

Reciprocity in Adolescent and Caregiver Violence

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Published online: 13 December 2014
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Abstract Over a 2-year period, with assessments every six months, the reciprocity in violent behaviors (verbal and physical) was investigated in a sample of 161 adolescents, who met the criteria for substance or alcohol abuse or dependence, and their caregivers, who participated in a clinical trial for family treatment for adolescent substance abuse. Using observed variables in a structural equation model with panel data, there was very little stability in violent behaviors across time from the perspectives of both the adolescents and caregivers. Evidence for violence reciprocity between adolescent and caregiver was demonstrated toward the end of the study period. The results are discussed in the context of previous literature about adolescent-to-parent violence.

Keywords Parent-adolescent violence · Family violence · Dyadic data analysis · Psychological abuse

Adolescent-to-parent violence is rarely studied in general, and even fewer studies include both the adolescent and parent report of verbal and physical abuse perpetrated by the adolescent toward the parent, or the parent toward the adolescent. It is estimated that between 9% and 14% of parents are physically assaulted by an adolescent child at some point before the child reaches the age of 18, and 50–80% of these adolescents are male (Cottrell and Monk 2004). Yet, Cottrell and Monk reported that fewer than 30 published studies focused on this issue. Research suggests that violent behaviors are often perpetrated by parents and adolescents in a reciprocal fashion (Browne and Hamilton 1998; Kim, Conger, Lorenz, and Elder 2001). Risk factors include living in a home in which the mother experiences domestic violence by a romantic partner, high levels of negativity, inconsistent rules and consequences,

and adolescent and/or parent drug and alcohol abuse (Cottrell and Monk 2004; Herrenkohl et al. 2007; Kim, et al. 2001; McCloskey and Lichter 2003).

The purpose of the current study was to examine the reciprocal nature of both physically and verbally violent behaviors between adolescents and their caregivers. The sample for this project is somewhat unique in that it includes adolescents who were part of a clinical trial to examine the impact of family therapy versus other individually-oriented therapies in treating substance use/abuse. All adolescents in this sample had run away from home and had met the criteria for alcohol/drug abuse or dependence. The same risk factors that contribute to violence between adolescents and parents (e.g., low parental monitoring, low academic achievement, parental substance use, depressive symptoms) also seem to contribute to runaway behavior and adolescent substance use (Thompson, Zittel-Palamara, and Maccio 2004) and may result in poor adolescent outcomes in general. If this is the case, it is possible that family treatment for substance abuse would also decrease violence between parent and child. Thus, treatment for substance abuse may have an added benefit of decreasing violence between the adolescent and parent.

Among the risk factors that emerge for violence between the adolescent and parent, substance use, and runaway behaviors, internalizing behaviors, such as depression, seem to be a common thread. There is evidence that adolescents exposed to violence between parents are more likely to experience internalizing problems than peers who are not exposed to parental violence (Moylan et al. 2010). Depression also seems to be commonly comorbid with substance use (Swendsen and Merikangas 2000). These depressive symptoms are another variable that may be impacted by substance abuse treatment. With family-based treatment parental depressive symptoms may also be impacted. If depressive symptoms decrease, violence between parent and adolescent may also decrease.

Given the findings from the literature (e.g., Cottrell and Monk 2004; Herrenkohl et al. 2007; Kim, et al. 2001; McCloskey and Lichter 2003), the family environment in which

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parent-adolescent violence and adolescent substance abuse and runaway behavior occur appears to be unpredictable. Brezina (1999) suggests that youth violence toward a parent is an adaptive behavior to cope with this sort of family environment. Brezina found a reciprocal relationship between parental and child aggression: while slapping by parents tended to foster aggression by the male adolescent, violent behavior by the male adolescent child tended to deter further slapping by the parent. Patterson (1982) argued that negative reinforcement arrangements are major reinforcers for attack-instigated aggression and play a key role in the maintenance of aggressive behavior patterns. That is, since adolescent aggression toward the parent tended to deter further attacks, they continued to use violence to get what they wanted. Cottrell and Monk (2004), on the other hand, used an ecological perspective to explain youth violence toward parents. They suggested that youth assaults of parents would be predicted by gender inequality and media violence (macrosystem); poverty, family stress, negative peer influence, and lack of social supports (exosystem); negative/ineffective parenting styles, parental conflict, and the minimization of family problems (microsystem); and youth characteristics, such as poor attachment to parents, mental health issues, drug/alcohol use, and early experience of victimization (ontogeny).

For the most part, the data gathered to examine adolescent violence toward parents have come from the adolescents' perspective, the parents' perspective, or from case files. Very few studies have included the perspectives of both the adolescents and parents within the same study, and fewer still have been able to follow these families over time. In this study, we had access to the youths' perspectives on their verbally abusive and physically violent behaviors in addition to their primary caregivers (typically mother). Further, their substance use, history of early experiences of victimization, and levels of depression were also assessed. Moreover, we examined the perspectives of the primary caregivers regarding their own behavior and the behavior of their child, as well as their own levels of depression. All those in the sample were part of the clinical trial and received some of the treatment that was part of the protocol. There were three treatments: Ecologically Based Family Therapy, the Community Reinforcement Approach (individual focus), and Motivational Enhancement Therapy (individual focus).

