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Do Gender and Exposure to Interparental Violence Moderate the Stability of Teen Dating Violence?: Latent Transition Analysis

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Abstract This study investigates the development, change, and stability of teen dating violence (TDV) victimization over time. Specifically, we identify distinct subgroups of adolescents based on past-year TDV victimization, whether adolescents change victimization statuses over time (e.g., from psychological victimization to physical victimization), and how exposure to interparental violence and gender influence the prevalence and stability of TDV statuses. Adolescents (N=1, 042) from 7 public high schools in Texas participated in this longitudinal study. The Conflict in Adolescent Dating Relationships Inventory (CADRI) (Wolfe et al., *Psychological Assessment, 13*(2), 277–293, 2001) was used to identify victimization statuses. Latent Transition Analysis (LTA) with measurement invariance was used to examine transition probability of an individual's latent status at Wave3 or Wave4 given his or her latent status at Wave2 or Wave3. Gender and exposure to interparental violence was included as moderators in the LTA. Three statuses of TDV victimization were identified: (1) non-victims; (2) emotional/verbal victims; and (3) physical/psychological victims. LTA showed that the majority of adolescents stayed in the same status over time; however, female youth exposed to interparental violence were more likely to move from a less to more severe status over time compared to non-exposed youth. This is among the first study to identify subgroups of TDV victimization and to examine the stability of group membership over time. Female youth exposed to interparental violence were more likely to remain in or move into a violent relationship compared to unexposed youth.

Keywords Dating violence victimization · Latent transition analysis · Interparental violence · Gender

More than one in ten adolescents report past-year victimization from a dating partner (Kann et al. 2014). Higher rates of teen dating violence (TDV) have been identified in regional and at risk samples (Hickman et al. 2004) and when the definition is broadened to include emotional or psychological abuse (Halpern et al. 2001). Victims of TDV are more likely than non-victims to report poor health outcomes such as depression, posttraumatic stress disorder (Ullman and Brecklin 2002), eating disorders (Ackard and Neumark-Sztainer 2002), substance abuse (Exner-Cortens et al. 2013; Temple and Freeman 2011), unwanted pregnancy (Silverman et al. 2001), and suicidal ideation or attempts (Silverman et al. 2001; Singer et al. 1995).

Despite the prevalence and consequences of TDV, and an increasing understanding of risk and protective factors (Foshee and Reyes 2012), very little is known about how TDV develops over time. An understanding of the dynamic nature of TDV will inform the nature and timing of intervention programs. In one of the few studies to address this topic, Fritz and Slep (2009) found that most victims of physical TDV remained victims 1 year later, especially when they were with the same partner (70 %) versus a new partner (50 %). In a study on psychological TDV victimization, Orpinas and colleagues (2012) identified two groups with stable victimization trajectories (e.g., high or low level of victimization across 7 years) and one group with an increasing

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victimization trajectory. Another study found that trajectories of physical TDV victimization differed from the trajectories of psychological TDV victimization (Brooks-Russell et al. 2013). Specifically, female victims of physical TDV evidenced three different patterns, including a group with a low and stable level of victimization and two bell-shaped trajectory groups (e.g., gradually or rapidly increasing victimization up to 10th grade and then decreasing until 12th grade), whereas male victims evidenced two distinct patterns, including a group with a low level of a stable trajectory and another group with a bell-shaped trajectory until 11th grade and then a positive linear trend until 12th grade.

Although studies on developmental patterns of physical (Brooks-Russell et al. 2013) and psychological (Fritz and Slep 2009; Orpinas et al. 2012) victimization have moved the field forward, even less is known with respect to the developmental pattern of multiple types of TDV victimization simultaneously. Given that types of TDV victimization often co-occur (Haynie et al. 2013), their developmental pattern should be collectedly considered. Of particular importance is studying the sequence of TDV victimization. For example, if we determine that victims of psychological TDV become victims of physical or sexual TDV over time, regardless of having the same or different partner, interventions targeting psychological abuse could be implemented to prevent escalation to other types of abuse. Thus, using Latent Class/Transition Analysis (LCA/LTA), this paper will investigate how status of TDV victimization develops over a 3-year time period.

