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ORIGINAL PAPER

Diminishing Delinquency: Social Support as a Moderator between Exposure to Community Violence and Delinquency in Adolescents

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Abstract

Background Adolescents experience community violence at concerning rates in the United States. Exposure to community violence (ECV) often portends negative outcomes, like delinquency, but social support has been found to lessen such outcomes in youth.

Objective Expanding on the buffering hypothesis, we assessed the moderating role of social support in the positive association between ECV and delinquency.

Methods We examined family, friend, and adult social support as moderators between primary and secondary ECV (PECV, SECV) and delinquency in a U.S.-based sample of adolescents. Negative binomial regressions were used to assess associations between ECV and social support on delinquency and to examine cross-product interactions between ECV and social support on delinquency.

Results ECV was positively associated with delinquency. All forms of social support were negatively associated with delinquency. Moderation models suggested that at higher levels of family and adult support, positive associations between ECV and delinquency were greater. Upon reinterpretation, we found that ECV moderated the links between family and adult support on delinquency such that negative associations became more positive as PECV and SECV were higher. Conversely, ECV did not moderate the link between friend social support and delinquency.

Conclusions ECV's moderation of cross-sectional associations between family and adult social support and delinquency suggest a potential deleterious impact despite the presence of such supports. As ECV did not moderate the association between friend social support and delinquency, future research could clarify directionality through longitudinal designs to understand if friend social support could reduce the negative effects of ECV and delinquency.

Keywords Exposure to community violence · Delinquency · Social support · Adolescents

The significance of community violence lies in its pervasiveness within United States (U.S.) neighborhoods and its impact on adolescents' psychosocial development (Affrunti et al.,

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2018; Wright et al., 2017). In 2022, approximately 3.5 million Americans aged 12 or older witnessed at least one violent crime (Thompson & Tapp, 2023). Unfortunately, exposure to community violence (ECV) has been linked to a litany of negative outcomes in adolescents, including anxiety, post-traumatic stress disorder (PTSD; Darawshy et al., 2020; Lee et al., 2020; Wright et al., 2017), poor academic achievement, and delinquency (Chen et al., 2016). This trend remains regardless of adolescents' direct victimization (primary exposure to community violence; PECV) or their witnessing/hearing about violence in their community (secondary exposure to community violence; SECV; Affrunti et al., 2018). The prevalence of ECV and its associated consequences are so severe that many scholars have labeled it a public health crisis (Affrunti et al., 2018; Darawshy et al., 2020; Humm et al., 2018).

Delinquency is an important outcome of ECV that requires special attention given its own overwhelming prevalence among youth and the negative sequela that follow. Though engagement in delinquent behaviors is normative for adolescents (Micalizzi et al., 2019), high levels have been linked to increased high school dropout rates (Peguero, 2011), failure to transition to independent living (Makarios et al., 2015), and increased criminal engagement and adulthood arrests (Mercer et al., 2016). Conversely, those who abstain from such behaviors may have better employment and mental health outcomes as adults (Mercer et al., 2016). Evidently, delinquency's effects are not limited to adolescence but manifest throughout the life course and permeate into various domains. Despite the independent and joint importance of ECV and delinquency, their association has been less explored, especially to address their shared outcomes.

Extant literature has found that social support can reduce adolescent delinquent engagement (Defoe et al., 2021; Mercer et al., 2016) and buffer against stressful life events like ECV (Szkody & McKinney, 2019). Additionally, adolescents who engage with prosocial agents (e.g., parents, teachers) have been found to report lower incidences of delinquency (Liu & Miller, 2020; Shetgiri et al., 2016), whereas those who *do* engage in delinquency often hold weaker social bonds (Mercer et al., 2016). These findings demonstrate the various benefits of social support on adolescent well-being and functioning and warrant further investigation into the prospective role of social support as a protective factor from ECV and delinquency.

Exposure to Community Violence

Santacrose and colleagues' (2021) systematic review of the interplay between socioecological factors, ECV, and the racial disparities Latinx youth experience defines ECV as a form of interpersonal violence (experienced firsthand or witnessed) that occurs between unrelated persons in a community setting. When discussing ECV, a notable distinction lies in whether the experience stems from direct victimization (e.g., being assaulted or robbed), known as PECV, or if it was experienced second-hand (e.g., witnessing gang violence, hearing about neighborhood crime), known as SECV. Though studies that specifically investigate the distinction between PECV and SECV are lacking, prior work has established that these forms are conceptually different and may affect adolescents through distinct mechanisms (Ceballo et al., 2022). This distinction in form is important to reach a more granular understanding of the potentially differing effects of PECV and SECV and the mechanisms through which they affect youth.

As mentioned, ECV is a particularly pressing issue in the United States as prevalence rates exceed that of other industrialized nations (Affrunti et al., 2018) with adolescents particularly vulnerable (Rubens et al., 2018). Adolescents of color, mainly Latinx and African American youth (Rubens et al., 2018; Santacrose et al., 2021; Schilling et al., 2007), and adolescents who live in urban centers are especially vulnerable as they are more likely to experience ECV (Lee et al., 2020; Santacrose et al., 2021). Existing research highlights various negative outcomes linked to ECV, emphasizing its pervasive and multifaceted nature. Studies have found that ECV can negatively affect physical health outcomes (Ford & Browning, 2014), academic achievement, and mental health outcomes (Lee et al., 2020). Though these consequences are of great significance, another significant but less explored outcome is adolescent delinquent engagement.

Delinquency

The link between ECV and delinquency is a compound issue as both constructs can result in notable undesirable effects. The present study, informed by Chen and colleagues (2016), defines delinquency as minor criminal or deviant behavior carried out by youth. Examples of criminal behavior include shoplifting, destruction of property, and assault (Defoe et al., 2021), and deviant, non-criminal behaviors include lying to parents (Liu & Miller, 2020) and cheating in school (Finkelhor & Turner, 2014). With over 700,000 juveniles arrested annually for such behaviors in the United States (Freelin et al., 2023), a better understanding of the mechanisms behind such behaviors is needed to mitigate these acts, especially as adolescents exposed to ECV are more likely to engage in delinquent behaviors (Rubens et al., 2018).