The model proposed for the study can be seen in Fig. 1. This model is an expansion of the Actor Partner Interdependence Model (APIM; Kenny, Kashy, and Cook 2006). The ideas behind the APIM are that within a relationship, a person's outcomes are predicted not only by their own characteristics (actor effects), but by the characteristics of their partner (partner effects). In Fig. 1, the paths that cross-over between the youth and the parent are the partner effects. Thus, it was hypothesized that verbal abuse and/or physical violence by the youth at one point in time would be a predictor of verbal abuse

by the parent at the next point in time and vice versa. The verbal abuse model and the physical violence model were tested three times: with adolescent perspective only, with caregiver perspective only, and with both perspectives. We did this to explore the possibility of bias in self-report; however, Whitbeck, Hoyt, and Ackley (1997) demonstrated that runaway and homeless adolescents were able to accurately report family characteristics when compared to their caregivers' reports.

In Fig. 1, the initial level of violence was associated with the adolescents' sex, age, race/ethnicity, experience of sexual abuse or physical abuse, level of substance use, and adolescent and caregiver levels of depression. At 6-month follow-up, violence was associated with initial levels of violence, the percent of treatment attended, type of treatment, difference in substance use after treatment, and difference in depression after treatment for both youth and parent. We utilized three other follow-up points at 12, 18, and 24 months post initial assessment. To calculate these, we used the previous time point's violence. There were two violence variables at each time point (verbal or physical violence for both youth and parent). Having this data over time allowed us to examine reciprocity in violence between the youth and parent from multiple perspectives.

The model in Fig. 1 is an extension of the APIM (Kenny et al. 2006). This discreet time model allowed the analyst to examine the impact of the actor on the partner, whether or not the partner impacts the actor, and accounts for the non-independence of the data for the dyads. This was done by correlating the disturbance terms or what is left over after partitioning the variance into the actor and partner effects. In the model, the verbal abuse disturbance terms and the disturbance terms for the physical violence variables of the youth and caregiver were correlated at each time point. It should be noted that the reciprocity that is being estimated here is reciprocity over time, rather than within a time point. That is, if the caregiver is violent at a particular time point, is the youth violent toward the caregiver at the next time point?

Method

Sample

Participants ($N=179$) were part of a larger longitudinal study that compared three types of treatment for substance abusing, runaway youth. To participate in the current study, youth were between the ages of 12 to 17, had a primary caregiver (PC) willing to participate in the research and treatment, met diagnostic criteria for substance abuse or dependence, and had used the services of a local runaway shelter. The adolescent sample was from a Midwestern runaway shelter. Approximately half of the sample was female ($n=94$; 52.5%), with