While it is critically important to expand our knowledge of how TDV develops and transitions over time, it is equally necessary to understand mechanisms underlying any changes in abusive behavior. Due to the transgenerational nature of family violence (Milletich et al. 2010; Karlsson et al. 2015), it is possible that youth who have been exposed to interparental violence are more likely to remain TDV victims or to experience increasingly severe TDV compared to their non-exposed counterparts. Although findings are mixed, gender can also play an important role regarding development of TDV victimization. Whereas Fritz and Slep (2009) found no gender differences in physical victimization rates, Brooks-Russell and colleges (2013) found that female youth reported less physical victimization compared to their male counterparts. Orpinas et al. (2012) illustrated that female youth were more likely to be in the psychological victimization class across 6 years (e.g., between 6th grade and 12th grade) compared with male youth. However, Fritz and Slep (2009) found that females, relative to males, were less likely to remain psychological victims over a year. The variability witnessed in female and male TDV victimization rates may be a function of their exposure to interparental violence. In the current study, we (1) use LCA to identify whether there are distinct subgroups based on past-year victimization of TDV and (2a) use LTA to explore whether adolescents change victimization statuses over time and (2b) explore whether these changes or stability of TDV victimization are influenced by youths' lifetime exposure to interparental violence and gender.

Methods

Participants and Procedure

This study was approved by the Institutional Review Board of the University of Texas Medical Branch. A total of 1042 adolescents originally in the 9th or 10th grade from 7 public high schools in Texas participated in the survey from 2010 (wave1) to 2013 (wave4). Of the participants, 56 % were female, and the average age of adolescents was 15.1 years old. Participants were ethnically diverse: Hispanic (32 %), White (30 %), African American (29 %), and other (9 %). Study recruitment occurred during school hours in courses with mandated attendance, and both parental permission and student assent were obtained. Assessments at each time point occurred during school hours, and students received a $10 gift card for participating. To increase reliability of adolescent self-report, teachers and other school administrators were not allowed to be present during questionnaire administration, and privacy was emphasized, including instructing participants not to write their names on surveys and informing them that a federal certificate of confidentiality protected their responses. The retention rate for each wave was 95 % at wave2, 85 % at wave3, and 75 % at wave4, respectively. An online survey was used for the 21 % of participants who graduated from high school by wave4.

Measurements

TDV victimization (Waves2, 3, and 4) *The Conflict in Adolescent Dating Relationships Inventory* (Wolfe et al. 2001) was used to measure TDV victimization (see Appendix1). TDV victimization at wave1 was excluded because lifetime, as opposed to past-year, experience was reported. Respondents were asked 25 items regarding his/her current or most recent (ex-)dating partner's behavior during a conflict or argument in the past year. TDV victimization at wave1 was excluded because lifetime, as opposed to past-year, experience was reported. The CADRI is comprised of five subscales including sexual (four items; e.g., "He/she touched me sexually when I did not want him/her to," "He/she forced me to have sex when I did not want to."), relational (three items; e.g., "He/she said things to my friends about me to turn them against me," "He/she spread rumors about me."), emotional/verbal (ten items; e.g., "He/she ridiculed or made fun of me in front of others," "He/she insulted me with put-downs."), threatening behavior (four items; e.g., "He/she destroyed or

threatened to destroy something I valued," "He threatened to hurt me."), and physical (four items; e.g., "He/she kicked, hit, or punched me," "He/she pushed, shoved, or shook me.") TDV. From these subscales, we created dichotomous latent class indicators. The sexual, relational, threatening, and physical subscales were dichotomized such that a positive endorsement on at least one subscale item was recorded as experiencing this form of abuse. Because of the commonness of emotional or psychological abuse in the general population, including in healthy relationships (O'Leary 1999), we did not want to over-identify adolescents as experiencing emotional/psychological abuse (Follingstad 2007). Indeed, 80 % of our participants reported at least one instance of emotional or verbal abuse. Thus, the emotional/verbal subscale was dichotomized such that positive endorsement on at least 4 (of 10) subscale items was recorded as experiencing emotional/verbal abuse.

Lifetime exposure to interparental violence (wave1 + wave2) Was measured with four items (two items: lifetime exposure at waves1 and 2 items: past-year exposure at wave2), in which participants were provided with nine examples of moderate to severe physical violence (e.g., "slapped," "choked," "slammed against wall"), and given the following instructions: "No matter how well parents get along, there are times when they argue, and feel angry toward each other. The following questions deal with things that your father (or male caregiver) and mother (or female caregiver) might have done to each other when they were angry." Participants reported the number of times their father perpetrated physical violence toward their mother, and vice versa. Lifetime exposure to interparental violence was created as a binary variable when participants reported at least one exposure to interparental violence up to wave2 (1 = exposed youth vs. 2 = non-exposed youth). Because we measured lifetime exposure at Wave1 and past-year exposure at wave2, we combined Wave1 and Wave2 to create lifetime exposure to interparental violence up to that point and investigate how this exposure influences transition probability of past-year TDV victimization classes between Wave2 and 3 and Wave3 and 4 (Table 1).

