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# Longitudinal Associations Between Teen Dating Violence Victimization and Adverse Health Outcomes

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## KEY WORDS

adolescent, young adult, dating violence, adverse outcomes, longitudinal studies

## ABBREVIATIONS

A-CASI—audio computer-assisted self-interview  
Add Health—National Longitudinal Study of Adolescent Health  
aOR—adjusted odds ratio  
CI—confidence interval  
CTS2—Revised Conflict Tactics Scale  
IPV—intimate partner violence  
PPV—physical and psychological victimization  
PVO—psychological victimization only  
TDV—teen dating violence

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**WHAT'S KNOWN ON THIS SUBJECT:** Although a number of cross-sectional studies have documented associations between teen dating violence victimization and adverse health outcomes, including sexual risk behaviors, suicidality, substance use, and depression, longitudinal work examining the relationship between victimization and outcomes is limited.



**WHAT THIS STUDY ADDS:** This study is the first to demonstrate the longitudinal associations between teen dating violence victimization and multiple young adult health outcomes in a nationally representative sample. Findings emphasize the need for screening and intervention for both male and female victims.

## abstract



**OBJECTIVE:** To determine the longitudinal association between teen dating violence victimization and selected adverse health outcomes.

**METHODS:** Secondary analysis of Waves 1 (1994–1995), 2 (1996), and 3 (2001–2002) of the National Longitudinal Study of Adolescent Health, a nationally representative sample of US high schools and middle schools. Participants were 5681 12- to 18-year-old adolescents who reported heterosexual dating experiences at Wave 2. These participants were followed-up ~5 years later (Wave 3) when they were aged 18 to 25. Physical and psychological dating violence victimization was assessed at Wave 2. Outcome measures were reported at Wave 3, and included depressive symptomatology, self-esteem, antisocial behaviors, sexual risk behaviors, extreme weight control behaviors, suicidal ideation and attempt, substance use (smoking, heavy episodic drinking, marijuana, other drugs), and adult intimate partner violence (IPV) victimization. Data were analyzed by using multivariate linear and logistic regression models.

**RESULTS:** Compared with participants reporting no teen dating violence victimization at Wave 2, female participants experiencing victimization reported increased heavy episodic drinking, depressive symptomatology, suicidal ideation, smoking, and IPV victimization at Wave 3, whereas male participants experiencing victimization reported increased antisocial behaviors, suicidal ideation, marijuana use, and IPV victimization at Wave 3, controlling for sociodemographics, child maltreatment, and pubertal status.

**CONCLUSIONS:** The results from the present analyses suggest that dating violence experienced during adolescence is related to adverse health outcomes in young adulthood. Findings from this study emphasize the importance of screening and offering secondary prevention programs to both male and female victims. *Pediatrics* 2013;131:71–78

Teen dating violence (TDV) is a substantial public health problem in the United States. In nationally representative samples, 20% of adolescents report any psychological violence victimization, and 0.8% to 12.0% report any physical violence victimization.<sup>1–3</sup> Although the burden of TDV victimization falls fairly equally on both boys and girls,<sup>4,5</sup> girls may experience more severe physical and sexual victimization than boys.<sup>2,5,6</sup>

A number of cross-sectional studies report that for both boys and girls, TDV victimization is associated with adverse outcomes, including increased sexual risk behaviors,<sup>7–9</sup> suicidal behaviors,<sup>6,10–12</sup> unhealthy weight control methods,<sup>8,10</sup> adverse mental health outcomes,<sup>11,13,14</sup> substance use,<sup>8,14,15</sup> pregnancy outcomes,<sup>8,16,17</sup> and injuries.<sup>5</sup> However, the cross-sectional design of these previous studies precludes an assessment of whether these behaviors are a cause or consequence of victimization.

