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Gender differences in the effects of exposure to intimate partner violence on adolescent violence and drug use*

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Abstract

Objective: This study investigated the long-term effects of exposure to intimate partner violence in the home on adolescent violence and drug use and gender differences in these relationships. Although the general relationship between exposure to IPV and negative outcomes for youth has been demonstrated in past research, gender differences in the effects of IPV on adolescents have been rarely assessed using longitudinal data. **Methods:** Longitudinal data was obtained from 1,315 adolescents and their primary care- givers participating in the Project on Human Development in Chicago Neighborhoods (PHDCN). The sample was 51% female and ethnically diverse (45% Hispanic, 37% African-American, and 14% Caucasian). Two waves of data were assessed to examine the effects of exposure to IPV, reported by caregivers when their children were aged 12 and 15, on violence and drug use, reported by adolescents 3 years later. Multivariate statistical models were employed to control for a range of child, parent, family, and neighborhood risk factors. **Results:** Exposure to IPV did not significantly predict subsequent violence among males or females in multivariate analyses. IPV exposure was significantly related to the frequency of drug use for females but did not predict drug use among males. This gender difference was not statistically significant, however, which suggests more similarities than differences in the relationship between exposure to IPV and subsequent violence and drug use. **Conclusions:** This study supports prior research indicating that exposure to IPV can negatively impact adolescent development, but it suggests that these effects may be more likely to influence some outcomes (e.g., drug use) than others (e.g., interpersonal violence). The findings also emphasize the need for additional research examining the overall impact of IPV on adolescent problem behaviors and gender differences in these relationships, including longitudinal studies and investigations that control for a range of other important predictors. A better understanding of these relationships can help inform intervention efforts aimed at ensuring that adolescents living in violent households receive timely and appropriate services to help prevent the occurrence of future problem behaviors.

Keywords: Intimate partner violence Drug use, Violence Gender

Introduction

Intimate partner violence (IPV) is a frequently occurring problem in the United States. It is estimated that between 3 (Brush, 1990) and 16% (Straus, Gelles, & Steinmetz, 2006) of US couples engage in intimate violence each year, exposing millions of children and adolescents to violent incidents (Jaffe, Wolfe, & Wilson, 1990; McDonald, Jouriles, Ramisetty-Mikler, Caetano, & Green, 2006). Youth exposed to IPV are likely to experience a range of adverse consequences (Herrera & McCloskey, 2001; Kitzmann, Gaylord, Holt, & Kenny, 2003; Wolfe, Crooks, Lee, McIntyre-Smith, & Jaffe, 2003). A meta-analysis of 118 family violence studies (Kitzmann et al., 2003) reported an average effect size of 0.29 between witnessing inter-adult physical aggression at home and children's psycho-social problems.

Research indicates that youth exposed to IPV are more at-risk for engaging in delinquency, violence, and drug use during adolescence. Several investigations have found that children who witness IPV were more likely than non-witnesses to display externalizing behaviors or to engage in illegal behaviors as teenagers (Bradford, Burns Vaughn, & Barber, 2007; Fergusson & Horwood, 1998; Yates, Dodds, Sroufe, & Egeland, 2003). Research has also found that IPV exposure increases the odds of aggressive or violent behavior during adolescence (Ireland & Smith, 2009; Maxwell & Royo Maxwell, 2003; Moretti, Obsuth, Odgers, & Reebye, 2006; Sousa et al., 2010), including arrests for violent offenses (Herrera & McCloskey, 2001). For example, Ireland and Smith (2009) reported that, among high-risk adolescents living in Rochester, NY, parent reports of intimate partner violence were associated with an increased likelihood of delinquency and violence (e.g., robbery, assault, and involvement in gang fights) 6 years later. Far fewer studies have assessed the relationship between IPV exposure and subsequent alcohol and drug use (Smith, Elwyn, Ireland, & Thornberry, 2010). Fergusson and Horwood (1998) found that youth in New Zealand who were exposed to parental IPV were more likely to report alcohol abuse at age 18 compared to those who did not witness IPV, and Smith et al. (2010) found that IPV exposure increased the likelihood of problem alcohol use.