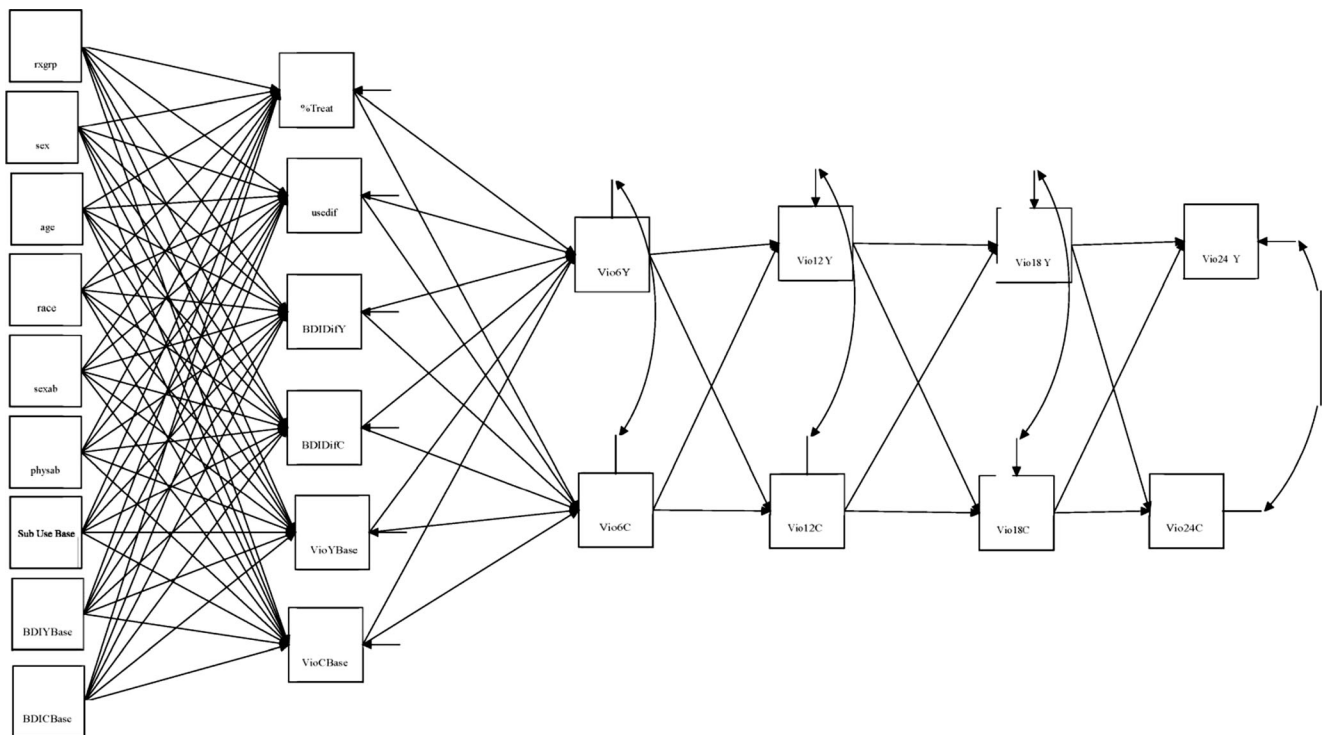


Fig. 1 Conceptual model for reciprocity in violent behaviors between adolescent (Y) and caregiver (C)

an average age of 15.4 ($SD=1.2$) years. The ethnic/racial composition was primarily African American ($n=117$; 65.4%), followed by White, non-Hispanic ($n=46$; 25.7%) and Other ($n=16$; 9%). The majority ($n=147$, 82.1%) of adolescents were currently enrolled in school. The youth had run away an average of 3.2 times ($SD=5.3$) and reported 31.6% days of substance use in the last 3 months. Roughly 33% of the sample ($n=60$) reported a history of physical abuse, and 30% ($n=55$) reported past sexual abuse.

The majority of PCs were female ($n=156$; 87.2%) and mothers of the adolescents ($n=137$; 76.5%). The second largest category was fathers ($n=21$, 11.7%), followed by grandmothers ($n=8$, 4%). The remaining PCs included aunts, sisters, and cousins. PCs were on average 41.2 ($SD=8.4$) years old and single ($n=78$; 45.3%). Over half were employed full-time (40 h or more per week) ($n=101$; 58.7%), followed by unemployed ($n=42$; 23.5%), employed part-time (less than 40 h a week) ($n=20$; 11.6%), and other ($n=9$; 5.2%).

Procedures

Research assistants (RAs) engaged adolescents from the only local runaway shelter in a large Midwestern city. Adolescents who were interested in the project were screened for eligibility, and those eligible provided verbal consent for RAs to contact their primary caregiver. PCs who agreed to participate in the project signed a consent form, and the adolescents signed an assent form. Next, the adolescents and their PCs completed a baseline assessment battery and were randomly

assigned to one of three treatment interventions: Motivational Enhancement Therapy (MET) ($n=61$), Community Reinforcement Approach (CRA) ($n=61$), or Ecologically-Based Family Therapy (EBFT) ($n=57$). MET included two 1-hour treatment sessions, while CRA and EBFT included 12 one-hour treatment sessions. Additionally, each intervention included two 2-hour educational sessions about HIV. In total, MET included four sessions, while CRA and EBFT included 14 sessions. More detailed information regarding the interventions and study design can be found in (Slesnick, Erdem, Collins, Bantchevska, and Katafiasz 2011).

RAs were undergraduate and graduate students who received intensive training on Institutional Review Board (IRB) and engagement procedures, administration of assessment instruments, tracking and locating families for follow-up, and crisis intervention procedures. New RAs shadowed veteran RAs for several weeks until becoming completely comfortable with the procedures. Weekly supervision was provided by the principal investigator.

Adolescents were encouraged to participate in their assigned treatment intervention, which was provided within the first 6 months post-baseline assessment. However, regardless of treatment attendance, adolescents and their PCs were contacted at 3, 6, 12, 18, and 24 months to complete a follow-up assessment battery. For the completion of each assessment battery, adolescents received a \$40 Walmart gift card, and primary caregivers received a \$25 gift card. All procedures were approved by the IRB at the Ohio State University.