Although several recent longitudinal studies have investigated the association between TDV victimization and later adverse outcomes,<sup>18–24</sup> only 4 have investigated outcomes other than risk for revictimization; 1 study<sup>21</sup> looked at effects of physical and sexual TDV on adverse health outcomes 5 years post-victimization in a sample of 1516 Minnesota teenagers, whereas the other studies<sup>22–24</sup> used the National Longitudinal Study of Adolescent Health (Add Health). Roberts et al<sup>22</sup> explored impacts of physical and psychological TDV on health risk behaviors in male and female individuals 1 year post-victimization. Teitelman et al<sup>23</sup> examined effects on future intimate partner violence (IPV) and HIV risk in a subsample of sexually active women, and van Dulmen et al<sup>24</sup> investigated cross-lagged effects between violence victimization and suicidality. Although 3 of these studies found associations between TDV victimization and future

adverse consequences, they each faced limitations, including limited power to detect effects,<sup>21</sup> limited outcome measures,<sup>23,24</sup> and a short-term follow-up period.<sup>22</sup> Further, although the adverse consequences of psychological victimization have been documented for adult men and women and female adolescents,<sup>17,25</sup> no previous studies have examined outcomes for adolescent males who have experienced psychological TDV. Because of the importance of understanding the association between TDV victimization and future health and well-being, the current study investigated a broad range of adverse outcomes related to physical and psychological TDV exposure 5 years after victimization in a nationally representative sample.

## METHODS

### Data

This study analyzed data from the Add Health data set. Add Health was designed to study determinants of health and risk behaviors in a nationally representative sample of US adolescents. In 1994, participants were selected from 80 high schools and 52 middle schools, stratified with respect to region of country, urbanicity, school size, school type, and ethnicity. At Wave 1 (1994–1995), adolescents in grades 7 to 12 participated in a structured in-home interview. Adolescents were reinterviewed in 1996 at Wave 2, and again in 2001–2002 (Wave 3).

### Sample

The analytic sample was restricted to adolescents who participated in the in-home interviews at Waves 1, 2, and 3. Participants were included if they reported that they (1) had been in a heterosexual dating or sexual relationship between the Wave 1 and 2 interviews ( $n = 7210$ )<sup>18,19</sup>; (2) were 18 years or younger at Wave 2 ( $n = 6638$ ); (3) had answered Wave 2 audio computer-assisted self-interview (A-CASI)

questions honestly ( $n = 6289$ )<sup>14</sup>; and (4) had complete data on all covariates ( $n = 5681$ ). Complete case analysis resulted in the exclusion of <10% of the eligible sample.

### Measures

At Wave 2, participants identified up to 3 romantic and 3 sexual relationships occurring since the Wave 1 interview. Participants were asked about violence victimization experienced in each relationship by using A-CASI. (All variables except age, race/ethnicity, gender, socioeconomic status, depression, self-esteem, and extreme weight control were assessed by using A-CASI.) Dating violence was measured by using 5 items from the revised Conflict Tactics Scale (CTS2).<sup>26</sup> Participants were asked if a partner had ever (1) called them names, insulted them, or treated them disrespectfully in front of others; (2) sworn at them; (3) threatened them with violence; (4) pushed or shoved them; or (5) thrown something at them that could hurt. For the present analyses, a dichotomous variable was created, indicating whether participants endorsed the particular victimization item in any of their romantic or sexual relationships.

Associations with adverse outcomes were explored in 2 TDV subgroups: those reporting psychological victimization only (PVO) (item[s] 1, 2, and/or 3) and those reporting both physical and psychological victimization (PPV) (item [s] 1, 2, and/or 3 and item[s] 4 and/or 5).<sup>1,27</sup> The subgroup experiencing physical violence only was too small to include in analyses. The comparison group was adolescents reporting having dating partners but no dating violence at Wave 2.

### Control Variables

#### Demographics

Included were age (Wave 2), gender, race/ethnicity (non-Hispanic white,

non-Hispanic black, Hispanic, and non-Hispanic other), and socioeconomic status, as indicated by parental education<sup>18,19</sup> (Wave 1; 6 categories).

### *Pubertal Status*

At Wave 2, participants rated themselves on 3 indicators of physical maturity, similar to items found in the Pubertal Development Scale.<sup>28</sup> Following Foster et al,<sup>27</sup> each item was first standardized to mean 0 and SD 1 and then averaged to create the pubertal status score. Higher scores indicate more advanced pubertal status.

### *Child Maltreatment*

Child maltreatment was measured retrospectively at Wave 3 by using 3 items, reflecting neglect, physical abuse, and sexual abuse. Questions were similar to those in the Parent-Child Conflict Tactics Scale.<sup>29</sup> A dichotomous variable indicates whether participants reported any form of abuse or neglect.