During adolescence, youth are granted more freedom, experience major life transitions (e.g., physiological changes, school changes), and increasingly value peer relationships (Jackson et al., 2023). These changes – paired with a surge in unstructured, unsupervised time with peers– mix to create an environment that can promote delinquent engagement. Communities where violence is prevalent also experience higher levels of poverty and lack neighborhood assets (e.g., libraries, parks) necessary to adequately stimulate children in structured environments, which can further promote delinquency (Smith et al., 2016). Such findings the link between ECV and adolescent delinquent behaviors. Researchers also theorize that delinquent engagement may stem from adolescents' desire to conform as they seek to establish their social identity and prioritize the opinions of their peers (Defoe et al., 2021). Youth may mimic peers who engage in delinquency in hopes of avoiding reproach or being ostracized, outlining the importance of peer networks during this phase (Mercer et al., 2016). In all, adolescents' environment and those around them play a critical role in their delinquent engagement.

Importantly, adolescents who engage in higher levels of delinquency often experience a variety of negative outcomes (e.g., poor academic and health outcomes) concurrently as well as later in adulthood (Evans et al., 2016; Sibley et al., 2011). Though not all adolescents who experience ECV engage in delinquency and vice versa, significant overlap in their consequences (e.g., poor educational outcomes, negative social outcomes) reinforces the notion of shared mechanisms linking these phenomena. Psychological, social, and life prospects impacted by ECV become markedly worse when adolescents engage in delinquent behaviors. Naturally, these widespread effects justify the label of "public health crisis" (Affrunti

et al., 2018; Darawshy et al., 2020; Humm et al., 2018). Given the importance of adolescents' support networks in their delinquent engagement (e.g., peers, family), we propose that social support may act as a protective factor and may lessen the association between ECV and delinquency.

The Buffering Hypothesis: Social Support as a Protective Factor

The buffering hypothesis (Cohen & Willis, 1985) is a prominent theoretical model that outlines the benefits of social support in mitigating the harmful effects of stress (Haines et al., 1991; Rafaelli et al., 2013; Szkody & McKinney, 2019). Social support – defined as an interactive process in which individuals feel valued and connected to a social network (Tomás et al., 2020) – has been found to protect against negative outcomes of stressful life events, like ECV (Rafaelli et al., 2013; Szkody & McKinney, 2019). It also has been found to decrease one's risk for depression, improve academic adjustment, reduce substance abuse (Camara et al., 2017), and mitigate adolescent delinquent engagement (Defoe et al., 2021; Mercer et al., 2016; Smith et al., 2016). Further, youth with friends who abstain from delinquent behaviors also tend to abstain themselves, whereas those who commit delinquent acts often exhibit poorer social bonds (Mercer et al., 2016).

As adolescents possess diverse support networks (e.g., friends, family, teachers, coaches), distinguishing between roles may elucidate differing effects on their delinquent engagement. For example, while peer/friend support has been found to influence risk-taking behavior, lessen emotional distress, and aid in problem solving (Brady et al., 2009), community social support has been noted to boost resilience (Camara et al., 2017). Further, while family support may improve academic performance (Tomás et al., 2020) and lessen depressive symptoms (Rafaelli et al., 2013), teacher support has been found to lower the risk of bullying (Tomás et al., 2020). Importantly, leveraging social support aligns with multisystemic treatment (MST) for adolescents. MST is an intervention aimed at reducing juvenile delinquency through within-community resources by fostering prosocial relationships and a more holistic focus on multiple aspects of youths' lives (e.g., school, family; Tighe et al., 2012; Osher et al., 2003). Research on MST has found it to be both efficacious and effective (Asscher et al., 2014; May et al., 2014), with lower rates of recidivism in youth who engaged in high levels of delinquency, and less severe acts of delinquency when recidivism *did* occur (Bourdain et al., 1995). Treatments like MST are rooted in keeping offending juveniles in their communities and building systems of support rather than following punitive practices. Though more often implemented in adolescents with more severe delinquent records, the basis of MST can be applied in less severe cases by promoting the social support to reduce adolescent delinquent engagement. Additionally, consideration for various sources of social support aligns with established work that highlights the significance of youth's networks and environment in general (e.g., ecological systems theory; Bronfenbrenner, 1979). Family – parents in particular – play an important role in shaping adolescent behavior, while peer relationships become increasingly important. Non-parent adult relationships can also play an important role in adolescents' ability to engage with their environment. Thus, these three sources play a critical role in the way youth interpret and navigate their environment.

In sum, adolescents' support networks are not only important in how they engage with the world, but distinct actors can affect youth in different ways. Consequently, a granular

investigation of the effects of social support is needed to understand if certain kinds of support may not only be better suited to reduce delinquent engagement, but also to lessen the impact of ECV. By interrogating the dynamics between these constructs, the present study aims to addresses a timely and important public health concern.

Hypotheses

The present study examined the potential moderating effects of family, friend, and adult social support on the cross-sectional association between ECV (both PECV and SECV) and delinquency. We conducted a secondary data analysis on a subset of the National Survey of Children's Exposure to Violence III (NatSCEV III) dataset – a large, representative sample of U.S.-based adolescents. In line with existing literature, (1) we predicted that higher levels of PECV and SECV would co-occur with more delinquent engagement in adolescents. (2) We also predicted that higher levels of friend, family, and adult social support would be associated with less delinquent engagement. (3) Last, we hypothesized that family, friend, and adult social support would emerge as moderators of the links between ECV (PECV and SECV) and delinquency, such that higher levels of social support would be linked with weaker associations between ECV and delinquency.

Methods

Participants

The present study used data from the NatSCEV III, collected between August 2013 and April 2014 (Finkelhor & Turner, 2016). The NatSCEV III sought to document lifetime and one-year incidence rates of childhood victimization across race/ethnicity, gender, and developmental stages. Data were collected from a nationally representative sample of 4,000 youth from the contiguous United States, excluding New Hampshire. Participants were included in the present study if (1) they were aged 12–17 ($n = 1{,}615$) at the time of data collection, (2) completed all items of the Juvenile Victimization Questionnaire (JVQ) and the Community Disorder, Delinquency, and Social Support sections of the NatSCEV III interview questionnaire, and (3) if demographic information about age, race/ethnicity, gender, and household income was reported. Additional information about study recruitment, the overall sample, and questionnaire procedures can be found in Turner et al. (2016). The current study involved the analysis of de-identified data and was thus exempt from IRB review. Our subsample originally consisted of 1,615 adolescents aged 12–17 years old (see Tables 1 and 2 for descriptive statistics and demographics, respectively). We excluded $n = 10$ respondents who did not provide race/ethnicity data and $n = 4$ respondents who identified as Pacific Islanders due to their impact on analyses stemming from low counts. We were subsequently left with 1,601 participants.