Instruments

Physical and Verbal Violence The Conflict Tactics Scale (CTS; Straus 1979) was used to assess the method and frequency of conflict resolution tactics utilized by adolescents and their PCs. The CTS includes three subscales: reasoning, verbal aggression, and physical violence. The current study utilized the subscales for verbal aggression and physical violence only. Internal reliability has been shown to be good, with a Cronbach's alpha of .83, among a sample of runaway and homeless adolescents (Yoder 1999). Given the distribution of the items, we removed several of the physical violence items since their frequency was either quite low or zero. There were six items utilized in the physical violence subscale, including throwing something, slapping, hitting, and threatening with a weapon. We did not use the items that referred to beating up the other or using a knife or gun. All six items from the verbal abuse subscale were retained in the subscale scores. Additionally, given the frequency of responses to the items, we recoded the CTS items so that zero times was left as zero, one to four times was coded as one, and five or more times was coded as two. This reduced the kurtosis and skewness of the scores, but still left a preponderance of zeroes, especially for the physical violence scores. For this reason, we elected to treat the CTS physical violence scores as categorical. As the distribution of the violence items is rarely normal, this type of categorization has been done in the past (i.e., Rosen et al. 2001).

In order to have the same period of time between assessments, we used the CTS scores from the initial assessment and the six-month, 12-month, 18-month, and 24-month follow-up periods. At each of the follow-up assessments, the participants were asked to remember the past six months when answering the CTS items, while at the initial assessment they were asked to remember the last 12 months. We divided the CTS subscale scores by the number of months the participant was asked to remember; thus, the CTS scores represent the number of incidences per month.

Depression The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, and Erbaugh 1961) is a 21-item self-report questionnaire with a 4-point Likert response scale. It was used to assess mood, cognitive and physical characteristics of depression for both adolescents and their caregivers. In the current study, Cronbach alpha for the total BDI score was .93, and the BDI has been successfully utilized with homeless adolescents in the past (Maxwell 1992).

Physical and Sexual Abuse Physical and sexual childhood abuse was captured by the demographic form. Physical abuse was indicated by the question, "Has anyone ever hurt you PHYSICALLY (enough to leave marks or bruises or burns)?" Sexual abuse was assessed with the question "Has

anyone ever touched you SEXUALLY in a way that made you feel uncomfortable OR hurt you OR was against your will?" Responses were dichotomous (yes or no). If the adolescent answered "yes" to either question, then he or she completed the two follow-up questions of "Was the abuse reported to the authorities?" and "Is the abuse currently happening?" Responses included "Yes" or "No." Next, adolescents described the circumstances (when, who, duration) of the abuse.

Substance Use Substance use was assessed by the Form 90-D, which utilizes a day-by-day calendar approach and weekly grid procedure (Miller 1996). Participants recalled the type, frequency, and amount of substances used in the past 90 days. The current study utilized data on alcohol and drug use, with the exception of tobacco, and responses were recorded on a calendar. The Form 90-D has been shown to have good-to-excellent test-retest reliability and convergent validity scores with runaway adolescents (Slesnick and Tonigan 2004).

Results

Missing Data

Participants attended 88% of the EBFT treatment, 74% of the CRA treatment, and 66% of the MET treatment. There were no overall differences in the total proportion of sessions attended. The follow-up completion rate across the six time points (3, 6, 9, 12, 18, and 24 months) ranged from 69% to 79%, and 125 of 178 participants (70%) completed assessments at all six time points. Although the attrition rate for the study was moderate (21–31%), there were some cases in which a follow-up assessment was missed, and there were instances in which the violence questions were skipped. Those cases with missing data at all time points were removed, creating a sample of 161 dyads.

In order to determine whether or not the missing data was missing at random, we performed Little's Missing Completely At Random test using SPSS version 19. The MCAR test resulted in a $\chi^2(1271) = 1230.86; p = .786$. This test shows that the data were missing at random. Given this, we performed data imputation with SPSS version 19 (SPSS was used because the original version of MPlus, version 6, used for further analysis did not have an imputation function). The method used was linear regression for continuous variables and the fully conditional specification MCMC procedure for categorical variables. We created five imputed data sets, and the results reported are based on the pooled results from these five data sets.

Analyses

The mean number of violence incidents at each time point are reported in Table 1 from both the youth and caregiver perspectives. The original data and the pooled estimates from the imputed data are presented. In Table 2, the correlations between youth and caregiver perpetrations of verbal and physical violence at each time point are reported from the youth-only perspective, the caregiver-only perspective, and from both perspectives. With each perspective, there are significant correlations for both verbally abusive behaviors and physically violent behaviors. This suggests that within a particular time point, both the adolescents and the caregivers perceived that increases in one person's behavior were related to increases in the other's. This may suggest reciprocity. However, when using self-reports regarding the behaviors of the adolescents and caregivers, there was only one significant correlation for verbal abuse at baseline.

Model Test

In order to test the model in Fig. 1, we used structural equation modeling with observed variables. To perform this analysis, we used Mplus7 (MPlus Version 7), which is able to use categorical variables as outcomes in a structural equation model using the appropriate fitting function (MLR: maximum likelihood with standard errors and a chi-square test statistic that is robust to non-normality and non-independence of observations). With imputation, MPlus7 provides pooled fit indices for the number of successful computations. The fit indices for all the models from the perspectives of the youths, PCs, and both can be seen in Table 3.