### *Forced Sex*

At Waves 1 and 2, female participants only were asked if they were physically forced to have sexual intercourse against their will by any person. A dichotomous variable reflects endorsement of forced sex by female participants at either wave.

## **Wave 3 Outcome Variables**

### *Depression*

Nine items from the 20-item Centers for Epidemiologic Studies—Depression Scale were used to assess depressive symptomatology,<sup>30</sup> asking if participants had experienced particular feelings in the past 7 days (eg, “You felt depressed”). The 9 items were summed; higher scores indicate greater depressive symptomatology (range, 0–27; Cronbach’s  $\alpha = 0.80$ ).

### *Self-esteem*

Self-esteem was assessed by using 4 items from Rosenberg’s self-esteem

scale (eg, “I have a lot of good qualities”).<sup>31</sup> Items were reverse coded and summed, so that higher scores indicate higher self-esteem (range, 0–16; Cronbach’s  $\alpha = 0.78$ ).

### *Antisocial Behaviors*

Seven items from the Self-Reported Delinquency scale assessed the frequency of antisocial behaviors over the past 12 months.<sup>32</sup> The 7 items were summed; higher scores indicate a greater frequency of antisocial behaviors (range, 0–21; Cronbach’s  $\alpha = 0.65$ ).

### *Sexual Risk*

Based on previous Add Health sexual risk indices,<sup>33,34</sup> we included 5 risk behaviors in this scale: condom nonuse at last sex, birth control nonuse at last sex,  $\geq 3$  sexual partners within the past 12 months, any sexually transmitted infection diagnosis in the past 12 months, and exchanging sex for drugs or money in the past 12 months. Each item was dichotomized and summed; higher scores indicate greater risk (range, 0–5).

### *Extreme Weight Control*

A dichotomous variable indicates if participants reported any of 3 extreme weight control items in the past 7 days to lose weight or keep from gaining weight (self-induced vomiting, taking diet pills, or taking laxatives).

### *Suicidality*

A dichotomous variable reflects if participants reported seriously thinking about committing suicide in the past 12 months. Participants endorsing this item were then asked if they had actually attempted suicide in the past 12 months (yes/no).

### *Substance Use*

Participants reported on smoking behavior in the past 30 days. This variable was dichotomized, indicating smoking on 1 or more days. To assess drinking

behavior, participants reported how many times they drank 5 or more drinks in a row in the past year. Heavy episodic drinking was defined as having at least 2 to 3 such episodes a month for each of the preceding 12 months (yes/no). Past year illicit substance use was divided into 2 categories: marijuana use and other drug use (eg, cocaine, injection drugs). Both variables were dichotomized, indicating any marijuana or other drug use in the past 12 months.

### *Adult IPV Victimization*

Participants reported on physical violence victimization occurring in romantic and sexual relationships in the past 12 months. Physical IPV items were derived from the CTS2<sup>26</sup>; participants were asked if a partner had (1) threatened them with violence, pushed or shoved them, or thrown something at them that could hurt or (2) slapped, hit, or kicked them. A dichotomous variable indicates whether participants endorsed either adult physical IPV item.

## **Analysis**

Descriptive statistics were calculated for the entire sample ( $n = 5681$ ). Bivariate associations between TDV victimization and other variables were then explored; significance of these associations was tested by using  $t$  tests or  $\chi^2$  tests of association as appropriate. Gender-stratified linear or logistic multivariate models that controlled for the level of the dependent variable at the previous wave were then created for each Wave 3 outcome variable. Multivariate analyses were performed for each TDV subgroup (PVO and PPV), to compare and contrast associations with outcomes. All multivariate models controlled for race, age, socioeconomic status, child maltreatment, pubertal status, and gender. Analyses in the female subsample only also controlled for forced sex.