Analytical Plan

Five victimization indicators (i.e., sexual, relational, threatening, emotional/verbal, physical TDV) were included in the LCA and LTA models. As preliminary analyses, we examined the LCA model at Wave 2, Wave 3, and Wave4 (see Table 2) and tested for measurement invariance across waves (Bayesian Information Criterion (BIC) restricted item-response probabilities across waves = 10,709.20 vs. BIC unrestricted item-response probabilities across wave = 11,302.31) indicating that there were three equivalent victimization classes at each wave. We considered the following criteria to determine the optimal number of statuses in the LTA model: (1) BIC and adjusted BIC (Nylund et al. 2007); (2) the adjusted Lo–Mendell–Rubin likelihood ratio test (LMR; Lo et al. 2001); and (3) theoretical interpretation in LCA model. Smaller BIC value indicates a better model fit. LMR is a model fit test to show whether k class is better than k-1 class at $p < .05$. According to Monte Carlo simulation studies (Nylund et al. 2007; Yang 2006; Tofighi and Enders 2008), LRT and BIC are good model fit indicators in the LCA model.

We also tested whether group difference regarding latent victimization classes in LCA by comparing several models on whether gender or interparental violence had different classes by restricting and unrestricting item responsibility between these groups (e.g., gender comparison model with restricted item-response probabilities between female and male, BIC = 4798.155 vs. model with unrestricted item-response probabilities, BIC = 4863.427), youth with and without a history of being exposed to interparental violence ($Model_{restricted}$: BIC = 4799.284 vs. $Model_{unrestricted}$: BIC = 4857.366, respectively). Because a smaller BIC is a good fit index for measurement invariance in LCA (Kankaraš et al. 2010) and suggest

Table 1 The number of youth who experienced past-year dating violence

Variables		2011 (Wave2)	2012 (Wave3)	2013 (Wave4)
Sexual abuse	No	707 (84 %)	667 (86 %)	607 (86 %)
	Yes	135 (16 %)	109 (14 %)	97 (14 %)
Relational abuse	No	726 (86 %)	681 (88 %)	631 (90 %)
	Yes	116 (14 %)	96 (12 %)	74 (11 %)
Emotional/verbal abuse	No	496 (59 %)	440 (57 %)	415 (59 %)
	Yes	346 (41 %)	337 (43 %)	290 (41 %)
Threatening behavior	No	735 (87 %)	669 (86 %)	611 (87 %)
	Yes	107 (13 %)	108 (14 %)	94 (13 %)
Physical abuse	No	672 (80 %)	625 (80 %)	586 (83 %)
	Yes	169 (20 %)	152 (20 %)	119 (17 %)

the better model fit, these comparisons provided evidence that identified victimization classes had the same meaning for females and males, and for youth with or without a history of exposure to interparental violence. Thus, females and males, as well as youth with and without a history of interparental violence exposure were not analyzed separately.

Next, we investigated group differences in the LTA model with regard to gender or exposure to interparental violence. First, we tested the assumption of measurement invariance across these potential moderators, by comparing LTA models in which the item–response probabilities were constrained to be equal across groups (BIC gender = 10,953.35, BIC interparental violence 10,946.96) and models in which the item–response probabilities were allowed to freely vary across groups (BIC gender = 11,123.77, BIC interparental violence = 11,117.38). Having determined that measurement invariance was upheld with regard to both gender and exposure status, we then assessed moderation in the LTA model. Specifically, we tested whether gender or exposure influenced class prevalence at each wave and transition probabilities across waves, by grouping these variables. Because Mplus 7.11 (Muthén and Muthén 1998–2012) can include only one grouping variable (e.g., gender) in each LTA model, we ran the three separate LTA models to examine gender, exposure to interparental violence, and the combined effect of gender and exposure (e.g., male without interparental violence, female without interparental violence, male with interparental violence, and female with interparental violence). To test for group differences for each moderator, we compared an LTA model in which class prevalence and transition probabilities were allowed to vary by group (BIC gender = 10,727.78 and BIC interparental violence = 10,707.60) and an LTA model in which class prevalence and transition probabilities were constrained to be equal across groups (BIC gender = 10,749.14 and BIC interparental violence = 10,742.74). Because smaller BIC indicates a better fit, we considered the grouping variables included in the model as moderators.

Results

Descriptive Statistics

The number of youth who reported past-year TDV victimization is shown in Table 1. Although the rate of victimization for each type of TDV varied, the portions of adolescents victimized by each type were similar each wave.