Since the verbal abuse variables were continuous, all models for verbal abuse were successfully computed. There were problems, however, with the physical violence variables. For the youth-only and both perspectives, there were four successful computations, while for the caregiver-only perspective model, there was only one successful computation. In reviewing the errors in the computations from the MPlus7 output, there were problems with the estimated variance-covariance matrix of the dependent variables. Within one person's perspective, these estimates created linear dependencies. In other words, their correlations were close to one. This suggested to us that within one person's perspective, it was difficult for the caregiver, especially, to distinguish between his or her own physical violence and that of the adolescent. It may be the case that physical violence from within an individual's perspective is almost always perceived to be reciprocal at the instant it occurs, thus the number of instances of violence per month was perceived by the caregiver and the youth to be the same.

Given the differences in fit and the problems with computation of some of the imputed data sets for the violence models, we provided the estimates for all models in Tables 4

and 5, but focused our results and discussion on the model that includes both perspectives. Table 4 provides the estimates of the control variables to the initial levels of violence. In Table 5, we provided the stability estimates (actor effects) and reciprocity estimates (partner effects).

Risk Factors that Predict Baseline Verbal and Physically Violent Behaviors

The most consistent variables that were predictive of verbal abuse by a youth were the participant's sex and race/ethnicity. Given how these variables were coded, based on the perspectives of both the youths and the caregivers, females and White adolescents were more likely to engage in verbally abusive behaviors. From the perspective of adolescents who had experienced sexual abuse, they reported that their caregiver was more likely to engage in more verbally abusive behaviors. None of the independent variables (i.e. history of physical or sexual abuse, race/ethnicity, BDI scores) significantly predicted physical violence at baseline (see Table 4). It should also be noted that change in substance use change in depression, and the percent of treatment sessions attended were not predictive of verbal abuse or physical violence at the six-month follow-up.

Reciprocity in Verbal Abuse Behaviors

In the model for verbal abuse using the perspectives of the adolescents and caregivers regarding their own behaviors, there were several significant relationships (the column labeled "Both Perspectives" in Table 5 provides the estimates from the model). Significant predictors of the youths' verbal abuse over time were their levels of verbal abuse at the previous time point. For the six-month follow-up, only initial levels of the adolescents' verbal abuse was predictive (unstandardized estimate = .35; $p < .001$). At the 12-month follow-up, there was some evidence of reciprocity; the youths' verbal abuse at 12 months was predicted by their verbal abuse at six months (unstandardized estimate = .36; $p < .01$) and by caregivers' verbal abuse at six months (unstandardized estimate = .16; $p = .067$). At 18 months, the adolescents' verbal abuse was only predicted by their level of verbal abuse at 12 months (unstandardized estimate = .47; $p < .001$). At 24 months, youths verbal abuse was again predicted by their verbal abuse at 18 months (unstandardized estimate = .53; $p < .001$), with some evidence of reciprocity with caregiver at 18 months (unstandardized estimate = .21; $p = .07$).

For caregivers, the same pattern of "stability" emerged, with more evidence of reciprocity. Caregivers' verbal abuse at the six-month follow-up was predicted by their initial levels of verbal abuse (unstandardized estimate = .22; $p < .01$). At the 12-month follow-up, caregivers' verbal abuse was predicted by both their own (estimate = .19; $p < .05$) and the youths'

Table 1 Average incidence of violence per month from both perspectives (original data, % complete, and pooled estimates)

	Youth			Caregiver		
	Original	% Complete	Pooled	Original	% Complete	Pooled
Youth perspective						
Baseline						
Verbal	7.45	82	7.44	6.97	81	6.85
Physical at						
0	39	76.4	48.4	42	75.2	56.2
1	53		69.4	28		34.2
2	31		43.2	51		70.4
6 month						
Verbal	3.69	54	3.53	2.89	53	2.85
Physical at						
0	63	54	81.6	64	54	82.8
1	16		36	15		41.8
2	8		43.4	8		36.4
12 Month						
Verbal	2.95	69.5	2.73	2.46	67	2.43
Physical at						
0	97	69.5	107.2	97	67	110.8
1	9		22.4	11		27.2
2	6		31.4	4		23
18 month						
Verbal	3.35	76.4	3.33	2.78	70	2.85
Physical at						
0	104	77	113.6	109	77	117.8
1	18		33.2	10		25.2
2	2		14.2	5		18
24 month						
Verbal	3.36	79.5	3.13	2.42	78	2.37
Physical at						
0	101	79.5	109.4	109	79.5	118.4
1	22		28.6	13		23.4
2	5		23	6		19.2
	Original	% Complete	Pooled	Original	% Complete	Pooled
Caregiver perspective						
Baseline						
Verbal	8.12	84	7.74	6.20	84	6.19
Physical						
0	49	76.4	58.2	45	77.6	58.8
1	43		54.4	31		39.2
2	31		48.4	49		63
6 month						
Verbal	4.38	59	4.31	3.11	59	2.97
Physical at						
0	68	56	84.2	71	55.3	88.4
1	13		37	14		34
2	9		39.8	4		38.6
12 month						
Verbal	2.97	69	3.27	1.98	70	2.00