Although the general relationship between exposure to IPV and negative outcomes for children has been established, many studies have methodological limitations which weaken the validity of their findings. For example, studies often have involved very small samples—usually fewer than 500 youths and often less than 100 subjects (Clements, Oxtoby, & Ogle, 2008). Non-representative samples, such as women and children living in domestic violence shelters, are also common, and results from these investigations have limited generalizability, as these subjects may be significantly different than the general population of IPV victims. Most previous research in this area has assessed exposure to IPV retrospectively and much of it has focused on violence occurring early in childhood, thus requiring that adolescent or young adult participants recall IPV that may have occurred many years previously, which may weaken the validity of these measures (Clements et al., 2008). Additionally, much research has been based on cross-sectional rather than longitudinal data, making causality and the long-term effects

of exposure to violence difficult to establish (Clements et al., 2008; Evans, Davies, & DiLillo, 2008). Finally, many studies have failed to control for other variables that may be related to either IPV or the outcomes examined (Holt, Buckley, & Whelan, 2008). In particular, parents who are violent towards one another may also engage in ineffective or abusive parenting practices, which themselves may increase the likelihood of adolescent problem behaviors (Derzon, 2010; Hawkins, Catalano, & Miller, 1992). Studies which fail to control for these or other relevant experiences may mis-specify and likely overstate the relationship between exposure to IPV and delinquency.

Importantly for the current study, there have been limited analyses of gender differences in the effects of exposure to IPV among adolescents, particularly longitudinal investigations that can assess the long-term impact of IPV. Some research has indicated that males who experience IPV are more likely to be at-risk for aggressive or violent behaviors compared to females (Clements et al., 2008; Evans et al., 2008; Yates et al., 2003). For example, the Evans et al. (2008) review of the literature indicated that males exposed to IPV were more likely than females exposed to IPV to display externalizing behaviors, with mean effect sizes on this outcome of 0.46 for boys and 0.23 for girls. However, other studies have found that girls exposed to IPV are *more likely* than boys to demonstrate aggressive and violent behaviors (Cummings, Pepler, & Moore, 1999; Herrera & McCloskey, 2001), and many studies have found no gender differences in these outcomes (Bradford et al., 2007; Fergusson & Horwood, 1998; Kitzmann et al., 2003; Maxwell & Royo Maxwell, 2003). Research examining gender differences in the effects of IPV exposure on drug use has been very limited. Smith et al. (2010) reported that females exposed to inter-parental violence during adolescence were more likely to develop alcohol use problems in early adulthood compared to males, but Fergusson and Horwood (1998) reported no gender differences in their analyses of New Zealand youth.

The lack of studies and mixed findings regarding the relationship between gender, exposure to IPV, and adolescent problem behaviors indicate the need for further research, particularly for well designed, longitudinal investigations that include enough male and female participants to identify gender differences if they are present. The current study was designed to address some of the limitations of past research in order to better understand the negative consequences of exposure to intimate partner violence and the degree to which male and female youth respond differently to IPV. Two research questions are addressed:

(1) Controlling for other relevant factors, what are the direct long-term effects of IPV exposure on adolescent violence and drug use?
(2) To what extent do these effects vary for females and males?

Methods

Sample

This study relies on data from the Project on Human Development in Chicago Neighborhoods (PHDCN) (Earls, Brooks- Gunn, Raudenbush, & Sampson, 2002). In order to collect information on a representative sample of Chicago residents, the PHDCN involved the creation of 343 neighborhood clusters, derived from 847 census tracts in Chicago, which were then stratified by 7 categories of racial-ethnic and socio-economic diversity. Eighty neighborhood clusters were selected from within strata for the Longitudinal Cohort Study (LCS). To be eligible for the longitudinal study, households in these areas had to include a family with at least 1 child in 1 of the 7 age cohorts (ages 0, 3, 6, 9, 12, 15, and 18) targeted for the study. The final sample included 6,228 participants (75% of the eligible population) who provided informed consent and agreed to participate in the study; this sample is considered to be representative of residents in the entire city of Chicago (Earls et al., 2002).