Latent Victimization Status

Model fit indexes are shown in the Table 2 based on LCA. Three latent victimization statuses were identified including (1) non-victims; (2) emotional/verbal victims; and (3) physical and psychological victims (see Table 3). The largest status

Table 2 LCA fit index each wave

2011 (Wave2)						
Model	Loglikelihood	AIC	BIC	Adjust BIC	BLRT	Entroy
1-Class solution	−2020.99	4051.97	4075.65	4059.77	N/A	N/A
2-Class solution	−1778.96	3579.91	3632.01	3597.07	472.37***	0.79
3-Class solution	−1763.41	3560.81	3641.32	3587.33	30.35***	0.72
4-Class solution	−1758.28	3562.56	3671.48	3598.40	10.00	0.71
5-Class solution	−1756.01	3570.03	3707.37	3615.27	4.42	0.81
2012 (Wave3)						
1-Class solution	−1834.48	3678.95	3702.23	3686.35	N/A	N/A
2-Class solution	−1629.43	3280.86	3332.07	3297.14	400.08***	0.73
3-Class solution	−1606.90	3247.80	3326.95	3272.96	43.96***	0.79
4-Class solution	−1602.05	3250.10	3357.18	3284.14	9.47*	0.81
5-Class solution	Not well-identified					
2013 (Wave4)						
1-Class solution	−1593.44	3196.88	3219.67	3203.79	N/A	N/A
2-Class solution	−1389.71	2801.42	2851.56	2816.63	397.36***	0.78
3-Class solution	−1376.60	2787.21	2864.70	2810.72	25.56*	0.71
4-Class solution	−1372.38	2790.76	2895.60	2822.57	8.24	0.75
5-Class solution	−1370.04	2798.09	2930.28	2838.20	4.55	0.79

After five classes, the model did not converge. Thus, more than six class-solutions fit really poorly. Model selection was performed before we compared with groping variables (e.g., gender and lifetime interparental violence). That is, these fit statistics refer to an unconstrained model with respect to gender and lifetime interparental violence in LCA

*$p < 0.05$; ***$p < 0.001$

Table 3 Prevalence of latent status membership and item-response probabilities in LTA

	Non-victims	Emotional/verbal victims	Physical and psychological victims
Prevalence of statuses			
2011 (Wave2)	$n = 529$ (56.9 %)	$n = 307$ (33.1 %)	$n = 93$ (10.0 %)
2012 (Wave3)	$n = 472$ (50.8 %)	$n = 351$ (37.8 %)	$n = 106$ (11.4 %)
2013 (Wave4)	$n = 524$ (56.4 %)	$n = 294$ (31.6 %)	$n = 111$ (12.0 %)
Item-responsibilities each latent class			
Sexual abuse victimization			
1 = No	**0.985**	**0.787**	0.471
2 = Yes	0.015	0.213	**0.529**
Relational abuse victimization			
1 = No	**0.976**	**0.826**	**0.602**
2 = Yes	0.024	0.174	0.398
Emotional/verbal abuse victimization			
1 = No	**0.915**	0.303	0.028
2 = Yes	0.085	**0.697**	**0.972**
Threatening behavior victimization			
1 = No	**0.988**	**0.903**	0.193
2 = Yes	0.012	0.097	**0.807**
Physical abuse victimization			
1 = No	**0.979**	**0.784**	0.139
2 = Yes	0.021	0.216	**0.861**

Boldface numbers represent moderate to high probabilities

(W2:56.9 %) was labeled non-victims as these youth had a low likelihood of any type of TDV victimization. The second largest status (W2:33.1 %) was labeled emotional/verbal victims as these youth had a high likelihood of experiencing only emotional or verbal victimization (0.70). The third latent status (W2:10.0 %) was called physical/psychological victims as members in this class had a high probability of experiencing emotional/verbal (0.97), physical (0.86), and threatening TDV (0.81).

Latent Transition Probability

An LTA was conducted to examine changes in membership class over time (see Table 4 for the transition probability matrix). Overall, youth in a specific latent status tended to stay in the same latent status the following year (see the bold-font diagonals in Table 4). For example, youth who were non-victims in Wave2 had a high probability (0.78) of remaining non-victims in Wave3, with probability of remaining non-victims increasing from Wave3 to Wave4 (0.88). Similarly, youth in the emotional/verbal victim status (W2 → W3: 0.70; W3 → W4: 0.74) and in the physical/psychological victim status (W2 → W3: 0.61; W3 → W4: 0.64) tended to stay in the same status in subsequent waves, with the transition probabilities for each of these status increasing slightly over time.