Table 1 Sample demographics and descriptive statistics

	n (%)	PECV	SECV	Delinquency	Family SS	Friend SS	Adult SS
Female	799 (49.5%)	1.88 (2.28)	1.98 (2.08)	0.87 (1.62)	7.06 (1.28)	7.07 (1.39)	4.86 (1.40)
Male	816 (50.5%)	2.60 (2.40)	2.31 (2.30)	1.40 (2.26)	7.14 (1.19)	6.66 (1.52)	4.68 (1.51)
White	1,250 (77.4%)	2.21 (2.36)	1.96 (2.00)	1.13 (1.98)	7.12 (1.22)	6.92 (1.45)	4.83 (1.44)
Black	125 (7.7%)	2.63 (2.39)	3.34 (2.76)	1.08 (1.75)	7.24 (1.16)	6.47 (1.52)	4.63 (1.56)
Hispanic	157 (9.7%)	2.38 (2.53)	2.83 (2.74)	1.29 (2.23)	6.80 (1.54)	6.61 (1.66)	4.51 (1.42)
Asian	35 (2.2%)	1.80 (2.18)	1.51 (2.93)	0.69 (1.39)	7.20 (0.96)	7.03 (1.40)	4.57 (1.29)
American Indian	14 (0.9%)	2.86 (2.77)	2.43 (2.90)	2 (2.72)	7.21 (1.12)	7.50 (0.65)	4.36 (1.82)
Mixed Race	20 (1.2%)	1.15 (1.46)	2.05 (1.93)	0.75 (1.62)	7.40 (0.68)	6.85 (1.31)	4.55 (1.82)
Subsample Total	1,615	2.24 (2.37)	2.15 (2.20)	1.13 (1.98)	7.11 (1.24)	6.87 (1.46)	4.77 (1.46)

Column "*n*" displays counts whilst subsequent columns display means with standard deviations in parentheses. Means and standard deviations were calculated by summing the number of unique kinds of exposures and delinquent acts endorsed by adolescents

Table 2 Adolescent demographics

	Male (*n*, %)	Female (*n*, %)	Total (*n*, %)
White (non-Hispanic)	642 (40.1%)	608 (38%)	1250 (78.1%)
Hispanic	89 (5.6%)	68 (4.2%)	157 (9.8%)
Black	47 (2.9%)	78 (4.9%)	125 (7.8%)
Asian	14 (0.9%)	21 (1.3%)	35 (2.2%)
Mixed	8 (0.5%)	12 (0.7%)	20 (1.2%)
American Indian	8 (0.5%)	6 (0.4%)	14 (0.9%)
Total	808 (50.5%)	793 (49.5%)	1,601 (100%)
< $20,000	60 (3.7%)	56 (3.5%)	116 (7.2%)
$20,000-<$40,000	75 (4.7%)	90 (5.6%)	165 (10.3%)
$40,000-<$75,000	160 (10%)	156 (9.7%)	316 (19.7%)
$75,000+	469 (29.3%)	422 (26.4%)	891 (55.7%)
Missing	44 (2.7%)	69 (4.3%)	113 (7%)
Total	808 (50.5%)	793 (49.5%)	1,601 (100%)

Measures

Demographics

Demographic variables used in the present study included age, race/ethnicity (White, Black, Hispanic, Asian, American Indian, Alaskan Native, or Native Hawaiian or Pacific Islander), gender (male, female), and household income (see Table 1). In the original NatSCEV III survey, household income was categorized as less than $5,000, $5,000 to less than $10,000, $10,000 to less than $15,000, $15,000 to less than $20,000, $20,000 to less than $30,000, $30,000 to less than $40,000, $40,000 to less than $50,000, $50,000 to less than $75,000,

$75,000 to less than $100,000, and $100,000 or more. Our study collapsed income into four categories consistent with 2023 U.S. tax brackets (Durante, 2022) and the 2021 U.S. median income (Semega & Kollar, 2022). These categories include less than $20,000, $20,000 to less than $40,000, $40,000 to less than $75,000, and $75,000 or more. Aligning our family income levels with U.S. tax brackets allows us to pool participants into meaningful groups that are affected by policy (i.e., taxes). This allows for more useful interpretations as our levels represent groups with real world differences rather than arbitrary divisions.

Exposure to Community Violence

ECV was measured using self-report items from the Juvenile Victimization Questionnaire (JVQ; Finkelhor et al., 2005) and Community Disorder variable area. Twenty items were culled from the JVQ (e.g., "At any time in your life, was anyone close to you murdered, like a friend, neighbor or someone in your family?") in addition to six items from the Community Disorder screener (e.g., "Have you ever gone to a school where a kid brought a gun or knife to school?"). Item responses included *Yes*, *No*, *Not Sure*, and *Refused*, where *Yes* was coded as 1, *No* as 0, and *Not sure* and *Refused* were coded as missing. Each ECV item indicated a unique type of community violence exposure and thus did not account for multiple occurrences of the same incident (e.g., being robbed once vs. being robbed multiple times within the same year). Additionally, not all forms of ECV are of the same intensity (e.g., witnessing a robbery vs. witnessing a murder). Items were divided into a PECV subscale ($n = 14$ items) and an SECV subscale ($n = 12$ items). See Supplementary Information for a list of all included items. PECV consisted of direct victimization (e.g., being robbed or sexually assaulted), and SECV involved seeing, hearing, or having knowledge of others' experiences with ECV within one's community (e.g., hearing of a neighbor being arrested or living in a neighborhood with gangs). Scores for PECV and SECV were computed by summing item responses for each subscale where higher scores denoted more incidences of exposure to unique types of community violence. Possible scores ranged from 0 to 14 for PECV and 0–12 for SECV. Both scales demonstrated acceptable internal consistency in the present sample (Cronbach's $\alpha = 0.76$, Cronbach's $\alpha = 0.75$, respectively).