Table 1
Descriptive statistics for the sample.[a]

	Males		Females		*t*-Test[b]
	$\bar{x}$	*SD*	$\bar{x}$	*SD*	
Dependent variables (Wave 2)					
Violence	1.06	1.58	0.65	1.22	5.10**
Any violence	0.47	0.50	0.32	0.47	5.49**
Drug use	1.77	3.32	1.35	2.79	2.42*
Any drug use	0.41	0.49	0.36	0.48	2.00*
Independent variables (Wave 1)					
Past year IPV exposure	0.96	3.11	1.39	4.22	−1.98*
Any past year IPV exposure	0.19	0.39	0.23	0.42	
Age	13.53	1.54	13.53	1.53	
Family SES	−0.09	1.14	−0.18	1.38	
Caucasian	0.14	0.35	0.14	0.35	
Hispanic	0.46	0.05	0.43	0.50	
African American	0.35	0.48	0.38	0.49	
Physical abuse	0.66	0.47	0.62	0.49	
Parental criminality	0.12	0.33	0.13	0.33	
Parental drug use	0.15	0.36	0.17	0.38	
Parental warmth	5.87	2.01	5.91	2.00	
Parental monitoring	10.12	1.68	10.16	1.72	
Peer delinquency	15.40	3.32	14.62	3.30	4.49**
Peer drug use	5.55	1.59	5.57	1.18	
Prior delinquency	0.67	0.47	0.58	0.49	3.78**
Prior drug use	0.36	0.48	0.28	0.45	3.10**

[a] Sample sizes are N = 1,517 at Wave 1 (males = 745; females = 772) and N = 1,315 at Wave 2 (males = 651; females = 664).
[b] Significant ($p < .05$) gender differences in mean scores are presented.
* $p < .05$.
** $p < .01$.

The Longitudinal Cohort Study involved data collected primarily through in-home interviews with primary caregivers and their children at 3 time points. Given our focus on adolescent problem behaviors, the current study relies on data collected at 2 time points from 2 cohorts of youth (aged 12 and 15) and their caregivers (89% of whom were women). Independent variables were based on data collected at Wave 1 from 1,517 participants, and dependent variables were assessed 3 years later (Wave 2) from 1,315 participants (87% of the sample). As shown in Table 1, at Wave 1, the sample was a mean age of 13.5 years, 51% female, and ethnically diverse, with 45% of youth reporting their race/ethnicity as Hispanic, 37% as African-American, and 14% as Caucasian (non-Latino White).

Measures

Exposure to intimate partner violence. The primary independent variable, *past year intimate partner violence (IPV) exposure*, was assessed using 6 items from the Conflict Tactics Scale (Straus, 1979) reflecting severe violence. Primary caregivers were asked the number of times during an argument with their partner in the past year their partner had: kicked, bit, or hit them with their fist; hit or tried to hit them with something; beat them up; choked them; threatened them with a knife or a gun; and used a knife or fired a gun. Frequency was assessed on a 6-point scale, from 0 times to 21+ times. The primary caregivers also reported their own violence by answering the same questions. Items were summed (alpha reliability = 0.75) to calculate the total incidence of severe IPV perpetrated by the primary caregiver and/or his or her partner. A dichotomous variable, *any past year IPV exposure*, was created to indicate if any of the 6 acts of severe IPV were reported (coded as 1) or not (coded as 0). This measure was used in bivariate analyses, while the incidence measure was used in the multivariate analyses.

