for a review). But the findings in the literature are inconsistent, with some studies suggesting greater male perpetration, especially regarding severe violence (Archer, 2000; Stark, 2007; Tjaden & Thoennes, 2000; White, Smith, Koss, & Figueredo, 2000). Thus, past findings are somewhat mixed, which may indicate differences in the samples. This study added to the literature by analyzing data from a nationally representative sample.

Commitment theory (Johnson & Ferraro, 2000) and the investment model of relationships (Rusbult, 1980) both propose that when couples are living together, they share resources and have invested a significant amount of time and energy in the relationship. Therefore, married and cohabiting couples are less likely than dating couples to terminate a violent relationship due to greater levels of commitment and investment as well as more barriers to exiting the relationship (Kurdek, 1998). Consistent with such theoretical frameworks, studies have shown that married and cohabiting couples demonstrated a higher level of violence than dating couples (Arriaga, 2002). Nevertheless, findings are not always consistent. Frias and Angel (2005) suggested that

cohabitators and daters did not differ in violence, but both cohabitators and daters reported lower levels of victimization than married couples did. Relationship type differences in IPV are examined in the current study.

Other factors have also been shown to be associated with relationship violence. First, individuals with a history of general aggression tend to be more likely to act aggressively toward a romantic partner (Cleveland et al., 2003). Several studies have suggested a possible association between general aggression and relationship violence (Capaldi, Kim, & Shortt, 2004). Second, parent-child violence has been shown to be associated with adolescent and young adult IPV (Cui et al., 2010; Gómez, 2011). Still, other factors that could affect the association of IPV in adolescence and young adulthood include age (Spriggs et al., 2009), race and ethnicity (Frias & Angel, 2005), parental education (Heyman & Slep, 2002; Simons, Lin, & Gordon, 1998), and family structure (Halpern, Oslak, Young, Martin, & Kupper, 2001). These potential confounding factors are considered in the current study.

In sum, in the present study, the continuity in IPV from adolescence to young adulthood is examined. In addition, potential gender and relationship type differences are examined. Many important covariates (i.e., parent-child violence, adolescent general aggression, age, race and ethnicity, parental education, and family structure) are included in the analyses to ensure that the proposed continuation of relationship violence is not an artifact of these factors. Based on theories and recent studies, the following hypotheses are proposed:

Hypothesis 1: IPV victimization in adolescent romantic relationships is positively associated with both victimization and perpetration in young adult IPV.

Hypothesis 2: Women demonstrate higher levels of perpetration and lower levels of victimization than men in young adult IPV.

Hypothesis 3: Young adults who are married or cohabiting demonstrate higher levels of victimization and perpetration than those who are dating.

METHOD

Sample and Procedures

To evaluate the hypotheses, data were drawn from the National Longitudinal Study of

Adolescent Health (Add Health). Add Health is a school-based longitudinal study of a nationally representative sample of adolescents in grades 7–12 in the United States during the 1994–1995 school year. Detailed descriptions of the sample and procedures can be found in Harris et al. (2008) and at the web site <http://www.cpc.unc.edu/projects/addhealth/design>. Briefly, a sample of 132 high schools and middle schools from the United States was selected with unequal probability of selection. Incorporating systematic sampling methods and implicit stratification into the Add Health study design ensured that this sample is representative of U.S. schools with respect to region of country, urbanicity, school size, school type, and ethnicity.

At Wave I, in-home interviews ($N = 20,745$) were administered to students in grades 7–12 in 1994–1995. The topics included social and demographic characteristics of respondents, household structure, family composition and dynamics, risk behaviors, sexual partnerships, and formation of romantic partnerships. Wave II surveyed students from the original sample (except for those who had graduated) in 1996. Data were collected from respondents during an in-home interview ($n = 14,738$). In 2001–2002, 15,197 respondents from the original sample, 18 to 27 years old, were reinterviewed in Wave III. In 2007–2008, Wave IV data were collected from respondents ($n = 15,701$), who were between ages 24 and 32.