Delinquency

Delinquency was assessed using 19 original NatSCEV III items that interrogated specific delinquent behaviors and required respondents self-report whether they engaged in such behaviors within the past 12 months. Respondents were prefaced with, "In the last year, did you…" and asked, "On purpose break, damage or destroy something that belonged to someone else?" for example. Item responses included *Yes*, *No*, *Not Sure*, and *Refused*, where *Yes* was coded as 1, *No* as 0, and *Not sure* and *Refused* were coded as missing. A total delinquency engagement score was calculated by summing all item scores where scores ranged from 0 to 19. Higher scores on the delinquency scale indicated higher endorsement of unique delinquent behaviors over the past 12 months. Though an adolescent may have engaged in a specific act more than once over the 12 months prior to completing the questionnaire, their score would remain as "1" as items are binary in querying engagement rather than frequency. This measure also does not account for differing levels of intensity

in delinquent acts (e.g., cheating in school vs. committing a robbery). Prior studies have successfully used this 19-item delinquency screener to assess delinquency in youth samples (Van Berkel et al., 2018; Turner et al., 2016). This scale demonstrated acceptable internal consistency in the present sample (Cronbach's $\alpha = 0.74$).

Social Support

Adolescent perceived social support was measured using 8 items from the Multidimensional Scale of Perceived Social Support (MSPSS; Zimet et al., 1988) and three original items from the NatSCEV III questionnaire that assessed adult social support. All items were self-reported. The MSPSS is comprised of 3 subscales including a friend social support subscale ($n = 4$ items), a family social support subscale ($n = 4$ items), and a significant other social support subscale. Only the friend and family subscales were administered during the NatSCEV III data collection process. The NatSCEV III-original adult support subscale ($n = 3$ items) measured non-parent adult support in participants' lives. Items were rated on a 3-point Likert scale with choices including *Never* (0), *Sometimes* (1), and *Often* (2). *Not sure* and *Refused* were coded as missing. Subscale items were summed to create the 3 subscale scores – friend, family, and adult social support. See Supplementary Information for more details on subscale items. Scores ranged from 0 to 8 on the friend and family subscales, and from 0 to 6 on the adult subscale. All subscales demonstrated adequate internal consistency in the present sample (friend Cronbach's $\alpha = 0.72$; family Cronbach's $\alpha = 0.66$; adult Cronbach's $\alpha = 0.76$). The friend and family MSPSS subscales have been used successfully in prior studies (e.g., Bruwer et al., 2008) and have demonstrated good internal validity (family: Cronbach's $\alpha = 0.87$; test-retest = 0.85, friend Cronbach's $\alpha = 0.85$).

Statistical Analyses

Given our delinquency variable consisted of count data with a zero-inflated distribution and showed overdispersion, we used negative binomial regressions instead of Poisson models to examine associations between ECV (PECV, SECV) and social support (family, friend, adult) on delinquency (see Supplementary Information for variable distributions). A zero-inflated model was checked to compare the ratio of observed zeros to expected zeros. This zero-inflated model did not provide a better explanation of our excess in zeros, thus directing us to use negative binomial regressions rather than zero-inflated negative binomial. In each model, delinquency was the outcome variable with either PECV or SECV as the predictor. Covariates in both models included age, gender (male/female; male reference), race/ethnicity (White, Black, Hispanic, Asian, American Indian, Mixed Race; White reference), and household income (less than $20,000, $20,000 to less than $40,000, $40,000 to less than $75.000, and $75,000 or more; $75,000 or more reference). Reference levels were selected based on the level with the highest count within each categorical variable.

To determine if social support moderated the effects of PECV and SECV on delinquency, we ran six negative binomial regressions with delinquency as the outcome and a cross-product interaction term between either PECV or SECV and one of our social support constructs (i.e., friend, family, and adult) as the predictor. Covariates in each model included age, gender (male/female; male reference), race/ethnicity (White, Black, Hispanic, Asian, American Indian, Mixed Race; White reference), and household income (less than $20,000, $20,000 to

less than $40,000, $40,000 to less than $75.000, and $75,000 or more; $75,000 or more reference). Simple slope analyses were subsequently run to better interpret moderation effects. RStudio Version 4.2.3 was used for data processing and analyses (Posit Team, 2023).

Results

Descriptive Information

Adolescents reported an average age of 14.7 years (SD=1.66) with 50.5% being male, 77.4% White (non-Hispanic), 9.7% Hispanic, 7.7% Black, 2.2% Asian, 1.2% Mixed, and 0.9% American Indian. Our sample was disproportionately White compared to current U.S. demographics as 50% of current adolescents in this age range identify as White (Annie E. Casey Foundation, n.d.). The sample also skewed toward affluence as 7.2% of adolescents came from households that earned less than $20,000, 10.3% came from households that earned $20,000 to less than $40,000, 19.7% came from households that earned $40,000 to less than $75,000, and 55.7% came from households that earned $75,000 or more (see Table 2 for more details).

Adolescents reported an average of 2.24 (SD=2.37) unique types of PECV experienced in their lifetime, with 69.4% of respondents noting at least one incident of direct victimization. A mean of 2.15 (SD=2.20) unique types of SECV were also reported during respondents' lifetime, with 73.3% of respondents indicating they witnessed or heard about at least one violent crime in their community ever. One adolescent reported experiencing 14 unique kinds of PECV (the maximum value for our measure of SECV), and six adolescents reported experiencing 12 unique kinds of SECV (the maximum for our measure of SECV). Four-hundred ninety adolescents (30.6%) reported no incidences of PECV, and 428 reported no incidences of SECV (26.7%). Overall, there were 7,029 unique incidences of ECV experiences recorded across 1,601 participants – 3,591 unique incidents of PECV and 3,438 unique incidents of SECV. Adolescents, on average, engaged in 1.14 (SD=1.99) unique acts of delinquency within the 12 months prior to responding, with a majority (57.3%) abstaining from such behaviors. Our social support subscales yielded mean scores of 7.10 (SD=1.24) for family support, 6.86 (SD=1.47) for friend support, and 4.77 (SD=1.46) for adult support. Thus, adolescents reported high levels of all kinds of social support.