To explore the impact of missing data, individuals with any missing data on

control or outcome variables were compared with individuals with no missing data. At Wave 2, individuals with missing data reported greater depression and lower self-esteem, and were more likely to report a suicide attempt, but less likely to report marijuana use. At Wave 3, individuals with missing data were less likely to report heavy episodic drinking. Individuals with missing data were also younger, had lower socioeconomic status, and reported less advanced pubertal status. Because the missing data mechanism did not appear to be missing completely at random (MCAR),<sup>35</sup> we attempted multiple imputation. However, because of the number of empty cells, the algorithm was unable to construct a distribution sufficiently precise for imputation, and so we could not use this method. Instead, we ran all analyses on 2 subsets, a subset using available case deletion and the complete case subset; the results from these subsets were similar, indicating that the missing data mechanism likely did not bias the results in any substantial way.<sup>36</sup> Because of this, results are presented for the complete case sample only ( $n = 5681$ ).<sup>35</sup>

All analyses were performed in R v.2.11.1. Because of design effects in the Add Health data set,<sup>37</sup> the R Survey package (The R Foundation for Statistical Computing. Available at: [www.r-project.org](http://www.r-project.org), 2010) was used to calculate all descriptive statistics, bivariate associations, and regression models. All results were evaluated at  $P < .05$ . This study was reviewed by the Cornell University Institutional Review Board and deemed exempt.

## RESULTS

### Sample Characteristics

Wave 2 TDV victimization was reported by 30.8% of adolescents in this sample; subgroup percentages and socio-demographic characteristics for the

entire sample are reported in Table 1. Victims and nonvictims differed on all characteristics except gender (Table 2). In the female subsample, 68.8% had never experienced TDV, 19.5% had experienced PVO, and 9.5% had experienced PPV, whereas in the male subsample, 69.6% had never experienced TDV, 20.1% had experienced PVO, and 7.6% had experienced PPV. Subtype of violence experienced did not vary by gender.

### Relationships Between Adverse Outcomes and TDV

#### PVO Subgroup

Compared with nonvictimized male individuals, male PVO victims reported increased Wave 3 antisocial behaviors

( $b = 0.33$ ; 95% confidence interval [CI] 0.12–0.54), as well as increased odds of suicidal ideation (adjusted odds ratio [aOR] = 1.90; 95% CI 1.13–3.20), marijuana use (aOR = 1.34; 95% CI 1.03–1.74), and adult IPV victimization (aOR = 2.08; 95% CI 1.53–2.84) (Table 3). In the female subsample, PVO victims were more likely to experience increased odds of Wave 3 heavy episodic drinking (aOR = 1.44; 95% CI 1.03–2.01) and adult IPV victimization (aOR = 1.87; 95% CI 1.44–2.43) when compared with nonvictims (Table 3). There were no associations with depressive symptomatology, self-esteem, sexual risk, extreme weight control, suicide attempt, smoking, or other drug use in either the male or female PVO samples (Table 3).

**TABLE 1** Sociodemographics ( $n = 5681$ )

	% ( $n$ ) <sup>a</sup>
Wave 2 age, y, mean (SD)	16.0 (0.10); range, 12–18 y
Wave 3 age, y, mean (SD)	21.4 (0.10); range, 18–25 y
Sex	
Male	47.7 (2519)
Female	52.3 (3162)
Race	
White, non-Hispanic	69.3 (3195)
Black, non-Hispanic	13.5 (1074)
Hispanic	10.8 (864)
Other	6.4 (548)
Parental education	
≤8th grade	2.7 (190)
Some high school	7.9 (447)
High school graduate	30.5 (1639)
Some postsecondary	22.8 (1236)
College graduate	24.5 (1426)
Postcollege	11.6 (743)
Child maltreatment	
Yes	33.1 (1906)
No	66.9 (3775)
Pubertal status	
2 SD above mean	1.6 (86)
1 SD above mean	14.8 (851)
Within ±1 SD of mean	71.8 (4095)
1 SD below mean	10.7 (584)
2 SD below mean	1.1 (65)
Wave 2 TDV victimization <sup>b</sup>	
PVO	19.8 (1143)
Physical only	2.4 (128)
PPV	8.6 (483)
None	69.2 (3927)

<sup>a</sup> Unless otherwise noted. Percentages and means are weighted, number of subjects is unweighted.