The off-diagonal numbers in the average column in Table 4 show the probability of changing to a different status the following wave. If youth in the non-victim status did transition, they were most likely to transition to the emotional/verbal victim status the following wave. Youth in the emotional/verbal victim were most likely to transition to the non-victims. Interestingly, youth in the physical/psychological victims at Wave2 were most likely to transition to the emotional/verbal victim at Wave3 (0.33), whereas youth in the same status at Wave3 were most likely to transition back to the non-victim status at Wave4 (0.25).

Gender and Interparental Violence as Moderators in the Latent Transition Model

We also examined whether transition probabilities and prevalence differed by gender and lifetime exposure to interparental violence (see Table 4 for transition probabilities and Table 5 for prevalence of latent status members).

Gender For males, the largest status was non-victims across all waves, whereas for females, the largest status varied across waves. Specifically, the largest status at Wave2 for females was emotional/verbal victims, while for Wave3 and 4, it was the non-victim status. Except for females in Wave2, the second largest victimization status was emotional/verbal victimization across gender and waves, followed by the physical/psychological victim status.

Table 4 Transition probabilities each gender and lifetime interparental violence experience across waves

W2 to W3	Pooled*			Male			Female			Youth without interparental violence			Youth with interparental violence		
	NV	EVV	PPV	NV	EVV	PPV	NV	EVV	PPV	NV	EVV	PPV	NV	EVV	PPV
NV	**0.78**	0.18	0.04	**0.74**	0.22	0.04	**0.80**	0.15	0.05	**0.82**	0.15	0.03	**0.71**	0.22	0.07
EVV	0.22	**0.70**	0.08	0.16	**0.70**	0.14	0.24	**0.69**	0.07	0.17	**0.79**	0.04	0.25	**0.63**	0.13
PPV	0.06	0.33	**0.61**	0.00	0.79	**0.21**	0.05	0.19	**0.76**	0.12	0.24	**0.64**	0.00	0.40	**0.60**
W3 to W4															
NV	**0.88**	0.11	0.00	**0.97**	0.01	0.02	**0.76**	0.25	0.00	**0.96**	0.03	0.02	**0.76**	0.24	0.00
EVV	0.16	**0.74**	0.10	0.08	**0.80**	0.12	0.21	**0.70**	0.09	0.16	**0.78**	0.06	0.16	**0.69**	0.15
PPV	0.25	0.12	**0.64**	0.38	0.03	**0.59**	0.17	0.15	**0.68**	0.27	0.01	**0.72**	0.25	0.19	**0.57**
W2 to W3				Male without interparental violence			Female without interparental violence			Male with interparental violence			Female with interparental violence		
				NV	EVV	PPV	NV	EVV	PPV	NV	EVV	PPV	NV	EVV	PPV
NV				**0.78**	0.17	0.05	**0.85**	0.13	0.03	**0.70**	0.25	0.05	**0.74**	0.14	0.12
EVV				0.02	**0.98**	0.00	0.23	**0.72**	0.05	0.19	**0.59**	0.22	0.25	**0.66**	0.09
PPV				0.00	0.79	**0.21**	0.15	0.10	**0.75**	0.09	0.75	**0.16**	0.00	0.20	**0.80**
W3 to W4															
				NV	EVV	PPV	NV	EVV	PPV	NV	EVV	PPV	NV	EVV	PPV
NV				**0.97**	0.00	0.03	**0.90**	0.09	0.01	**0.95**	0.05	0.00	**0.58**	0.42	0.00
EVV				0.15	**0.81**	0.03	0.17	**0.77**	0.07	0.02	**0.79**	0.19	0.23	**0.64**	0.13
PPV				0.29	0.00	**0.72**	0.20	0.04	**0.77**	0.36	0.11	**0.53**	0.18	0.23	**0.59**

Item-response probabilities were constrained to be equal at all 3 years. Boldface numbers represent the probability of membership in the same latent status at two consecutive years.

NV non-victims, *EVV* emotional and verbal victims, *PPV* physical and psychological victims

* Pooled transition probabilities are based on LTA model without gender and interparental violence variables. In the models including grouping variables, pooled transition probabilities are slightly different (e.g., three decimal points). Due to small differences, we only show transition probabilities based on LTA model without grouping variables. Because Mplus can include only one grouping variable, each group are separately examined.