The current study used data from all waves: Wave I included most demographic variables, Wave II included adolescent IPV, and Waves III and IV included young adult outcome variables. Participants were included in the present analysis if they had participated in all waves and had valid sampling weights. These criteria resulted in a sample of 9,421 participants. In order to address the research questions on violence from adolescence to young adulthood, the sample in this study was further restricted to those who were 18 or younger at Wave II (i.e., adolescents; see also Spriggs et al., 2009; $n = 7,232$). Of the 7,232 participants, 4,468 had reported at least one romantic relationship at Wave II and therefore were included in the analyses. Of the 4,468 participants from adolescents (Wave II) to young adulthood (Wave III and Wave IV), 3,563 in Wave III and 4,048 in Wave IV had complete data on all variables of interests. Attrition analyses suggested that male

participants, African Americans, and those in lower grade levels in earlier waves were more likely to have dropped out from the survey. The use of longitudinal weights minimized attrition biases. The final operational samples included 3,563 participants at Wave III and 4,048 participants at Wave IV.

Measures

Relationship violence victimization in adolescence (Wave II). At Wave II, adolescents were asked to report up to three romantic relationships. For each relationship, they were asked five questions on violence victimization (Conflict Tactic Scale; Straus, Hamby, Boney-McCoy, & Sugarman, 1996; e.g., Did your partner threaten you with violence? Did your partner push or shove you?). The answers were coded as 0 = *no* and 1 = *yes*. The five items were added together to create a count of violence victimization. If the adolescents only reported one relationship, the report of violence victimization of that one relationship was used. If the adolescents reported two or three relationships, the scores for violence victimization were averaged across relationships.

Relationship violence victimization and perpetration in young adulthood (Wave III). At Wave III, both victimization and perpetration of relationship violence were assessed. Participants were asked to report their IPV in as many relationships as they reported having had since Wave I. The participants were asked four items on *violence victimization* (e.g., How often did your partner slap, hit, or kick you? How often did you have an injury, such as sprain, bruise, or cut because of a fight with your partner?). The responses ranged from 0 = *never* to 6 = *more than 20 times in the last year of the relationship*. The scores of the four items were added together to create a composite score, with a higher score indicating a higher level of violence victimization. Similar to the measure in adolescence, if the participants reported more than one relationship, the scores for victimization were averaged across relationships. The alpha coefficient was $\alpha = .80$. Likewise, participants were also asked the same four items on *violence perpetration* (e.g., How often did you slap, hit, or kick your partner?) with the same coding scheme. The scores were created the same way as victimization. The alpha coefficient was $\alpha = .68$.

Relationship violence victimization and perpetration in young adulthood (Wave IV). At Wave IV, both victimization and perpetration of relationship violence were also assessed. Unlike the Wave III questions that asked about as many relationships as the participants had, the Wave IV questions asked about one current relationship. If participants reported multiple relationships, priority was given first to marriage, then to cohabitation, and then to relationships with pregnancy and dating relationships. If two or more relationships fell into the same type of relationship, the longer or longest relationship was selected. The items were the same as in Wave III with a slightly different coding: from 0 = *never* to 7 = *more than 20 times in the last year of the relationship*. As in Wave III, the scores were summed to create the measures of victimization and perpetration. The alpha coefficients were $\alpha = .76$ for victimization and $\alpha = .69$ for perpetration.

Parent-child violence (Wave III). Unfortunately, information on parent-child violence was not collected at Wave I. Instead, participants were asked in Wave III to retrospectively report how often their parents or other adult caregivers slapped, hit, or kicked them by the time they were in the sixth grade. The item was recoded as 0 = *never happened*, 1 = *one time*, 2 = *two times*, 3 = *three to five times*, 4 = *six to ten times*, and 5 = *more than ten times*, with a higher score indicated a higher level of parent-child violence.

General aggression (Wave II). Adolescents were asked to report on three items (i.e., during the past 12 months, how often did you get into a severe physical fight? How often did you use or threaten to use a weapon to get something from someone? How often did you take part in a fight where a group of your friends was against another group?). The responses ranged from 0 = *never* to 3 = *5 or more times*. The scores from the three items were summed together. The alpha coefficient was $\alpha = .64$.