Table 1 (continued)

	Youth			Caregiver		
	Original	% Complete	Pooled	Original	% Complete	Pooled
Physical at						
0	94	68.3	110.4	97	68.3	106
1	13		29.6	12		30.2
2	3		21	1		24.8
18 month						
Verbal	3.47	67	3.62	2.40	73	2.27
Physical at						
0	94	71.4	101.2	101	71.4	111.8
1	13		30.6	11		33.8
2	8		29.2	3		15.4
24 month						
Verbal	3.13	71	3.13	2.06	74	2.25
Physical at						
0	97	72	108.2	98	73	110.2
1	15		31.0	18		28.8
2	4		24	1		22.0

verbal abuse (unstandardized estimate=.17; $p<.05$) at six months. Caregivers’ verbal abuse at 18 months was significantly predicted by their own verbal abuse at 12 months (unstandardized estimate=.40; $p<.001$). At 24 months, the caregivers’ level of verbal abuse was significantly predicted by only their use of verbal abuse at 18 months (unstandardized estimate=.48; $p<.001$).

The disturbance or residual variance of the verbal abuse variables was correlated between the adolescent and

caregiver at each time point in the model, with the exception of the initial levels. These correlated disturbances accounted for the nonindependence of the dyads. These correlations were not significant for the verbal abuse model using both perspectives.

Reciprocity in Physical Violence

There was no evidence of stability or reciprocity in physical violence between baseline and the six-month follow-up or for any of the other time points. There was some stability in caregivers’ reports of physical violence between 18 and 24 months (unstandardized estimate=.37; $p<.05$). Reciprocity between caregivers’ physical violence at 18 months and

Table 2 Pooled correlations between youth and caregiver at each time point for the verbal abuse and physical violence (interval by interval Pearson’s R) from each perspective

	Youth perspective	Caregiver perspective	Youth and caregiver
Verbal abuse			
Baseline	.63***	.70***	.26*
6 month	.47***	.54***	.20
12 month	.78***	.56***	.20
18 month	.60***	.72***	.18
24 month	.67***	.82***	.15
Physical violence			
Baseline	.53***	.44***	.12
6 month	.43***	.52***	.20
12 month	.55***	.49***	.37
18 month	.58***	.52***	.27
24 month	.51***	.50***	.33

These are correlation coefficients from SPSS using the imputed data

Table 3 Pooled fit indices for all models from youth only, caregiver only, and both perspectives

Youth Only	χ^2	Degrees of freedom	RMSEA	CFI	TLI
Verbal abuse	193.61	135	.052	.898	.836
Physical violence	253.42	135	.074	.793	.667
Caregiver only					
Verbal abuse	183.94	135	.047	.902	.842
Physical violence ^a	342.14	135	.098	.645	.429
Both					
Verbal abuse	147.04	135	.024	.957	.93
Physical violence	198.55	135	.054	.797	.673

Only one successful computation

Table 4 Path estimates (unstandardized) for initial levels of verbal and physical violence in association with control variables

Path	Youth	Caregiver
To Initial youth verbal abuse		
From treatment group	-.53	-.12
From sex of youth	-1.9*	-1.58*
From age of youth	.37	-.04
From race/ethnicity of youth	-1.78*	-2.38*
From sex abuse	1.39	.99
From physical abuse	1.72 ^a	.89
From % days use	-.01	.00
From youth BDI	.01	.00
From caregiver BDI	.02	.03
To initial caregiver verbal abuse		
From treatment group	-.06	-.24
From sex of youth	-1.41	-.25
From age of youth	.31	-.10
From race/ethnicity of youth	-.65	-.22
From sex abuse	2.13*	1.28
From physical abuse	1.57	.91
From % days use	-.01	.00
From youth BDI	-.03	-.03
From caregiver BDI	.04	.05
To Initial youth physical violence		
From treatment group	.00	.13
From sex of youth	-.39	-.18
From age of youth	-.02	-.10
From race/ethnicity of youth	-.29	.33
From sex abuse	.21	.14
From physical abuse	.02	-.18
From % days use	-.00	-.00
From youth BDI	-.00	-.01
From caregiver BDI	.00	.00
To initial caregiver physical violence		
From treatment group	.01	-.03
From sex of youth	-.34	.01
From age of youth	.07	-.03
From race/ethnicity of youth	-.11	.42 ^a
From sex abuse	.21	.11
From physical abuse	.16	-.00
From % days use	-.00	-.00
From youth BDI	-.00	-.00
From caregiver BDI	.00	-.00

*: $p < .05$; **: $p < .01$; ***: $p < .001$; a: $p < .08$

These are the unstandardized path coefficients using the imputed data in the Mplus7 models

adolescents' violence at 24 months (unstandardized estimate = .29; $p < .05$) was demonstrated. The disturbance terms for the 12-month follow-up were significantly correlated between youth and caregiver physical violence.