Most youth remained in their initial status regardless of gender (see bold-font diagonals in the male and female in Table 4). The patterns based on transition probabilities are similar to the pattern of LTA without gender, although there were several differences (see off diagonal in male and female in Table 4). First, from Wave2 to Wave3, most males in the physical/psychological victim status transitioned to the emotional/verbal victim status (0.79) instead of remaining in the same status (0.21). Second, males in the non-victim status were more likely to remain non-victims from Wave3 to Wave4 (0.97) than were females (0.76). Third, if males in the emotional/verbal victim status did transition, they were more likely to transition to the physical/psychological victim status (W2 → W3: 0.14 and W3 → W4: 0.12), while females in the emotional/verbal victim status were more likely to transition to the non-victim status (W2 → W3: 0.24 and W3 → W4: 0.21). Fourth, although males in the physical/psychological victim status were more likely to transition to non-victims (0.38) from Wave3 to Wave4, females in the physical/psychological victim status were more likely to transition to either the non-victim status (0.17) or the emotional/verbal victim status (0.15). Finally, females in the physical/psychological victim status were more likely to remain in that same status from Wave3 to Wave4 (0.68) compared with males over the same period (0.59).

Lifetime Interparental Violence Youth who were not exposed to interparental violence had the highest chance of being in the non-victim status, followed by the emotional/verbal victim and physical/psychological victim statuses across all waves. Conversely, youth exposed to interparental violence had a high membership probability of being in the emotional/verbal victim status, followed by the non-victim and the physical/psychological victim statuses across all waves.

Overall, these two groups had relatively clear transition patterns. First, most youth remained in their initial status regardless of their lifetime exposure to interparental violence (see bold-font diagonals in the youth with/without exposure to interparental violence columns in Table 4). That said, compared to unexposed youth, those exposed to interparental violence had a lower probability of remaining in the same status across years. The diagonal probabilities in youth without exposure to interparental violence ranged from 0.64 to 0.96,

Table 5 Prevalence of latent status membership by gender, lifetime interparental violence, and both

	Male ($n = 409$)	Female ($n = 520$)	Youth without interparental violence ($n = 532$)	Youth with interparental violence ($n = 397$)	Male without interparental violence ($n = 245$)	Female without interparental violence ($n = 287$)	Male with interparental violence ($n = 164$)	Female with interparental violence ($n = 233$)
Wave2								
NV	267 (65.3 %)	202 (38.8 %)	356 (66.9 %)	162 (40.8 %)	190 (77.6 %)	169 (58.9 %)	83 (50.6 %)	68 (29.2 %)
EVV	105 (25.7 %)	243 (46.7 %)	131 (24.6 %)	184 (46.3 %)	44 (18.0 %)	83 (28.9 %)	59 (36.0 %)	127 (54.5 %)
PPV	37 (9.0 %)	75 (14.4 %)	45 (8.5 %)	51 (12.8 %)	11 (4.5 %)	35 (12.2 %)	22 (13.4 %)	38 (16.3 %)
Wave3								
NV	222 (54.3 %)	233 (44.8 %)	329 (61.8 %)	146 (36.8 %)	159 (64.9 %)	162 (56.4 %)	72 (43.9 %)	87 (37.3 %)
EVV	161 (39.4 %)	202 (38.8 %)	154 (28.9 %)	188 (47.4 %)	74 (30.2 %)	89 (31.0 %)	74 (45.1 %)	96 (41.2 %)
PPV	26 (6.4 %)	85 (16.3 %)	46 (8.6 %)	63 (15.9 %)	12 (4.9 %)	36 (12.5 %)	18 (11.0 %)	50 (21.5 %)
Wave4								
NV	229 (56.0 %)	243 (46.7 %)	354 (66.5 %)	159 (40.1 %)	169 (69.0 %)	179 (62.4 %)	74 (45.1 %)	85 (36.5 %)
EVV	147 (35.9 %)	197 (37.9 %)	125 (23.5 %)	174 (43.8 %)	63 (25.7 %)	72 (25.1 %)	70 (42.7 %)	104 (44.6 %)
PPV	33 (8.1 %)	80 (15.4 %)	53 (10.0 %)	64 (16.1 %)	13 (5.3 %)	36 (12.5 %)	20 (12.2 %)	44 (18.9 %)

NV non-victims, *EVV* emotional and verbal victims, *PPV* physical and psychological victims

whereas the diagonal probabilities for youth with exposure to interparental violence ranged from 0.57 to 0.76. Second, youth exposed to interparental violence generally had a higher transition probability of changing to a more severe victim status compared to non-exposed youth. For example, if youth in the non-victim status did transition from Wave2 to Wave3, interparental violence-exposed youth had a higher probability (0.22) of being in the emotional/verbal victim status compared with their non-exposed counterparts (0.15).