Other variables. Gender was coded as 0 = *male participant* and 1 = *female participant*. Relationship type was assessed by three dummy variables at Wave IV: married, cohabiting, and dating (reference category). Age was assessed in years at Wave II. Other demographic variables were assessed at Wave I. Race and ethnicity were

assessed by five dummy variables for Hispanic, White (reference category), African American, Asian, and others. In order to control for family effects, the analysis also included family structure and parents' education. *Family structure* was assessed by five dummy variables for two-parent families (reference category), step-families, single-mother families, single-father families, and other families. *Parents' education* was assessed by asking the target adolescent about his or her mother's and father's years of schooling. Based on the higher number of years of schooling of mother and father, the responses were coded into four dummy variables: college education or more, some college education, high school graduation (reference category), or less than a high school education (Cui, Ueno, Fincham, Donnellan, & Wickrama, 2012).

Analytic Strategy

Following the advice of Add Health researchers (Chantala, 2006), Stata's "svy" estimation was used to adjust the analysis for the multistage stratified sampling design. Specifically, the estimation method used longitudinal sampling weights to correct for the unequal chance of being selected into the sample and remaining in the sample across waves, and it employed the Taylor series linearization method to adjust standard errors for data clustering (e.g., students nested in schools). The estimation method also helped specify the analytical subpopulation (age 18 or younger at Wave II) so the results could be generalized to this subpopulation. For the primary analysis, negative binomial models were used to address the extremely skewed distribution in the dependent variable—a large number of 0's (no violent behavior) and a small number of very high values (high levels of violence; see Cui et al., 2012).

Further, one major concern of the current study is that the differences between adolescents who experienced IPV and those who did not may be due to pre-existing differences in their background characteristics (therefore, individuals selected themselves or were selected into IPV in adolescence and young adulthood). To address this concern, propensity score matching models were also estimated. Propensity score matching approximates an experimental design by using observed variables to generate a treatment group (adolescents who reported IPV) and a control group (adolescents who did not

report IPV). It makes the treatment and control groups as similar as possible by matching their propensity for the treatment or the key independent variable (Morgan & Harding, 2006). Three types of matching techniques were used: nearest-neighbor matching, radius matching, and kernel matching (Becker & Ichino, 2002; Turney, 2012). The nearest-neighbor matching technique estimates young adult victimization and perpetration by comparing each treatment observation to a control observation with the closest propensity score. Radius matching compares each treatment observation with control observations within a specific radius. Kernel matching compares each treatment observation with all control observations but weights these observations according to their distance from the treatment observation.

RESULTS

Descriptive Statistics

Table 1 provides descriptive information about the sample. The means for violence were relatively low but with big variations. This suggested that the use of negative binomial regression would be appropriate. In addition to the mean levels reported in Table 1, prevalence statistics (not shown in Table 1) suggested that in adolescence (Wave II), 70% reported no IPV victimization, whereas the remaining 30% reported "yes" to at least one violence victimization item. In young adulthood (e.g., Wave IV), 70% reported no victimization or perpetration (0 times), 5% reported perpetration only, 13% reported victimization only, and 12% reported both victimization and perpetration. Such findings on IPV prevalence are similar to those from previous studies (e.g., Whitaker, Haileyesus, Swahn, & Saltzman, 2007). Information regarding other variables is also provided in Table 1. The average age of adolescents at Wave II was 16.07 with a range from 13 to 18. Slightly over half (55.66%) were female adolescents. Regarding relationship type at Wave IV, 50.70% were married, 36.94% were cohabiting, and 12.36% were dating.

Negative Binomial Models

Table 2 provides the results for the effects of adolescent violence victimization on young adult violence victimization separately for Wave III and Wave IV. Regarding the results in Wave IV, there are several important

Table 1. Descriptive Information on Study Variables (Weighted) ($n = 3,520$)

Variables	<i>M</i> or %	<i>SD</i>	Range
Adolescent violence victimization (Wave II)	0.412	0.818	0–5
Young adult violence victimization (Wave III)	0.946	2.019	0–21
Young adult violence perpetration (Wave III)	0.667	1.423	0–14
Young adult violence victimization (Wave IV)	1.193	2.767	0–28
Young adult violence perpetration (Wave IV)	0.705	1.920	0–27
Gender			
Female participants	55.66%		
Male participants (reference)	44.34%		
Relationship type			
Married	50.70%		
Cohabiting	36.94%		
Dating (reference)	12.36%		
Parent–child violence	0.768	1.413	0–5
Adolescent general aggression	0.631	1.146	0–9
Age	16.07	1.176	13–18
Race and ethnicity			
White (reference)	73.32%		
Hispanic	10.70%		
African American	12.54%		
Asian	2.27%		
Other races and ethnicities	1.17%		
Parents' education			
College or more	36.84%		
Some college	21.87%		
High school graduation (reference)	30.90%		
Less than a high school education	10.39%		
Family structure			
Two biological parents (reference)	57.29%		
Stepfamilies	17.75%		
Single-mother families	19.19%		
Single-father families	2.67%		
Other families	3.10%		