Dependent variables. Adolescent self-reports at Wave 2 were used to measure violence and drug use. *Violence* was assessed using 11 items adapted from the Self-Report Delinquency Questionnaire (Huizinga, Esbensen, & Weiher, 1991). Adolescents reported the number of times in the past year they had committed each violent act, including: throwing objects at someone, hitting someone, hitting someone you live with, chasing someone, carrying a weapon, attacking with a weapon, gang fight, robbery, shooting someone, shooting at someone, and hurting someone in another way. Each item was dichotomized (no violence = 0; any violent act = 1) and summed (alpha 0.69) to measure the total number (count) of violent acts reported. A dichotomous measure, *any violence*, was created to differentiate those who reported no violence (coded as 0) and those who reported one or more violent acts in the past year (coded as 1).

Drug use was reported using 6 items derived from the National Household Survey on Drug and Abuse (1991). Adolescents reported the number of days in the past year (on an 8-point scale ranging from 0 days to 200 or more days) they used each of 6 drugs (alcohol, marijuana or hashish, cocaine, crack, inhalants, and hallucinogens). Responses were summed (alpha 0.47) to measure the *frequency of drug use*. A dichotomous variable, *any drug use*, was also created to differentiate those who reported no use of any drug in the past year (coded 0) and those who reported using 1 or more drugs (coded 1). The low reliability of the drug use measure is likely due to the very low prevalence (less than 1%) of drugs other than alcohol and marijuana (which together have an alpha of 0.72). Although the reliability is less than desired, the content validity of the measure is high and inclusion of a variety of drugs in a summed measure is common in the field for this age group (Elliott, Huizinga, & Ageton, 1985; Ireland, Smith, & Thornberry, 2002).

Control variables. Multiple control variables were included in the analysis in order to account for other possible predictors of youth problem behaviors; all were measured

at Wave 1. Adolescent self reports were used to assess age, race/ethnicity, peer delinquency and drug use, and prior delinquency and drug use. *Age* was the youth's age in years. Two separate dichotomous variables, *Hispanic* and *African American*, denoted the race/ethnicity of the participant, with Caucasians (non-Latino Whites) serving as the reference category in analyses. *Peer delinquency* was included in analyses which focused on violence and was based on subject's reports of the number of their friends who engaged in 11 delinquent acts (alpha 0.83), including vandalism, stealing, breaking and entering, car theft, fighting, robbery, selling drugs, and so forth. *Peer drug use* was included in models assessing drug use and was based on 4 items (alpha 0.76) measuring the number of friends who used tobacco, alcohol, marijuana, and other drugs in the past year. Self-reported *prior delinquency* was included in models assessing violence and *prior drug use* was included in models assessing drug use; both were dichotomous variables indicating any lifetime delinquency or drug use. *Prior delinquency* was based on youth reports at Wave 1 of having ever committed any of 22 acts (alpha 0.77), including non-violent, violent, minor, and serious illegal behaviors (e.g., vandalism, arson, breaking and entering, stealing, selling drugs, fighting, robbery, etc.). *Prior drug use* was based on youth reports of having ever used any of 6 drugs (alcohol, marijuana, crack, cocaine, inhalants, and hallucinogens; alpha 0.47).

Responses from the primary caregiver or interviewer impressions were used to measure 6 additional variables: family socio-economic status, parental criminality and drug use, parental warmth, and parental monitoring. *Family SES* was a factor score based on parent education, employment and income (alpha 0.25). (The reliability of this measure is lower than desired. Although the reliability increases to 0.56 when only parent education and income are included in the measure, all three constructs were retained given the consensus among social scientists that socioeconomic status is best captured using measures of all three constructs in combination [Bradley & Corwyn, 2002].) *Parental criminality* was a dichotomous variable indicating that the primary caregiver identified either biological parent of the child as having had "trouble with the police or been arrested." Similarly, *parental drug use* indicated that either parent had problems with "health, family, job, or police" due to drinking or drug use. *Parental warmth* was observed by trained PHDCN staff during in-home interviews, who rated the occurrence (not observed = 0; observed = 1) of each of 9 behaviors displayed by parents during interactions with children. These 9 behaviors were summed (alpha 0.77) to reflect overall warmth (e.g., praise, encouragement, and affection). *Parental monitoring* was also based on in-home interviews, during which the primary caregiver reported whether or not he/she used each of 13 supervision techniques (alpha 0.50), including making and enforcing rules, interacting with children's peers, visiting the child's teacher or school, and discouraging drug use. The low reliability of this scale likely reflects the high endorsement on most items by parents, but it was retained given literature indicating that parents in violent relationships may have poor child monitoring skills (Holt et al., 2008), and that low supervision is strongly related to adolescent substance use (Hawkins et al., 1992). Finally, *physical abuse* was assessed with the Conflict Tactics Scale for Parent and Child