Table 5 Pooled stability and reciprocity estimates (unstandardized) from the youth only, caregiver only, and both perspective models

	Youth	Caregiver	Both
Youth 6 month			
Stability verbal	.42***	.32***	.35***
Stability physical	.17	-.21 ^a	.16
Reciprocal verbal	-.09	.05	.04
Reciprocal physical	.20	-.26*	.09
Caregiver 6 month			
Stability verbal	.01	.06	.22**
Stability physical	.26*	.20 ^a	.34 ^a
Reciprocal verbal	.25*	.22**	.04
Reciprocal physical	.17	.32***	.02
Youth 12 month			
Stability verbal	.29	.49***	.36**
Stability physical	-.13	-.26	.09
Reciprocal verbal	.15	-.12	.16 ^a
Reciprocal physical	.33	.28	.15
Caregiver 12 month			
Stability verbal	.16	.06	.19*
Stability physical	.43	.94***	.41 ^a
Reciprocal verbal	.06	.22**	.17*
Reciprocal physical	-.07	-.86***	.11
Youth 18 month			
Stability verbal	.66***	.43***	.47***
Stability physical	-.39	-.19	-.25
Reciprocal verbal	-.23	.18	.19
Reciprocal physical	.68	.29	.63
Caregiver 18 month			
Stability verbal	.16	.24 ^a	.40***
Stability physical	.58	.63**	.73 ^a
Reciprocal verbal	.43***	.18*	.03
Reciprocal physical	-.12	-.31	-.31
Youth 24 month			
Stability verbal	.30*	.29**	.53***
Stability physical	-.32	-.39	.13
Reciprocal verbal	.39**	.39**	.21 ^a
Reciprocal physical	.56	.66*	.29*
Caregiver 24 month			
Stability verbal	.53***	.47***	.48***
Stability physical	.53	.42	.37*
Reciprocal verbal	-.03	.01	.00
Reciprocal physical	-.29	.03	.13

*: $p < .05$; **: $p < .01$; ***: $p < .001$ a: $p < .08$

These are the unstandardized path coefficients using the imputed data in the Mplus models

Discussion

The results of this study seem somewhat surprising. There appears to be very little perceived stability in physically

violent behaviors on the part of both adolescents and caregivers, with more stability in verbally abusive behaviors. In other words, violent behaviors seem unpredictable based on past behavior. It should be noted, however, that all of the adolescents were in some form of treatment for substance abuse. It may be that any treatment, contact with treatment providers, or even completing assessment interviews had destabilized these families in some way. That is, if violence in any form is more reciprocal than unidirectional, and there is evidence for this (Browne and Hamilton 1998; Kim et al. 2001), then the treatment and/or contact with those completing the assessments may have interrupted the reciprocity of violent behaviors. In the models for physical violence, more evidence of stability and reciprocity (although not much) was seen in later months following the completion of treatment. It may be that some of these families were beginning to regress to previous behaviors.

Previous literature proposed a number of risk factors that were associated with adolescent violence toward parents, with many authors suggesting that these behaviors need to be considered in a context of unpredictable or inconsistent family environments (Cottrell and Monk 2004; Kim et al. 2001; McCloskey and Lichter 2003). The sample for the present study appeared to include these types of families; however, the only demographic and initial variables that seemed to matter were sex and ethnicity of the adolescents. Females were perceived by themselves and their caregivers to perpetrate more acts of verbal abuse than males.

White adolescents were perceived by themselves and their caregivers to be more verbally abusive than Black adolescents. Very little has been reported in the literature about ethnic differences in adolescent-to-parent violence. In a sample of adolescent high school males from the 1960s, Brezina (1999) found that non-White adolescents were more likely to be aggressive toward parents than White adolescents. Additionally, being male was a risk factor for physically violent behaviors, which was suggested by previous literature (Herrenkohl et al. 2007); however, there appeared to be no differences between males and females in terms of physical violence toward caregivers in this sample. Pagani, Larocque, Vitaroa, and Tremblay (2003) used both adolescent and mother perspective on aggression and found that mothers tended to underreport daughter's aggression more so than sons'. This may have been why there were no gender differences in physical violence.

Substance use and a history of physical and/or sexual abuse were also cited as risk factors in the literature (Cottrell and Monk 2004). Evidence for this varied by which perspective was used in the model. If the adolescent reported being sexually abused, he or she also reported receiving more verbal abuse from caregivers. If an adolescent reported physical abuse, he or she in turn noted more verbally abusive behavior toward the caregiver (unstandardized estimate=1.72; $p=.078$). Reports of sexual or physical abuse were not

predictive of physical violence on the part of the youths or the caregivers. Because physical and sexual abuse were estimated using single-item variables, these variables may not have captured the range of abuse that these adolescents had experienced, leading to the lack of an observed relationship. Future studies should consider using a multidimensional measure of childhood abuse.