<sup>b</sup> At Wave 2, 28.4% of participants experienced either psychological violence only (19.8%) or both physical and psychological violence victimization (8.6%), and 69.2% reported no violence victimization. The remaining 2.4% reported physical violence victimization only (ie, no psychological victimization). Previous studies have found comparable past year prevalence rates for individuals reporting physical violence only.<sup>1,38</sup>



**TABLE 2** Sociodemographics by Wave 2 Victimization Status ( $n = 5681$ )

	% ( $n$ ) <sup>a</sup>	
	Victims ( $n = 1754$ ) <sup>b</sup>	Nonvictims ( $n = 3927$ )
Wave 2 age, mean (SD) <sup>c</sup>	16.2 (0.09)	15.9 (0.10)
Wave 3 age, mean (SD) <sup>c</sup>	21.7 (0.10)	21.4 (0.10)
Sex		
Male	47.0 (808)	48.0 (1711)
Female	52.3 (946)	52.0 (2216)
Race <sup>d</sup>		
White, non-Hispanic	66.1 (968)	70.7 (2227)
Black, non-Hispanic	15.2 (341)	12.8 (733)
Hispanic	11.3 (262)	10.6 (602)
Other	7.5 (183)	6.0 (365)
Parental education <sup>e</sup>		
≤8th grade	2.0 (51)	3.0 (139)
Some high school	9.7 (154)	7.1 (293)
High school graduate	32.3 (553)	29.7 (1086)
Some postsecondary	23.6 (384)	22.5 (852)
College graduate	22.2 (406)	25.5 (1020)
Postcollege	10.3 (206)	12.2 (537)
Child maltreatment <sup>c</sup>		
Yes	40.2 (688)	29.9 (1218)
No	59.8 (1066)	70.1 (2709)
Pubertal status <sup>e</sup>		
2 SD above mean	2.6 (39)	1.1 (47)
1 SD above mean	16.7 (303)	14.0 (548)
Within ±1 SD of mean	70.0 (1234)	72.6 (2861)
1 SD below mean	9.6 (160)	11.2 (424)
2 SD below mean	3.1 (18)	1.1 (47)

<sup>a</sup> Unless otherwise noted. Percentages and means are weighted, number of subjects is unweighted.

<sup>b</sup> Victims are individuals who reported physical TDV victimization only ( $n = 128$ ), psychological TDV victimization only ( $n = 1143$ ), or both physical and psychological TDV victimization ( $n = 483$ ) at Wave 2.

<sup>c</sup>  $P < .001$ .

<sup>d</sup>  $P < .05$ .

<sup>e</sup>  $P < .01$ .

### PPV Subgroup

Wave 2 PPV in female individuals was associated with greater depressive symptomatology ( $b = 0.90$ ; 95% CI 0.12–

1.67), as well as increased odds of suicidal ideation ( $aOR = 2.07$ ; 95% CI 1.17–3.66), smoking ( $aOR = 1.53$ ; 95% CI 1.13–2.06), and adult IPV victimization

**TABLE 3** Regression Analyses Predicting Outcomes at Wave 3 for Adolescents Reporting PVO at Wave 2, Stratified by Gender

	Male ( $n = 2254$ )		Female ( $n = 2816$ )	
	Coefficient, $b$ (95% CI)	$P$ Value	Coefficient, $b$ (95% CI)	$P$ Value
Depression	0.36 (−0.02 to 0.74)	.06	0.21 (−0.57 to 1.00)	.40
Self-esteem	−0.18 (−0.45 to 0.08)	.18	−0.15 (−0.42 to 0.13)	.30
Antisocial behaviors	0.33 (0.12 to 0.54)	.003	0.04 (−0.10 to 0.18)	.57
Sexual risk taking <sup>a</sup>	−0.07 (−0.37 to 0.23)	.63	0.19 (−0.08 to 0.46)	.17
	Coefficient, $aOR$ (95% CI)	$P$ Value	Coefficient, $aOR$ (95% CI)	$P$ Value
Extreme weight control	1.63 (0.60 to 4.40)	.34	1.47 (0.93 to 2.33)	.10
Suicidal ideation	1.90 (1.13 to 3.20)	.02	1.61 (0.94 to 2.77)	.09
Suicide attempt	1.33 (0.41 to 4.35)	.63	2.12 (0.93 to 4.86)	.08
Smoking	0.99 (0.72 to 1.36)	.96	1.16 (0.90 to 1.51)	.25
Heavy episodic drinking	1.24 (0.92 to 1.68)	.16	1.44 (1.03 to 2.01)	.04
Marijuana use	1.34 (1.03 to 1.74)	.03	1.11 (0.86 to 1.44)	.43
Other drug use	1.36 (0.93 to 1.98)	.12	1.40 (0.97 to 2.00)	.07
Adult IPV victimization	2.08 (1.53 to 2.84)	< .001	1.87 (1.44 to 2.43)	< .001

All analyses controlled for race, age, socioeconomic status, child maltreatment, pubertal status, and gender. Each analysis also controlled for the dependent variable at Wave 2 (eg, in the regression for depression, depression at Wave 2 was included as a covariate). Analyses for females also included forced sex as a covariate.