(Straus, 1979) and was a dichotomous measure reflecting caregiver reports of engaging in any of 7 acts (alpha 0.69) in the past year, including: threw something at; slapped; pushed or grabbed; kicked, bit, or hit with fist; hit with something; beat up; or burned or scalded their child.

Analysis

Researchers have demonstrated that neighborhood characteristics such as economic disadvantage or collective attempts to regulate behavior can influence youth behaviors such as delinquency and drug use (Elliott et al., 1996; Sampson, Raudenbush, & Earls, 1997). Therefore, it is optimal to control for those effects when investigating the impact of IPV on youth. The current study includes respondents living in 80 neighborhoods in Chicago. Hierarchical modeling techniques (Hierarchical Linear Modeling [HLM], see Raudenbush & Bryk, 2002) were used to control for potential neighborhood influences on outcomes by adjusting for the correlated error that exists between individuals who lived within the same neighborhoods. Further, this technique permitted us (by group-mean centering individual-level predictors) to remove any between-neighborhood variation that may be related to adolescent violence and drug use.

Two types of analyses were conducted. Bernoulli models, analogous to logistic regression models, were used when analyzing the dichotomous outcomes (e.g., *any violence* and *any drug use*). Negative binomial models were used to analyze the number of violent acts and the frequency of drug use because they take into account outcomes that are over-dispersed (i.e., large variance) or skewed (Raudenbush & Bryk, 2002). Given our focus on gender differences, the relationships between exposure to IPV and violence and drug use were examined separately for males and females, and the strength of the coefficients were compared using the equality of coefficients test developed by Clogg, Petkova, and Haritou (1995).

Table 2
Percentage (*N*) of males and females reporting any violence and any drug use at Wave 2, by exposure to IPV in the past year.

Past year IPV exposure	Males		Females	
	Any violence	Any drug use	Any violence	Any drug use
No exposure	44.1% (167)	42.2% (160)	29.1% (108)	32.5% (120)
IPV exposure	55.1% (49)	41.6% (37)	37.7% (40)	45.3% (48)*
Chi-square value	3.51	0.01	2.87	5.87

* $p < .05$ (chi-square analysis).

Results

Table 1 shows the mean scores for all independent and dependent variables by gender. As expected, significantly more males (47%) than females (32%) reported committing 1 or more violent crimes in the past year at Wave 2, as well as a greater number of violent offenses (1.06 vs. 0.65). Males were also significantly more likely than females to report using any drugs, and they reported a higher frequency of drug use than females. Mean scores of the independent variables were comparable across the sexes, with the exception of past year IPV exposure, peer delinquency,

prior delinquency, and prior drug use. Females were significantly more likely than males to be exposed to severe violence between their parents, while males reported significantly higher levels of prior delinquency, prior drug use, and delinquent friends.

The first analysis, presented in Table 2, examined the bivariate relationship between exposure to IPV and subsequent violence and drug use for males and females. Based on chi-square analyses, exposure to IPV at Wave 1 was not significantly ($p \leq .05$) related to increased violence 3 years later for either sex. Exposure to IPV significantly increased any drug use for females at Wave 2, but was not related to drug use for males, and exposure was not related to the frequency of drug use for either sex.