Note: The descriptive statistics were based on those who had valid weights and completed data on all four waves, so the n in this table is smaller than those used in subsequent analyses where only Wave III or Wave IV (but not both) was used in the model. Relationship type was measured at Wave IV.

findings. First, violence victimization at Wave II was significantly associated with violence victimization at Wave IV ($b = .239$, $exp(b)$ or odds ratio (OR) = 1.270, $p < .001$). The odds ratio of 1.270 shows that a one unit increase in violence victimization in adolescence was associated with a 27% increase in the predicted risk of violence victimization in young adult relationships. Women reported significantly lower levels of victimization at Wave IV. Regarding relationship type in Wave IV, married and cohabiting young adults reported a higher level of victimization than dating couples. Further, parent–child violence and adolescent general aggression also significantly predicted victimization. A similar pattern was found in

Wave III (except for relationship type, which was not applicable due to multiple relationships reported in Wave III).

Findings on young adult perpetration are presented in Table 3. For young adults aged 24 to 32 in Wave IV, adolescent victimization was significantly related to young adult perpetration in Wave IV ($b = .159$, $OR = 1.172$, $p < .01$). Women reported significantly higher levels of perpetration than men did. People in marital and cohabiting relationships reported higher levels of perpetration than those in dating relationships. Parent–child violence and general aggression during adolescence also significantly predicted perpetration. A similar pattern was found in Wave III.

Table 2. *Negative Binomial Regression of the Association Between Adolescent Violence Victimization and Young Adult Victimization at Wave III (n = 3,563) and Wave IV (n = 4,048)*

Variables	Wave III n = 3,563			Wave IV n = 4,048		
	<i>b</i>	<i>SE</i>	<i>OR</i>	<i>b</i>	<i>SE</i>	<i>OR</i>
Adolescent victimization	0.282***	0.040	1.326	0.239***	0.049	1.270
Gender	-0.396***	0.110	0.673	-0.484***	0.112	0.616
Relationship type						
Married				0.607**	0.192	1.835
Cohabiting				0.695***	0.197	2.004
Parent-child violence	0.153***	0.024	1.165	0.078*	0.034	1.081
Adolescent general aggression	0.142***	0.033	1.153	0.191***	0.042	1.210
Age	-0.112**	0.041	0.894	-0.003	0.045	0.997
Race and ethnicity						
Hispanic	0.155	0.144	1.168	0.135	0.133	1.145
African American	0.050	0.141	1.051	0.432***	0.114	1.540
Asian	-0.310	0.238	0.733	-0.199	0.299	0.820
Other	-0.111	0.465	0.895	0.501	0.257	1.650
Parents' education						
College or more	0.097	0.124	1.102	-0.322**	0.124	0.725
Some college	0.004	0.137	1.004	-0.127	0.142	0.881
Less than high school	0.292	0.174	1.339	0.178	0.166	1.195
Family structure						
Stepfamilies	0.146	0.114	1.157	0.141	0.128	1.151
Single-mother families	0.228	0.114	1.256	0.182	0.134	1.200
Single-father families	0.136	0.312	1.146	0.224	0.357	1.251
Other	-0.008	0.286	0.992	0.371	0.233	1.449
Constant	0.918	0.689		-0.540	0.769	
	$F(16, 115) = 11.61, p < .001$			$F(18, 113) = 9.03, p < .001$		

Note: * $p < .05$. ** $p < .01$. *** $p < .001$.