Interaction Between Gender and Lifetime Interparental Violence Males and females who were not exposed to interparental violence were most likely to be in the non-victim status, followed by the emotional/verbal and physical/psychological victim statues across all waves. Males exposed to interparental violence were more likely to be a member of either emotional/verbal victims or non-victims compared to females and to males not exposed to interparental violence. The majority of females exposed to interparental violence were more likely to be in the emotional/verbal victimization status, relative to non-exposed group females and males. Moreover, they had the highest prevalence of being in the physical/psychological victim status among the four groups across all three waves.

With few exceptions, the patterns of transition probability of these four groups (i.e., males without exposure to interparental violence, females without exposure to interparental violence, males exposed to interparental violence, and females exposed to interparental violence) mirrored the patterns found when examining gender and interparental violence exposure alone. First, females exposed to interparental violence in the non-victim status had the highest transition probability (0.12) of changing from non-victims to physical/psychological victims from Wave2 to Wave3 among the four groups. In addition, females exposed to interparental violence had the lowest probability of remaining in the non-victim status from Wave3 to Wave4 (0.58) among the four groups. Instead, females in the non-victim status were more likely to transition to the emotional/verbal victimization status (0.42) from Wave3 to 4. Females in the physical/psychological victimization status who were exposed to interparental violence were more likely to transition to the emotional/verbal victimization status (0.23) from Wave3 to 4, while the other three groups in the physical/psychological victim status were more likely to transition to the non-victim status. Finally, males exposed to interparental violence in the emotional/verbal victimization status were more likely to transition to the physical/psychological victimization status compared to the other three groups across all waves.

Discussion

In among the first studies to demonstrate how TDV victimization status based on multiple types of abuse changes over time, we identified three subgroups of victimization: non-victims, emotional/verbal victims, and physical/psychological victims. In general, youth in a specific status were more likely to remain in that status across three waves. These findings suggest a certain level of stability in victimization status through high school; that non-victims are likely to remain non-victims and victims to

remain victims (Orpinas et al. 2012; Brooks-Russell et al. 2013). Moreover, the chance of remaining in the same victimization status the following year slightly increased for victims of TDV. That stability of TDV status increased over time may be a result of older adolescents having more stable romantic relationship (Carver et al. 2003), and thus more likely to stay with the same (abusive or non-abusive) partner over time.

For gender, transition patterns varied depending on victimization status. First, the transition probability to remain in the non-victim class for females decreased across waves, whereas the transition probability to remain in the same non-victim class for males increased across waves. Second, males in the emotional/verbal victimization status were more likely to transition to a more severe victimization status compared to females across waves. Finally, males in the physical/psychological victimization status were more likely to transition to a less severe victimization status(es) compared to females in the physical/psychological victim status. Interestingly, males in the physical/psychological victimization status were more likely to transition to the emotional/verbal victimization status from Wave2 to Wave3 but tended to remain in the physical/psychological victim status from Wave3 to Wave4. Given that the majority of our sample was in 10th grade at baseline (75 %), this pattern is similar to the finding by Brooks-Russell et al. (2013) where males evidenced decreased physical TDV victimization between 9th and 11th grade followed by a rapid increase.

We found that exposure to interparental violence influenced TDV victimization, including change and stability of status and prevalence. First, youth exposed to interparental violence were more likely to be victims of TDV at baseline. Second, among interparental violence-exposed youth, emotional/verbal victims and physical/psychological victims were more likely to transition to another victimization status (e.g., emotional/verbal victims → physical/psychological victims) compared to youth who were not exposed to interparental violence. Thus, it appears that exposure to interparental violence is a risk factor for TDV victimization and a barrier to transitioning out of an abusive relationship (Karlsson et al. in press). It is possible that youth exposed to violence between their parents perceive violence as a normal part of relating or resolving conflict, thus decreasing the likelihood of ending an abusive relationship. Female adolescents exposed to interparental violence in the physical/psychological victimization status seem especially vulnerable to staying in or transitioning to an abusive relationship. It is possible that the psychological abuse that accompanies male-to-female violence decrease women's self-efficacy and worth, which then may limit her ability to extricate herself and/or increase the likelihood that she is re-victimized in a subsequent relationship.

Practical Implications

The finding that nearly half of adolescents were estimated to be victims of some form of abuse, and that these youth generally remained in abusive relationships over time, carries several important implications for prevention and intervention programs. First, programs designed to prevent the onset of TDV may need to target younger adolescents prior to or as they begin dating and before a maladaptive pattern of relating develops. Because of the high stability of TDV (victims remained victims), primary prevention programs may be most effective if implemented in middle school. High school-based programs, on the other hand, may need to focus as much effort on reducing or halting the escalation of violence. Albeit not the norm, we are somewhat reassured by our finding that if a transition did occur from one TDV status to another, emotional/verbal victims and physical/psychological victims generally moved from a more to less severe status. Thus, prevention programs should capitalize on this natural decline in the severity of violence evidenced by some individuals.