<sup>a</sup> Results are for the subset of participants who were sexually active at Waves 2 and 3.

( $aOR = 2.79$ ; 95% CI 2.06–3.77) at Wave 3 (Table 4). In male individuals, Wave 2 PPV was associated only with increased Wave 3 adult IPV victimization ( $aOR = 3.56$ ; 95% CI 2.34–5.42); however, there was also a borderline association between PPV at Wave 2 and depressive symptomatology at Wave 3 (Table 4). There were no associations with self-esteem, antisocial behaviors, sexual risk, heavy episodic drinking, marijuana use, or other drug use in either the male or female PPV samples (Table 4).

## DISCUSSION

The results of this study suggest that in this sample, TDV victimization experienced during adolescence was related to adverse health outcomes in young adulthood. Five years after victimization, female victims reported increased heavy episodic drinking, depressive symptomatology, suicidal ideation, smoking, and adult IPV victimization, whereas male victims reported increased antisocial behaviors, suicidal ideation, marijuana use, and adult IPV victimization, compared with individuals reporting no victimization at Wave 2. Further, in the male subsample, we found that PVO was more strongly associated with adverse outcomes than the experience of PPV, whereas for female individuals, the converse appeared true (ie, PPV was related to more outcomes than PVO). This suggests that for male and female individuals, outcomes may be differentially related to certain subtypes of TDV. Because previous studies of TDV victimization have not assessed the association of PVO with future outcomes, and, as psychological aggression in teen dating relationships is an understudied phenomenon, it is important that future studies include a specific consideration of this form of victimization, to replicate these findings. The finding that PVO was more often related

**TABLE 4** Regression Analyses Predicting Outcomes at Wave 3 for Adolescents Reporting PPV at Wave 2, Stratified by Gender

	Male (n = 1909)		Female (n = 2501)	
	Coefficient, b (95% CI)	P Value	Coefficient, b (95% CI)	P Value
Depression	0.89 (0.01 to 1.76)	.05	0.90 (0.12 to 1.67)	.03
Self-esteem	-0.06 (-0.42 to 0.30)	.75	-0.18 (-0.50 to 0.13)	.26
Antisocial behaviors	0.54 (-0.05 to 1.14)	.08	0.03 (-0.17 to 0.22)	.80
Sexual risk taking <sup>a</sup>	0.006 (-0.34 to 0.35)	.97	-0.11 (-0.44 to 0.22)	.52
	Coefficient, aOR (95% CI)	P Value	Coefficient, aOR (95% CI)	P Value
Extreme weight control	n/a	n/a	0.95 (0.46 to 1.96)	.90
Suicidal ideation	1.90 (0.96 to 3.74)	.07	2.07 (1.17 to 3.66)	.01
Suicide attempt	n/a	n/a	1.87 (0.81 to 4.32)	.15
Smoking	1.04 (0.63 to 1.71)	.88	1.53 (1.13 to 2.06)	.006
Heavy episodic drinking	1.13 (0.72 to 1.76)	.61	0.98 (0.64 to 1.48)	.91
Marijuana use	1.13 (0.72 to 1.79)	.59	1.06 (0.70 to 1.60)	.78
Other drug use	1.20 (0.74 to 1.92)	.46	0.98 (0.58 to 1.64)	.93
Adult IPV victimization	3.56 (2.34 to 5.42)	<.001	2.79 (2.06 to 3.77)	<.001

All analyses controlled for race, age, socioeconomic status, child maltreatment, pubertal status, and gender. Each analysis also controlled for the dependent variable at Wave 2 (eg, in the regression for depression, depression at Wave 2 was included as a covariate). Analyses for females also included forced sex as a covariate. n/a, indicates that the cell count for male victims at Wave 3 was too small to obtain a reliable estimate.