In addition to the results presented in Tables 2 and 3, several additional analyses were conducted. First, considering individual variability in the degree of IPV (Gómez, 2011), the items of victimization and perpetration were split into two subscales: less severe violence (threatened with violence; slapped, hit, kicked partner) and more severe violence (forced sexual behavior, fights resulting in injuries). The two subscales were then treated as separate outcomes. The analyses showed similar results for less severe violence and more severe violence (e.g., for Wave IV: $b = .255$ for adolescent victimization on young adult less severe victimization; $b = .256$ for adolescent victimization on young adult more severe victimization; $b = .205$ for adolescent victimization on young adult less severe perpetration; $b = .231$ for adolescent victimization on young adult more severe perpetration; $p < .001$ for all).

Additionally, when creating violence measures in Waves II and III, the analyses presented above used averaged violence across multiple relationships in order to obtain a more stable estimate. Another set of analyses was conducted using an alternative approach, in which the most violent relationship among the multiple relationships was selected. The results showed similar patterns of findings as reported in Tables 2 and 3 ($b = .219, p < .001$ for adolescent maximum victimization on young adult maximum victimization; $b = .163, p < .001$ for adolescent maximum victimization on young adult maximum perpetration).

Propensity Score Matching

In addition to the results reported in Tables 2 and 3, propensity score matching was conducted to examine whether the above significant

Table 3. *Negative Binomial Regression of the Association Between Adolescent Violence Victimization and Young Adult Perpetration at Wave III (n = 3,563) and Wave IV (n = 4,048)*

Variables	Wave III n = 3,563			Wave IV n = 4,048		
	b	SE	OR	b	SE	OR
Adolescent victimization	0.213***	0.042	1.237	0.159**	0.060	1.172
Gender	0.823***	0.108	2.277	0.432***	0.129	1.540
Relationship type						
Married				0.587**	0.279	1.799
Cohabiting				0.754**	0.291	2.125
Parent-child violence	0.180***	0.028	1.197	0.118**	0.038	1.125
Adolescent general aggression	0.106**	0.033	1.112	0.104*	0.052	1.110
Age	-0.115*	0.045	0.891	-0.0380	0.049	0.963
Race and ethnicity						
Hispanic	0.130	0.146	1.139	0.410**	0.150	1.507
African American	0.530***	0.126	1.699	0.565***	0.141	1.759
Asian	-0.217	0.204	0.805	-0.224	0.310	0.799
Other	-0.123	0.528	0.884	0.898*	0.360	2.455
Parents' education						
College or more	-0.099	0.120	0.906	-0.133	0.147	0.875
Some college	-0.112	0.130	0.894	-0.103	0.135	0.902
Less than high school	0.273	0.143	1.314	0.101	0.190	1.106
Family structure						
Stepfamilies	-0.165	0.094	0.848	0.262	0.150	1.30
Single-mother families	-0.128	0.126	0.880	0.193	0.145	1.213
Single-father families	0.044	0.263	1.045	-0.450	0.359	0.638
Other	-0.273	0.238	0.761	-0.0660	0.241	0.936
Constant	0.543	0.745		-1.052	0.878	
	F(16, 115) = 12.70, p < .001			F(18, 113) = 4.27, p < .001		

Note0. *p < .05. **p < .01. ***p < .001.

findings were robust to selection effect. First, a dichotomous variable of adolescent victimization (0 = no IPV, control group; 1 = IPV, treatment group) was created. Before running propensity score matching models, negative binomial models were run to make sure that this dichotomous version of adolescent victimization variable was also significantly associated with young adult victimization and perpetration in the same way that the continuous version of the variable was. With significant findings, propensity score matching was then used. Specifically, the propensity scores were generated using a logistic regression model and included the following variables: parent-child violence, general aggression tendency, age (and age squared for Wave III), gender, race and ethnicity, parents' education, and family structure. Once the balancing property was satisfied, the propensity scores were generated. Three types of matching

procedures were then used: nearest-neighbor matching, radius matching, and kernel matching (Morgan & Harding, 2006; Turney, 2012).