It should be noted that when examining the behaviors for the adolescents and the caregivers from the perspective of both groups, the Pearson correlations between adolescents' and caregivers' perspectives within each time point were significant and positive. When adolescents perceived more verbal abuse from caregivers, they also reported more verbal abuse toward their caregivers. When the adolescents perceived that they were physically violent toward their caregivers, they reported more physical violence from their caregivers as well. This same pattern was seen within the caregivers' perspective. However, the correlations between perspectives were not significant. If the adolescent reported more verbal abuse toward the caregiver, the caregiver did not report more verbal abuse toward the adolescent during that same time period. Since most past research has used only one perspective to test for reciprocity, these findings support those previous studies (e.g., Brezina 1999), but also call them into question. Although there were significant correlations within each perspective for each time point, when both perspectives were used, there was no evidence of this type of reciprocity. Determining which perspective to use in order to further investigate reciprocity in adolescent and caregiver violence continues to be a question that needs to be studied.

There was very little that predicted violent behaviors from past time periods. It may be that these families had been destabilized, or it may be that violent behaviors (verbal or physical) are not very predictable, even if they have occurred in the past. This speaks to living in an environment that may feel unsafe to both the adolescent and the caregiver. It may be that these adolescents and their caregivers are engaging in other processes that they believe protect them from further violence, such as running away or shutting the child out of the home. It is possible that more subtle processes are at work as well; perhaps emotionally distancing from each other is a way to decrease incidents of conflict and, thus, decrease the likelihood of future violent behaviors. More research in the area of family processes that inhibit or encourage further violence is necessary. The risk factors cited in the literature provide some information about who might be at risk for violent behaviors, but they do not provide us with high levels of predictive ability when considering the very families who do, in fact, experience violence.

Limitations

As noted, a single item to assess sexual and physical abuse does not capture the complete experience of these traumas for

the adolescents. Future studies should consider using a multi-dimensional measure of childhood abuse. Additionally, there are some potential limitations to the study based on the specific population that was used. The sample consisted of very troubled adolescents who have been diagnosed with substance abuse or dependence and have a history of running away. The majority in the sample were urban dwelling African American youth and their caregivers, who were mostly mothers. Although this may be representative of youth who runaway in an urban setting, it may not represent all runaway, substance abusing youth. There were many in this sample that already had open cases with Child Protective Services (CPS) and, thus, their reports of violence may have been biased, either to protect themselves from more involvement with CPS or, perhaps, to exaggerate the presence of violence to move CPS to demand out-of-home placement. This is clearly not a representative sample of all adolescents and their caregivers. However, this is a group of families where violence would be more probable given the risk factors cited in previous literature.

Conclusions and Future Study

Future research in this area needs to continue to explore multiple perspectives of violent behavior using more representative samples of youth. Although violence would be more probable in the present sample, there may be something special about these adolescent-caregiver pairs given the runaway and substance abuse behaviors. It may also be more productive to investigate reciprocity more immediately than was examined in this study. Others who have studied reciprocity in violence (i.e., Brezina 1999) have found evidence of a coercive control (i.e., if the adolescent hit back, the parent stopped hitting). It may be that, given the time lags in the current study, this coercive control was occurring, and, thus, there was no evidence of reciprocity; if the adolescent used some form of violence in response to the caregiver's violence, the caregiver tended to not reciprocate at the next time period. It may also be the case that reciprocity in these violent behaviors is more instantaneous than lagged. Using a continuous time model in future research may lead to more evidence of reciprocity.

Given minimal evidence for reciprocity overall, and this only in later time periods in this study, it seems possible that the treatment and follow-up assessment contact received by the adolescents and their caregivers may have interrupted more typical patterns of violence, if parent-adolescent violence is truly reciprocal. The incidents of violence also seemed to decrease over time, especially in the form of physical violence from the adolescents and caregivers. This is good news and may suggest that any attention, including attention by those doing the follow-up assessments, may interrupt the patterns of violence in these families.

Since there has been little research regarding adolescent-to-parent violence, we have even less literature about how to intervene. In more severe cases, the perpetrator may be arrested, though evidence from intimate partner violence interventions suggests that arrest and incarceration alone are not likely to decrease violence in the future. Additionally, Brezina (1999) contends that violence is a functional behavior for some adolescents; violence toward their parents seems to decrease their parents' violence toward them. Thus, we need to find methods of intervening with these families in a way that will keep all participants safe and teach new patterns of interacting that do not lead to further violence.

Acknowledgments This work has been supported by NIDA grant (R01 DA016603).

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