Main Effects: The Associations between ECV, Social Support, and Delinquency

ECV and Delinquency

As negative binomial regressions yield coefficients in log counts, we exponentiated our results to interpret them in a more understandable format – incident rate ratios. We found PECV (p=<0.001; IRR=1.346) and age (p=<0.001; IRR=1.263) to be positively associated with delinquency. Each additional reported incident of PECV was associated with a 34.6% uptick in adolescents' expected delinquency. A 26.3% increase in expected acts of delinquency also co-occurred with each year an adolescents aged. Hispanic-identifying adolescents' expected counts of delinquency were 30.4% higher (p=.04, IRR=1.304) than that of White-identifying adolescents. Adolescents who identified as female (p=<0.001,

Table 3 Negative binomial regression with PECV predicting delinquency

	Coeff.	IRR	CI		*p*-value
			LL	UL	
PECV	0.30	1.346	1.31	1.39	<0.001***
Age	0.23	1.263	1.20	1.33	<0.001***
Gender[1]					<0.001***
Female	−0.27	0.760	0.65	0.89	<0.001***
Family Income[1]					0.099
< $20,000	−0.15	0.859	0.65	1.14	0.294
$20,000 - < $40,000	−0.33	0.722	0.55	0.94	0.015*
$40,000 - <$75,000	−0.09	0.915	0.76	1.11	0.362
Race[1]					0.083
Black	0.06	1.064	0.80	1.42	0.666
Asian	−0.70	0.498	0.25	0.96	0.049*
American Indian	0.34	1.404	0.69	2.97	0.348
Mixed Race	−0.15	0.863	0.38	1.89	0.727
Hispanic	0.27	1.304	1.01	1.68	0.040*

Note. * < 0.05, ** < 0.01, *** <0.001.[1]Categorical variables' significance were calculated using Likelihood Ratio Tests to assess contribution to model fit. 95% confidence intervals were calculated

Table 4 Negative binomial regression with SECV predicting delinquency

	Coeff.	IRR	CI		*p*-value
			LL	UL	
SECV	0.32	1.378	1.33	1.43	<0.001***
Age	0.21	1.236	1.18	1.30	<0.001***
Gender[1]					<0.001***
Female	−0.29	0.752	0.65	0.88	<0.001***
Family Income[1]					0.085
< $20,000	−0.16	0.855	0.64	1.14	0.282
$20,000 - < $40,000	−0.31	0.736	0.56	0.96	0.023*
$40,000 - <$75,000	−0.15	0.858	0.71	1.040	0.112
Race[1]					0.009**
Black	−0.39	0.677	0.50	0.91	0.010**
Asian	−0.84	0.432	0.22	0.84	0.019*
American Indian	0.35	1.413	0.68	3.02	0.346
Mixed Race	−0.60	0.550	0.25	1.20	0.154
Hispanic	−0.09	0.912	0.70	1.19	0.493

Note. * < 0.05, ** < 0.01, *** <0.001. [1]Categorical variables' significance were calculated using Likelihood Ratio Tests to assess contribution to model fit. 95% confidence intervals were calculated

IRR = 0.760; 24% decrease), Asian (p = .04, IRR = 0.498; 50.2% decrease), or coming from a household that earned between $20,000 and less than $40,000 ($p$ = .02, IRR = 0.722; 27.8% decrease) had lower expected counts of delinquency compared to their respective reference groups. See Table 3 for more details.

We also found that SECV *(p <.001, IRR = 1.378)* and age *(p <.001. IRR = 1.236)* were associated with delinquent engagement. Each additional unique incident of SECV and each additional year in age was associated with increases in adolescents' expected delinquent acts by 37.8% and 23.6%, respectively. Identifying as female (p = <0.001, IRR = 0.752; 24.8% decrease), Black (p = .01, IRR = 0.677; 32.3% decrease), Asian (p = .02, IRR = 0.432; 56.8% decrease), or coming from a household that earned between $20,000 and $40,000 ($p$ = .02, IRR = 0.736; 26.4% decrease) was associated with decreases in expected acts of delinquency compared to their respective reference group. See Table 4 for more details.

Importantly, higher levels of PECV and SECV were associated with higher levels of adolescent delinquent engagement.

Social Support and Delinquency

Additional negative binomial regressions were conducted to understand the links between family, friend, and adult social support and adolescent delinquent engagement. All forms of social support were negatively associated with delinquency (family: $p = < 0.001$, IRR = 0.751; friend: $p = < 0.001$, IRR = 0.886; adult: $p = < 0.001$, IRR = 0.876). Decreases of 24.9%, 11.4%, and 12.4% for expected acts of delinquency co-occurred with each additional reported type of support for family, friend, and adult social support, respectively (see Supplementary Information for tables of these analyses).

Moderating Effects of Social Support

Models testing the moderating effects of family, friend, and adult social support on the association between ECV and delinquency included the same variables as the main effect models with the addition of a cross-product interaction term between either PECV or SECV and one of family, friend, or adult social support. Results from these six models are reported in Tables 5, 6, 7, 8, 9 and 10. Analyses indicated that family social support and adult social support moderated the association between PECV and delinquency (p <.001, IRR = 1.028; p=.034, IRR = 1.020, respectively) and SECV and delinquency (p =.003, IRR = 1.031; p=.013, IRR = 1.025, respectively). Counter to our hypotheses, it appears that the link between ECV and delinquency (i.e., more ECV being associated with more delinquency) was more positive in adolescents who reported more family and adult social support compared to adolescents who reported less family and adult social support. To better understand these effects given vast literature highlighting the benefits of social support, including our own main effect analyses, we shifted the interpretation of our cross-product interactions to

Table 5 Negative binomial regression for PECV with family social support as a moderator

	Coeff.	IRR	CI		*p*-value
			LL	UL	
PECV	0.09	1.098	0.96	1.26	0.13
Age	0.23	1.258	1.20	1.32	<0.001***
Gender[1]					<0.001***
Female	−0.30	0.742	0.64	0.87	<0.001***
Family Income[1]					0.041*
< $20,000	−0.19	0.826	0.62	1.10	0.185
$20,000 - < $40,000	−0.37	0.693	0.53	0.90	0.006**
$40,000 - <$75,000	−0.11	0.900	0.75	1.09	0.273
Race[1]					0.092
Black	0.09	1.095	0.82	1.46	0.529
Asian	−0.68	0.509	0.26	0.98	0.054
American Indian	0.35	1.416	0.70	2.97	0.331
Mixed Race	−0.90	0.915	0.41	2.00	0.833
Hispanic	0.26	1.297	1.01	1.67	0.042*
Family Social Support	−0.23	0.795	0.72	0.87	<0.001***
Family SS*PECV	0.03	1.028	1.01	1.05	<0.001***