Table 4 shows the results. For example, the average treatment effect for the treated (ATT; see Becker & Ichino, 2002) estimates for adolescent IPV ranged from .379 to .651 (p < .001 for all) for young adult victimization at Wave III. All three strategies—nearest-neighbor matching, radius matching (radius = 0.1), and kernel matching (bandwidth = 0.06)—yielded the same patterns of findings. The significant findings suggested that, compared with those who did not experience adolescent victimization, adolescents who experienced victimization showed more victimization and perpetration in young adulthood. Taken together, these propensity score models suggested that when adolescents who experienced victimization were matched with adolescents who did

Table 4. Propensity Score Matching Models Estimating the Consequences of Adolescent Victimization for Young Adult IPV at Wave III and Wave IV

	Treatment <i>n</i>	Control <i>n</i>	Young Adult IPV			
			Victimization	SE	Perpetration	SE
Adolescent IPV – Wave III						
Nearest-neighbor matching	1,158	908	.379***	.104	.281***	.078
Radius matching	1,158	2,831	.651***	.080	.409***	.060
Kernel matching	1,158	2,831	.584***	.066	.355***	.052
Adolescent IPV – Wave IV						
Nearest-neighbor matching	1,183	943	.619***	.138	.460***	.101
Radius matching	1,183	2,828	.746***	.115	.427***	.085
Kernel matching	1,183	2,828	.635***	.110	.381***	.075

Note: Adolescent IPV (victimization) is dichotomized into a control group (no IPV) and a treatment group (IPV).

*** $p < .001$.

not experience victimization, there remained a highly significant association between adolescent victimization and young adult IPV.

DISCUSSION

Hypotheses were proposed that experiences of relationship violence victimization in adolescence would be associated with IPV in young adulthood. Using a sample from Add Health, results from negative binomial regression supported the hypothesis that there was continuity in IPV from adolescence to young adulthood. The results are consistent with social learning theory and the life course perspective and have several important implications for the current understanding of IPV.

First, the findings suggest that being a victim of violence in romantic relationships during adolescence was a significant predictor of violence victimization in romantic relationships in young adulthood. Such a finding is consistent with previous findings on continuity of relationship violence victimization from adolescence to young adulthood (Spriggs et al., 2009). For example, being a victim of relationship violence may lead adolescents to believe that violence is a normal part of romantic relationships and therefore lead them to be less resistant to partner violence in later relationships (Roscoe & Benaske, 1985). The findings from this study advance the current literature in that the sample extended the study period from adolescence to the whole range of young adulthood. The findings provide strong support for the long-term effects of early violence victimization on violence victimization in later young adulthood years.

Second, the findings suggested that being a victim in relationships during adolescence was also predictive of violence perpetration in relationships in young adulthood. Thus, being a victim of relationship violence can also lead to being a perpetrator of violence in future romantic relationships. This is consistent with several studies that found victimization to be a strong predictor of violent behavior (i.e., perpetration; e.g., Bookwala et al., 1992; Cano et al., 1998; Gómez, 2011). One reason could be that, having experienced violence by their partners (i.e., violence victimization), adolescents may learn such violent behavior from their partners and become violent themselves in their current as well as future relationships. Indeed, being a victim in a relationship can create violent interactions that lead to greater likelihood of both victimization and perpetration.

Notably, the association between adolescent violence and young adult violence in relationships found in this study was observed after taking into account parent–child violence and the participants' own general aggression tendencies. Studies have found that experiencing parent–child violence was a strong predictor of later IPV (Cui et al., 2010). Similarly, participants' general aggression was also controlled for in this study because it has been shown to be associated with IPV (Capaldi et al., 2004). Taken together, the significant findings suggested that the continuity of IPV is relationship specific and extends beyond the influence of parent–child violence and general aggression. That is, individuals likely learn relational schemas that provide

the basis for if–then inferences regarding the use of IPV in their relationships (Baldwin, 1992).

The findings on gender differences were consistent with several recent studies (e.g., Archer, 2006; Cui et al., 2010; Cunradi, 2007), in that women demonstrated higher levels of perpetration and lower levels of victimization than men did. Such findings were also consistent with social role theory (Eagly, 1987) and family conflict theory (Straus, 2009; White, 2009). One possible reason is that women feel more empowered in relationships, and therefore are more likely to initiate verbal and physical aggression or use violence as a means of conflict resolution (Archer, 2006). Nevertheless, given the inconsistent findings in the existing literature, more studies on this topic are needed.