Females exposed to interparental violence appear to be the most vulnerable to experiencing TDV compared to exposed males and non-exposed females and males. Across all three waves, the largest victimization status for females who were exposed to interparental violence was emotional/verbal victims, while the other three groups' largest status was the non-victims. In addition, females exposed to interparental violence were overrepresented in the physical/psychological victim status across all three waves, relative to the other three groups. Further, females exposed to interparental violence in the physical/psychological victimization status were more likely to transition to the emotional/verbal victimization status from Wave3 to 4, whereas other youth in the physical/psychological victimization status were more likely to transition to the non-victim status over the same period. Similarly, youth in the non-victim status mostly remained in the same status; however, females exposed to interparental violence transitioned to the emotional/verbal victimization status from Wave3 to 4. These findings emphasize the importance of providing TDV prevention and intervention programs for females exposed to interparental violence.

Although females exposed to interparental violence was the most at-risk group, males exposed to interparental violence were also at greater risk of victimization by a dating partner, especially emotional/verbal victimization. Across all three waves, males exposed to interparental violence in the emotional/verbal victimization status had the highest transition probabilities to change to the physical/psychological victimization status. Thus, TDV intervention programs may benefit from identifying and targeting youth exposed to interparental violence (males and females) through shelters, emergency rooms, and other settings where family violence is overrepresented.

Limitations and Future Studies

As with all research, our findings should be interpreted in light of several limitations. First, our measure of interparental violence was limited to lifetime exposure to physical violence, and did not account for severity or recency of the witnessed violence, or exposure to other forms of abuse. It is likely that recent exposure to severe violence between parents would have a stronger impact on behavior than exposure to moderate violence many years prior. It is also likely that being exposed to severe interparental verbal and psychological abuse would provide more or varied tolerance to particular types of violence (e.g., emotional/verbal abuse). Other factors not accounted for in the current analyses, such as relationship status, may also influence stability or change of TDV status or prevalence. Moreover, approximately 25 % of participants graduated from high school between Wave3 and 4, which may have influenced their relationships and dating patterns (dissolution, new pool of dating partners), and thus affected their transition probabilities or prevalence. Additional research is needed on how the transition from high school to college/job or other risk factors (e.g., substance use) can influence change in or stability of TDV victimization status. Second, although this study addresses how the status of victimization changes over time, severity of TDV victimization was not considered. Specifically, victims in the physical/psychological TDV who experienced less severe physical and psychological TDV over time would have remained in the same victimization status with the change not being appreciated in the current analyses. Third, other factors such as parental monitoring and skills (Brendgen et al. 2001), attitudes (Karlsson et al. 2015), norms (Foshee et al. 2004), and self-efficacy (Walsh & Foshee 1998) likely influences the transition probability or prevalence and should be considered in future research. Fourth, even though it is necessary to reduce data reduction for LCA/LTA from 25 individual items to five types of victimization based on previous literature (Wolfe et al. 2001), it is possible that different data reduction methods may influence latent victimization class/status and their transition probability/prevalence. However, previous studies using ten individual items adapted from the conflict tactics scale (Straus et al. 1996) showed a similar pattern to our findings (Haynie et al. 2013). Fifth, although we showed that interparental violence can influence transition probabilities and prevalence, onset of TDV was not measured. That is, it is unclear whether youth who were exposed to interparental violence started with an aggressive partner or transitioned to aggressive partners, as they became more experienced daters. Further, we did not have access to needed information (e.g., same partner or not) or a robust enough sample size (e.g., youth who had never dated at Wave2, $n=41$) to examine this important question. Regardless, our data indicate that these youth are particularly vulnerable to TDV victimization and would likely benefit from universal or targeted prevention programs.

Conclusion

The current study identified three distinct victimization statuses across waves: non-victims, emotional/verbal victims, and physical/psychological victims. Youth were more likely to remain in their original victimization status over time, regardless of their exposure to interparental violence and gender. However, adolescents with a history of exposure to interparental violence were more likely to move from a less to more severe victimization status compared to non-exposed youth, especially with respect to females. These findings suggest that (1) primary prevention programs should target younger adolescents; (2) high school-based TDV prevention programs should be secondary and tertiary in nature; and (3) youth exposed to interparental violence, particularly females, should be targeted to reduce escalation of TDV victimization.

Compliance with Ethnical Standards

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Research Involving Human Participants All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This study received approval from University Institutional Review Board at University Of Texas at Medical Branch.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Conflicts of Interest The authors declare that they have no conflict of interest.

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