Note. * < 0.05, ** < 0.01, *** <0.001.[1]Categorical variables' significance was calculated using a Likelihood Ratio Test to assess contribution to model fit. 95% confidence intervals were calculated

Table 6 Negative binomial regression for PECV with friend social support as a moderator

	Coeff.	IRR	CI		*p*-value
			LL	UL	
PECV	0.20	1.221	1.080	1.39	0.001**
Age	0.24	1.270	1.21	1.33	<0.001***
Gender[1]					0.002**
Female	−0.25	0.783	0.67	0.91	0.002**
Family Income[1]					<0.001***
< $20,000	−0.17	0.840	0.63	1.12	0.067
$20,000 - < $40,000	−0.35	0.708	0.54	0.92	0.010**
$40,000 - <$75,000	−0.09	0.9160	0.76	1.11	0.364
Race[1]					0.076
Black	0.04	1.041	0.78	1.39	0.781
Asian	−0.70	0.498	0.25	0.96	0.048*
American Indian	0.40	1.491	0.73	3.16	0.268
Mixed Race	−0.16	0.851	0.38	1.87	0.704
Hispanic	0.26	1.300	1.01	1.68	0.042*
Friend Social Support	−0.12	0.890	0.82	0.97	0.004**
Friend SS*PECV	0.01	1.014	1.00	1.03	0.127

Note. * < 0.05, ** < 0.01, *** <0.001. [1]Categorical variables' significance was calculated using a Likelihood Ratio Test to assess contribution to model fit. 95% confidence intervals were calculated

Table 7 Negative binomial regression for PECV with adult social support as a moderator

	Coeff.	IRR	CI		*p*-value
			LL	UL	
PECV	0.20	1.217	1.11	1.35	<0.001***
Age	0.24	1.265	1.21	1.33	<0.001***
Gender[1]					<0.001***
Female	−0.26	0.771	0.66	0.90	<0.001***
Family Income[1]					0.076
< $20,000	−0.16	0.855	0.65	1.13	0.273
$20,000 - < $40,000	−0.34	0.715	0.55	0.93	0.011*
$40,000 - <$75,000	−0.10	0.901	0.75	1.09	0.282
Race[1]					0.080
Black	0.05	1.050	0.79	1.40	0.731
Asian	−0.73	0.484	0.25	0.92	0.037*
American Indian	0.29	1.337	0.66	2.79	0.419
Mixed Race	−0.26	0.772	0.33	1.73	0.549
Hispanic	0.25	1.277	0.99	1.65	0.056
Adult Social Support	−0.17	0.843	0.78	0.92	<0.001***
Adult SS*PECV	0.02	1.020	1.00	1.04	0.034*

Note. * < 0.05, ** < 0.01, *** <0.001.[1]Categorical variables' significance was calculated using a Likelihood Ratio Test to assess contribution to model fit. 95% confidence intervals were calculated

frame family and adult social support as predictors and PECV and SECV as moderators within these same models. With this reinterpretation, our results pointed toward more ECV co-occurring with a greater association between family and adult social and delinquency (i.e., more support being linked with more delinquency in adolescents who had higher ECV).

Models were graphed using the "ggplot2" package in RStudio for further interpretation (Wickham et al., 2016). Social support subscale scores and ECV subscale scores were grouped into lower, middle, and upper tertiles for visualization as we reframed our analyses to include our social support subscales as predictors and ECV subscales as moderators

Table 8 Negative binomial regression for SECV with family social support as a moderator

	Coeff.	IRR	CI		*p*-value
			LL	UL	
SECV	0.09	1.095	0.94	1.29	0.203
Age	0.21	1.230	1.17	1.29	<0.001***
Gender[1]					<0.001***
Female	−0.33	0.722	0.62	0.84	<0.001***
Family Income[1]					0.009**
< $20,000	−0.27	0.764	0.58	1.02	0.062
$20,000 - < $40,000	−0.38	0.687	0.53	0.90	0.005**
$40,000 - <$75,000	−0.21	0.812	0.67	0.98	0.032*
Race[1]					0.026*
Black	−0.32	0.725	0.54	0.97	0.032*
Asian	−0.80	0.448	0.23	0.87	0.023*
American Indian	0.39	1.469	0.72	3.08	0.282
Mixed Race	−0.49	0.613	0.28	1.33	0.234
Hispanic	−0.08	0.928	0.72	1.20	0.569
Family Social Support	−0.28	0.756	0.69	0.83	<0.001***
Family SS*SECV	0.03	1.031	1.01	1.06	0.003**

Note. * < 0.05, ** < 0.01, *** <0.001. [1]Categorical variables' significance was calculated using a Likelihood Ratio Test to assess contribution to model fit. 95% confidence intervals were calculated

Table 9 Negative binomial regression for SECV & friend social support as a moderator

	Coeff.	IRR	CI		*p*-value
			LL	UL	
SECV	0.32	1.374	1.17	1.63	<0.001***
Age	0.22	1.250	1.19	1.31	<0.001***
Gender[1]					<0.001***
Female	−0.26	0.774	0.66	0.90	<0.001***
Family Income[1]					0.046*
< $20,000	−0.19	0.826	0.62	1.10	0.187
$20,000 - < $40,000	−0.34	0.712	0.55	0.93	0.011*
$40,000 - <$75,000	−0.16	0.855	0.71	1.04	0.110
Race[1]					0.005**
Black	−0.42	0.660	0.49	0.89	0.006**
Asian	−0.82	0.443	0.22	0.86	0.022*
American Indian	0.41	1.500	0.72	3.20	0.267
Mixed Race	−0.63	0.532	0.24	1.17	0.133
Hispanic	−0.10	0.904	0.70	1.17	0.447
Friend Social Support	−0.10	0.906	0.83	0.99	0.017*
Friend SS*SECV	<0.01	1.000	0.98	1.02	0.986

Note. * < 0.05, ** < 0.01, *** <0.001. [1]Categorical variables' significance was calculated using a Likelihood Ratio Test to assess contribution to model fit. 95% confidence intervals were calculated

(graphs for our original framing are also included). See Figs. 1, 2, 3 and 4a, b for more details.