Regarding relationship type, the findings suggested that couples living together demonstrated higher levels of IPV than dating couples. This is consistent with commitment theory (Johnson & Ferraro, 2000), the investment model (Rusbult, 1980), and several previous studies (e.g., Kurdek, 1998). Indeed, when couples live together, they have more interactions and therefore more opportunities for IPV. Further, couples living together have more shared resources, thus making them less likely to leave the relationship. As previous researchers have argued, these couples perhaps have greater demands for solving their problems rather than simply terminating the relationship. No moderating effects by relationship status were found in this study. This suggested that relationship type was associated with young adult couples' mean level IPV but did not change the association between adolescent IPV and young adult IPV.

This study has several methodological strengths. First, the study included both victimization and perpetration in young adult relationships. Such an approach allowed specific violent behavior rather than a general combined violent interaction to be investigated (Fusco, 2010). Specifically, a link between adolescent victimization and young adult perpetration in addition to young adult victimization was demonstrated. Also worth mentioning, one sexual violence item was included in young adult IPV. Inclusion of this item was important, as many studies have overlooked sexual violence. Second, this study took into consideration several important covariates, including parent–child violence and general aggression. The findings were particularly informative when

they were shown to exist over and beyond associations with parent–child violence and own general aggression tendencies. Third, the study focused on variations in absolute violence levels, which complements existing studies, most of which focus on prevalence (e.g., Halpern et al., 2009). Fourth, propensity score matching was used to draw stronger conclusions about the association between adolescent IPV and young adult IPV beyond selection effect. Finally but importantly, this study used longitudinal data from a large, nationally representative sample that covered a period of more than 10 years. The findings therefore provide an additional contribution to the current literature where most studies had data limitations such as cross-sectional design, retrospective reports, nonrepresentative samples, and truncated age range.

Nevertheless, the findings should be viewed in the light of several limitations. First, the measures used in this study were all from participants' self-reports. Self-report of socially undesirable behavior could result in underreporting of such behavior (Cui, Lorenz, Conger, Melby, & Bryant, 2005). The interpretation of gender differences could be complicated, especially when underreporting varies by gender (Gómez, 2011). Second, this study included measures of adolescent violence victimization but not perpetration, due to lack of information in the data set. Specifically, the omission of adolescent perpetration may have led to the overestimation of the association between adolescent victimization and young adulthood perpetration because the study could not control for adolescent perpetration. For example, adolescent violence perpetration could be associated with young adult perpetration. Further, violence perpetration could lead to victimization (e.g., partner hitting back). More complete analyses require both adolescent victimization and perpetration as predictors of victimization and perpetration in romantic relationships in young adulthood (Gómez; Graves et al., 2005). Third, even though parent–child violence was included in the current study, it was retrospectively reported. Such retrospective reports could increase recall bias. Further, future studies may consider including partner characteristics (e.g., partner's age, general aggression) to examine whether they moderate the continuity of violence. Use of partners' reports of violence should also be considered in order to examine the robustness of the present findings. Fourth,

even though the study used a longitudinal design, the analyses focused on the association of IPV behaviors from adolescence to young adulthood and did not examine within-person changes. Future studies are needed to investigate the changes in levels of IPV over time to gain a better understanding of the developmental trend of such behavior. Finally, even though the findings of this study established the continuity of IPV, the mechanisms explaining such continuity were not examined. Future research should explore the potential mechanisms to explain such continuity in IPV.

Despite these limitations, the study provided important evidence on the continuation of violence from adolescent relationships to young adult relationships. The findings suggested that experiences of relationship violence may form part of a lifelong continuum that continues from violent adolescent romantic relationship experiences to violence in relationships formed in adulthood (Halpern et al., 2001). Given the continuation and degree of violence among young adults, adolescents are a critical group for intervention.

NOTE

This research was supported by a grant (1R03HD064836) from the Eunice Kenney Shriver National Institute of Child Health and Human Development. This study uses data from Add Health, a program project directed by Kathleen Mullan Harris and designed by J. Richard Udry, Peter, S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill, and funded by a grant P01-HD31921 from the National Institute of Child Health and Human Development, with cooperative funding from 23 other federal agencies and foundations. Special acknowledgement is due Ronald R. Rindfuss and Barbara Entwisle for assistance in the original design. Information on how to obtain the Add Health data files is available on the Add Health web site (<http://www.cpc.unc.edu/addhealth>). No direct support was received from grant P01-HD31921 for this analysis.

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