As seen in the results presented in Table 3, past year exposure to IPV did not significantly predict the number of violent acts reported by adolescents or the prevalence of violence (i.e., the perpetration of *any* violent acts), controlling for other relevant predictors. For both sexes, the number of violent offenses was increased for respondents with delinquent peers and those previously involved in delinquency. Prior delinquency (for males and females), Hispanic race/ethnicity (among males) and delinquent peers (for females) all significantly increased the likelihood of *any* violence. No other child or family characteristics predicted adolescent violence. Importantly, there was no evidence of gender differences in the effects of IPV exposure or in the effects of any of the control variables on adolescent violence, although the model intercepts indicated that males were significantly more likely than females to engage in any violence and to report a greater number of violent acts.

Table 4 shows the results of the multivariate models examining the relationship between exposure to IPV and drug use by gender. The analyses indicated that exposure to IPV significantly increased the frequency of drug use among females but not among males. However, the magnitude of the difference between the two groups was not statistically significant. Among the control variables, the frequency of drug use was increased among male and female adolescents who had friends that engaged in drug use and who themselves had

Table 3
Fixed effects models predicting adolescent violence at Wave 2, by gender.

	Violence				*Z*-Test	Any violence				*Z*-Test
	Males		Females			Males		Females		
	˘	*SE*	˘	*SE*		˘	*SE*	˘	*SE*	
Intercept	−0.07	0.08	−0.65**	0.11	4.26**	−0.17	0.13	−0.89**	0.12	4.07**
Past year IPV exposure	0.00	0.02	0.01	0.02		0.01	0.03	0.02	0.03	
Age	0.02	0.06	−0.02	0.06		0.05	0.10	−0.02	0.09	
Family SES	0.00	0.06	−0.07	0.07		0.02	0.09	−0.00	0.10	
Hispanic[a]	0.42	0.25	0.15	0.29		0.92*	0.38	−0.01	0.39	
African American[a]	0.28	0.32	0.52	0.39		0.78	0.49	0.39	0.50	
Physical abuse	0.27	0.16	−0.03	0.18		0.40	0.23	0.06	0.24	
Parental criminality	0.13	0.22	0.35	0.24		0.66	0.36	0.57	0.34	
Parental warmth	−0.01	0.04	−0.04	0.05		0.07	0.06	−0.01	0.07	
Parental monitoring	0.07	0.06	−0.04	0.06		−0.04	0.09	−0.02	0.08	
Peer delinquency	0.07**	0.02	0.10**	0.03		0.03	0.04	0.09*	0.04	
Prior delinquency	0.71**	0.19	1.00**	0.22		1.30**	0.27	1.14**	0.27	

[a] Caucasian youth are the reference group.
* $p < .05$ (2-tailed).
** $p < .01$ (2-tailed).

Table 4
Fixed effects models predicting adolescent drug use at Wave 2, by gender.

	Drug use				*Z*-Test	Any drug use				*Z*-Test
	Males		Females			Males		Females		
	˘	*SE*	˘	*SE*		˘	*SE*	˘	*SE*	
Intercept	0.24*	0.10	−0.08	0.11	2.15*	−0.32*	0.14	−0.76**	0.13	2.30*
Past year IPV exposure	−0.00	0.03	0.04**	0.01		−0.05	0.04	0.06	0.04	
Age	0.29**	0.07	0.13	0.07		0.26*	0.12	0.21	0.11	
Family SES	0.13*	0.06	0.02	0.06		−0.03	0.10	−0.00	0.10	
Hispanic[a]	−0.29	0.26	−0.53*	0.23		−0.06	0.40	−0.35	0.41	
African American[a]	−0.56	0.31	−0.08	0.28		−0.10	0.52	−0.70	0.52	
Physical abuse	0.37*	0.15	−0.12	0.16	2.23*	0.19	0.25	0.17	0.25	
Parental drug use	0.15	0.20	−0.07	0.20		0.24	0.35	−0.08	0.33	
Parental warmth	0.02	0.04	−0.10*	0.04	2.12*	0.02	0.06	−0.06	0.07	
Parental monitoring	0.03	0.05	−0.02	0.05		0.12	0.09	−0.01	0.09	
Peer drug use	0.23**	0.05	0.12*	0.05		0.38**	0.10	0.10	0.08	2.19*
Prior drug use	0.76**	0.17	1.36**	0.21	−2.22*	0.91**	0.28	1.73**	0.33	