<sup>a</sup> Results are for the subset of participants who were sexually active at Waves 2 and 3.

to adverse outcomes in male subjects than PPV also deserves further investigation. Based on literature suggesting that male individuals are more likely than female individuals to laugh off physical violence by a partner,<sup>39,40</sup> it seems plausible that psychological victimization may affect male individuals more than physical victimization. However, this does not explain why the combination of physical and psychological aggression was associated with fewer outcomes than PVO. One possibility is that psychological aggression experienced on its own is qualitatively different from that experienced in combination with physical aggression; for example, perhaps psychological aggression is more severe when not accompanied by physical violence. This possibility should be investigated with data that provide more thorough measurement of the nature of psychological aggression (eg, severity, frequency), to clarify this result.

Our results also extend the findings of Roberts et al,<sup>22</sup> who looked at adverse outcomes experienced ~1 year after victimization. By using this time frame, they found that TDV in female individuals was associated with next-year

substance use, antisocial behaviors, and suicidal behaviors, whereas in both males and female individuals, TDV was associated with next-year depressive symptomatology. Following-up with this same sample ~5 years post-victimization, we found that effects on substance use, depressive symptomatology, and suicidal behaviors persisted for female subjects. For male subjects, depression effects appeared slightly attenuated. In addition, associations with substance use, antisocial behaviors, and suicidal behaviors emerged in the male subsample, but only for the subset of male subjects experiencing PVO. This discrepancy may be because the TDV measure used by Roberts et al<sup>22</sup> included individuals experiencing any combination of psychological and physical victimization, and did not divide the sample into violence subgroups.

Although not testable here, coping processes may represent 1 potential mechanism for explaining trajectories from TDV victimization to adverse outcomes.<sup>41</sup> Namely, individuals experiencing adverse outcomes may appraise victimization as psychologically stress-

ful, and then use unhealthy coping processes to deal with this demand.<sup>41,42</sup> By using a sample of adult IPV victims, Calvete et al<sup>43</sup> found that disengagement coping mediated the relationship between psychological aggression and depression/anxiety. It is possible this same relationship holds for TDV victimization. Other coping mechanisms might also be investigated, including substance use as both a potential outcome and form of coping.<sup>44,45</sup>

Several limitations of this study should be noted. First, although this study was longitudinal, and TDV was determined to be a statistical predictor of several subsequent adverse outcomes, our results may be confounded by unmeasured factors. Therefore, although our findings may reflect a causal relationship between TDV and adverse health outcomes in both male and female individuals, it is also possible that the relationship is spurious. Second, although our results suggested that specific subtypes of TDV victimization may be differentially associated with adverse outcomes, the 5 Add Health TDV questions measured relatively mild forms of psychological and physical aggression, and so we could not assess whether these same patterns existed for more severe forms of violence. Add Health also did not include questions related to sexual TDV victimization. Because female individuals appear more likely to experience severe forms of TDV,<sup>2,5,6</sup> including more comprehensive questions may allow a more precise assessment of the relationship between TDV and adverse outcomes in female victims. Finally, all 5 TDV questions were derived from the CTS2, and so are focused on specific behaviors, and not the context within which the acts occurred, further limiting a more nuanced investigation of the association between TDV and future outcomes.<sup>46</sup>

In spite of these limitations, these findings have important implications

for future research and clinical practice. Specifically, our data emphasize the importance of screening male and female adolescents for dating violence victimization, so that victims can be appropriately referred to secondary prevention programs and treatment. Research demonstrates that youth are willing to be screened,<sup>47</sup> and that health care providers can screen youth for TDV victimization quickly and effectively,<sup>48</sup> although individuals experiencing controlling behaviors specifically may be less willing to disclose.<sup>58</sup> Recent recommendations from the Institute of Medicine also support screening adolescent women for TDV victimization (recommendation 5.7).<sup>49</sup> As the findings of this study demonstrate, opportunities to intervene after the occurrence of TDV may be critically important to improving future health outcomes for victims.

## CONCLUSIONS

TDV experienced in adolescence was associated with a number of adverse health outcomes in young adulthood for both male and female individuals. Our findings emphasize the need to provide opportunities for secondary prevention to teenagers, including prioritizing TDV screening during clinical office visits and developing health care-based interventions for responding to adolescents who are in unhealthy relationships, as part of the effort to reduce future health problems in victims. Finally, further research using more nuanced measures of TDV is needed to better understand the mechanism of these effects.

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## Longitudinal Associations Between Teen Dating Violence Victimization and Adverse Health Outcomes

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