Simple slope analyses were conducted for statistically significant moderation results using the "interactions" package in RStudio (Long, 2024). Coefficients for family and adult social support were estimated at zero, the mean, and +1 SD of PECV and SECV (see Tables 11 and 12). Coefficients were then exponentiated to produce IRRs for interpretability and consistency with previous procedures. These analyses confirmed our moderation results: there was a co-occurrence between higher levels of ECV and more positive links

Table 10 Negative binomial regression for SECV & adult social support as a moderator

	Coeff.	IRR	CI		*p*-value
			LL	UL	
SECV	0.20	1.224	1.11	1.36	<0.001***
Age	0.22	1.241	1.18	1.30	<0.001***
Gender[1]					<0.001***
Female	−0.27	0.766	0.66	0.89	<0.001***
Family Income[1]					0.063
< $20,000	−0.17	0.848	0.64	1.13	0.252
$20,000 - < $40,000	−0.32	0.730	0.56	0.95	0.019*
$40,000 - <$75,000	−0.17	0.846	0.70	1.02	0.088
Race[1]					0.004**
Black	−0.41	0.664	0.49	0.89	0.007**
Asian	−0.88	0.415	0.21	0.81	0.013*
American Indian	0.27	1.311	0.64	2.78	0.459
Mixed Race	−0.71	0.493	0.22	1.10	0.097
Hispanic	0.13	0.881	0.68	1.14	0.340
Adult Social Support	−0.19	0.828	0.76	0.90	<0.001***
Adult SS*SECV	0.02	1.025	1.00	1.05	0.013*

Note. * < 0.05, ** < 0.01, *** <0.001. 1Categorical variables' significance was calculated using a Likelihood Ratio Test to assess contribution to model fit. 95% confidence intervals were calculated

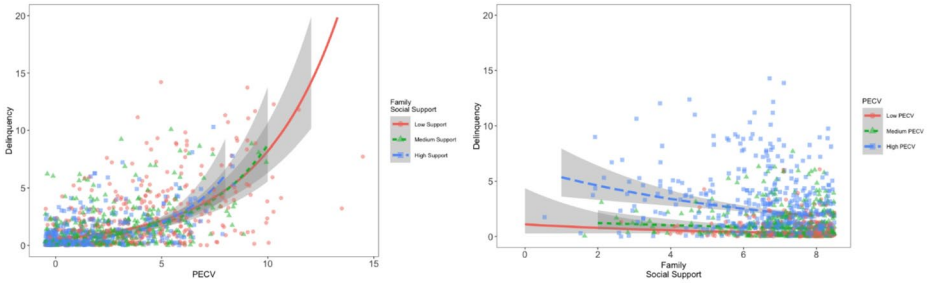

Fig. 1 **a** PECV predicting delinquency moderated by family social support. **b** Family social support predicting delinquency moderated by PECV

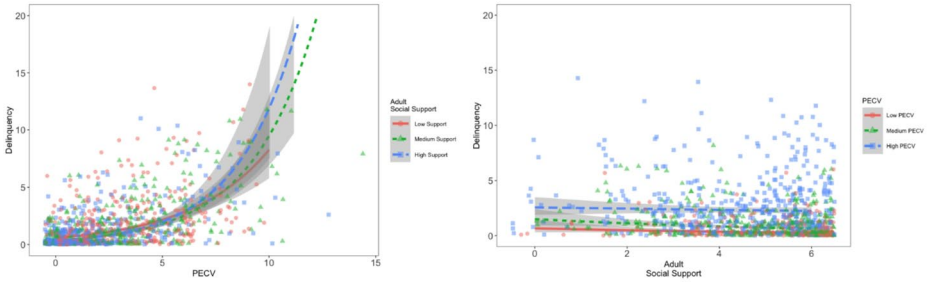

Fig. 2 **a** PECV Predicting Delinquency Moderated by Adult Social Support **b** Adult Social Support Predicting Delinquency Moderated by PECV

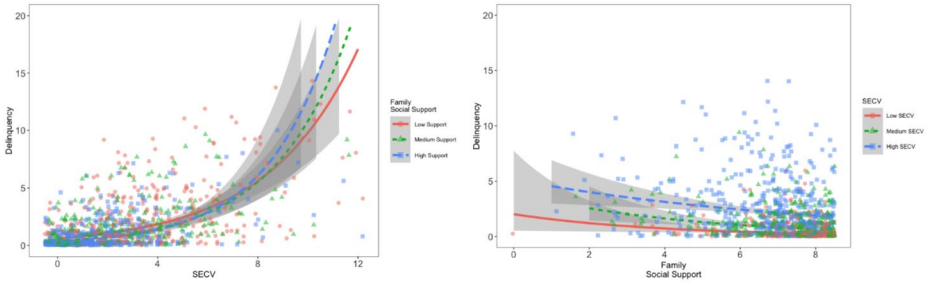

Fig. 3 **a** SECV predicting delinquency moderated by family social support **b** Family social support predicting delinquency moderated by SECV

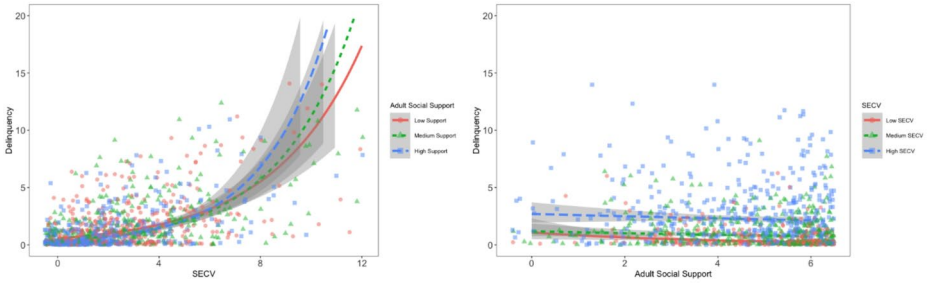

Fig. 4 **a** SECV Predicting Delinquency Moderated by Adult Social Support. **b** Adult Social Support Predicting Delinquency Moderated by SECV

Table 11 Simple slope analyses for the social support and PECV interactions

(a) Simple Slope Analysis for Family Social Support*PECV Interaction			
PECV Value	Family S.S. IRR	Standard Error	*p*-value
0.00	0.79	0.04	<0.001***
2.24	0.84	0.03	<0.001***
4.62	0.90	0.03	<0.001***
(b)Simple Slope Analysis for Adult Social Support*PECV Interaction			
PECV Value	Adult S.S. IRR	Standard Error	*p*-value
0.00	0.84	0.4	<0.001***
2.24	0.87	0.4	<0.001***
4.62	0.92	0.3	<0.001***