[a] Caucasian youth are the reference group.
* $p < .05$ (2-tailed).
** $p < .01$ (2-tailed).

already begun using drugs at Wave 1. For males only, the frequency of drug use was predicted by age (with older respondents using drugs more often), family socioeconomic status (with higher SES related to more drug use), and physical abuse (with abused males using drugs more frequently). Among females only, Hispanics were less frequent drug users (compared to Caucasians), as were those who experienced more parental warmth. Use of *any* drugs at Wave 2 was predicted by age and peer drug use (for males only, with older youth and those having drug-using peers more likely to use drugs themselves) and by prior drug use (for both sexes).

A few significant gender differences in the predictors of adolescent drug use were found. Males who were physically abused were significantly more likely than female abuse victims to use drugs frequently. Daughters whose parents displayed warmth towards them were less likely than sons with warm parents to use drugs frequently; that is, parental warmth was a protective factor reducing drug use among females but not males. Females were also more affected by their own prior drug use: those reporting earlier drug use had significantly more frequent drug use than males who had previously used drugs. Males, however, were more susceptible to peer influences. Males whose peers used drugs were significantly more likely than females with friends who used drugs to report using any drugs. As shown in the first row of Table 4, the model intercepts indicated that males were significantly more likely than females to report frequent and any use of drugs.

Discussion

This paper examined the relationship between gender, exposure to intimate partner violence, and adolescent violence and drug use. While many prior studies have found that youth exposed to IPV are at an increased risk for subsequent problem behaviors, our analyses indicated that, controlling for a range of other child and family experiences, IPV exposure did not significantly predict the likelihood of violence or the number of violent acts reported by adolescents. IPV exposure did

significantly increase the frequency of drug use, but not the likelihood of engaging in any drug use, among female adolescents only. These findings suggest that the negative effects of IPV exposure may not be uniform; instead, they may vary depending on the outcome assessed and the gender of the victim.

Our results indicated mixed support for gender differences in the effects of IPV exposure on adolescent violence and drug use. Bivariate analyses indicated that IPV exposure increased the likelihood of drug use among females but not males, and IPV exposure predicted an increased frequency of drug use among females but not males in multivariate models that controlled for prior drug use and other individual, family, and neighborhood control variables. However, the results did not indicate significant gender differences in the strength of the relationship between IPV exposure and the frequency of drug use, and no gender differences were found in the effects of IPV on violence among males and females. These findings suggest that the effects of IPV on adolescent development are more similar than different, which is in contrast to studies hypothesizing and/or demonstrating that IPV exposure has a greater impact on externalizing behaviors such as aggression and violence for males compared to females (Clements et al., 2008; Evans et al., 2008; Yates et al., 2003). However, relatively few studies have assessed gender differences in the relationship between IPV exposure and adolescent problem behaviors, particularly substance use. More research is clearly needed to explore potential differences in how females and males respond to violence occurring between their parents.

Our findings did not reveal significant gender differences in strength of the relationship between the control variables and subsequent adolescent violence, but there were several gender differences in the effects of these factors on drug use. Males who were physically abused were more likely than females who were physically abused to use drugs frequently. Peer influences were also more important for males, in that males whose peers used drugs were more likely to report having used any drugs than females whose peers also used drugs. Females' past drug use was more important in predicting their subsequent drug use than was males' prior drug use, and parental warmth significantly reduced drug use among females but did not do so for males. These results suggest that while the predictors of violence among males and females are similar, gender differences in the predictors of drug use are more likely.

In summary, this investigation found both gender similarities and differences in the effects of exposure to IPV on violence and drug use. Strengths of the current study include reliance on longitudinal data and a relatively large and ethnically diverse sample of adolescents. Unlike much prior research, the current investigation also included multiple control variables. Doing so is important given that models which do not include relevant control variables, especially those that may be prevalent in families experiencing IPV, may mis-specify the relationship between IPV and negative outcomes (Herrenkohl, Sousa, Tajima, Herrenkohl, & Moylan, 2008; Holt et al., 2008). It is also noteworthy that the primary independent and dependent variables were both measured during adolescence, whereas much prior research has assessed exposure to IPV and problem behaviors primarily

during childhood. Within criminology, developmental research has suggested that family influences on children may be less salient during adolescence, when teenagers are striving to assert their independence from parents and are becoming more exposed to peer and environmental factors which may influence their behavior more so than parental factors (Patterson, DeBaryshe, & Ramsey, 1989; Sampson & Laub, 1993); our examination extends the family violence research by focusing on adolescence rather than childhood.

Our study did have limitations, however. The analyses relied on self-reports of both IPV (from caregivers) and problem behaviors (from adolescents) and may not be representative of families in which IPV or adolescent behaviors are severe enough to warrant attention from the criminal justice system. Reliance on official reports of these measures is also problem- atic, however, as they fail to capture individuals whose behaviors have not come to the attention of the authorities. Further, there is evidence that self-reports can produce valid measures of youth's participation in substance use and other illegal activities (Bachman, Johnston, & O'Malley, 1996; Thornberry & Krohn, 2000).

Some of the current findings are in contrast to those demonstrated in prior research (Evans et al., 2008; Herrera & McCloskey, 2001; Ireland & Smith, 2009; Maxwell & Royo Maxwell, 2003; Moretti et al., 2006; Sousa et al., 2010). However, differences in the methodological design and sample characteristics between the current study and past work may explain this disparity. For instance, this investigation included many control variables and examined adolescents living in inner- city neighborhoods of a large metropolis (Chicago). Although we believe that the inclusion of multiple control variables increases confidence in the results, two of the measures (parental SES and parental monitoring) had relatively low internal reliability, which may have impacted their relationships with the outcomes. Future research may also wish to include these as control variables to assess how they might affect relationships between IPV exposure and adolescent behaviors. Additionally, respondents in this study were primarily Hispanic and African American adolescents from urban neighborhoods in just one city, and as such our findings may not be generalizable to families living in other geographical regions or from other racial/ethnic backgrounds. Finally, the fact that IPV did not significantly predict violence and predicted drug use frequency among females only may be related to our measure of IPV, which was reported by caregivers using the Conflict Tactics Scale. Although the validity and reliability of the CTS has been demonstrated (Straus, 1979), we restricted the measure to the most serious forms of violence, which we hypothesized would have the greatest impact on problem behaviors, but the results cannot be generalized to families experiencing less severe conflict. In addition, although evidence suggests that even if children do not directly witness parental violence, they may be knowledgeable of it because they hear or see the aftermath of such altercations (e.g., broken furniture, bruises) (Holt et al., 2008), we cannot ensure that all children whose parents reported IPV actually witnessed or knew about the events. The measure may thus have under-estimated the effects of IPV if some adolescents coded as victims were actually unaware of their caregivers' violence.

Given the limitations of the current investigation and the relatively paucity of research in this area, there is need for continued investigation of potential gender differences in the negative effects of exposure to IPV on adolescents. Studies based on longitudinal data can help identify the specific pathways from this type of victimization to delinquency and violent behavior later in life. A better understanding of these relationships can help inform intervention efforts aimed at ensuring that youth living in violent households receive timely and appropriate services that can help prevent the occurrence of future problem behaviors.

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