Note. * < 0.05, ** < 0.01, *** <0.001. Family S.S. = Family Social Support. Family Social Support coefficients were estimated at the minimum possible value for PECV (0), the PECV mean, and + 1 SD

between family and adult social support and adolescent delinquent engagement, per increasing IRRs. At a more granular level, Johnson-Neyman intervals indicated that adolescents who reported more than five unique incidences of PECV also experienced no significant negative association between parent and adult social support and delinquency (i.e., our main effect between social support and delinquency was not present; 5.85 and 5.48, respectively). One-hundred eighty-nine of our 1,601 adolescent sample reported more than five unique types of PECV (11.8%). Similarly, adolescents who reported more than six unique inci-

Table 12 Simple slope analyses for the social support and SECV interactions

(a) Simple Slope Analysis for Family Social Support*SECV Interaction			
SECV Value	Family S.S. IRR	Standard Error	*p*-value
0.00	0.76	0.04	<0.001***
2.24	0.81	0.03	<0.001***
4.62	0.87	0.03	<0.001***
(b) Simple Slope Analysis for Adult Social Support*SECV Interaction			
SECV Value	Adult S.S. IRR	Standard Error	*p*-value
0.00	0.83	0.040	<0.001***
2.24	0.88	0.027	<0.001***
4.62	0.92	0.027	0.01*

Note. * < 0.05, ** < 0.01, *** <0.001. Family S.S. = Family Social Support. Family Social Support coefficients were estimated at the minimum possible value for PECV (0), the SECV mean, and + 1 SD

dences of SECV also experienced no significant negative association between family social support and delinquency, and adolescents who reported more than five unique incidences of SECV also experienced no negative association between adult social support and delinquency (i.e., our main effect between social support and delinquency was not present). One-hundred thirty-two adolescents reported more than five unique types of SECV (8.24%) and 78 reported more than six unique types of SECV (4.87%).

Discussion

Exposure to community violence and delinquency are important public health concerns that impact the short- and long-term future of youth. Those exposed to community violence experience a litany of negative psychosocial, physiological, and behavior outcomes, including increased delinquent engagement (Chen et al., 2016; Rubens et al., 2018). Additionally, such behaviors have been linked to a myriad of academic and social problems (Poquiz & Fite, 2018), such as difficulties forming and maintaining friendships (Schilling et al., 2007). The prevalence and negative impact of community violence and delinquency in U.S. neighborhoods, both individually and in tandem, demand research exploring potential protective factors that can stymie their deleterious impact on youth. Research suggests social support may mitigate adverse effects brought on by ECV, potentially reducing delinquency (Defoe et al., 2021; Mercer et al., 2016). The present study sought to reassess the associations between ECV and social support and delinquency. By building on the buffering hypothesis (Cohen & Wills, 1985), we sought to examine the potential moderating effects of family, friend, and adult social support on the association between PECV and SECV and adolescent delinquency in a series of cross-sectional analyses. This work can inform future work that establishes directionality.

Our analyses confirmed prior work linking ECV (both PECV and SECV) and adolescent engagement in delinquency. There was a co-occurrence between more ECV and higher levels of engagement in delinquency. While our study does not directly explore the mechanisms linking ECV and delinquency, we underscore the robust association between these constructs across different studies, which may stem from multiple sources. Adolescents exposed to community violence may adopt beliefs that deviant behaviors, like delinquency, are normative or necessary within their environments (Kennedy & Ceballo, 2016). They

may also be more likely to affiliate with peers that engage in violent or illicit activity given the prevalence of delinquency in neighborhoods where ECV is common and the increasing importance of friend/peer relationships during this developmental stage (Chen et al., 2016; Rees & Zimmerman, 2016). Furthermore, ECV could be linked to youth's threat sensitivity and stress response (Kennedy & Ceballo, 2016), which could cause adolescents to be more prone to "flight-or-flight" behaviors that may be characterized as delinquency (e.g., fighting). These behaviors may be further promoted by PTSD symptomatology, which has been found in adolescents exposed to community violence, demonstrating the complex web of factors that affect youth within these circumstances (Lee et al., 2020; Wright et al., 2017). Future research can build on the present study by identifying causal pathways between EVC and delinquency in more racially/ethnically and socioeconomically diverse samples as the present sample was predominantly White and affluent, with participants overall reporting lower levels of ECV.

Consistent with prior findings, our analyses also found a negative association between family, friend, and adult social support and delinquency (Liu & Miller, 2020; Rafaelli et al., 2013; Smith et al., 2016; Szkody & McKinney, 2019). Higher levels of all forms of social support were associated with lower levels of adolescent delinquent engagement. Rooted in the buffering hypothesis, these results emphasize the *potential* benefits of social support in combatting delinquent engagement. Though our analyses should be interpreted with caution given the cross-sectional nature of these data, these findings can guide future research that aims to bolster these links through longitudinal designs. The pathways through which social support may affect delinquency are numerous. For example, social support creates opportunities for parents, adult mentors, and prosocial peers to model socially appropriate acts and reinforce behaviors such as self-control and empathy that may contribute to less delinquent engagement (Brady et al., 2009; Camara et al., 2017; Liu & Miller, 2020). Social support has been found to promote positive outcomes like well-being in adolescents (Chu et al., 2010) and may also increase their sense of self-worth, purpose, and connection, which could raise the perceived costs of engaging in delinquent behaviors. Receiving support from others may also provide psychosocial resources to help cope with major external stressors (e.g., ECV) that lead to externalizing behaviors (e.g., fighting at school), potentially limiting their impact (Camara et al., 2017).

Given ample literature suggesting the benefits of social support, we predicted that it would moderate the association between ECV and delinquency where a co-occurrence between higher acts of delinquency and higher ECV would only be applicable to adolescents who reported lower levels of social support. Thus, adolescents who reported more social support would have a weaker association between ECV and delinquency. Contrary to this hypothesis, we found that the positive association between ECV and delinquency was greater in adolescents who reported more family and adult social support. As these moderations were tested using cross-product interaction terms, we reframed our interpretation with social support as predictors of delinquency and PECV and SECV as moderators. These results painted a more understandable relationship in line with the body of work that supports the benefits of social support on delinquency. With this reframing, we found that the negative associations between family and adult social support and delinquency only applied to adolescents with lower levels of ECV. Simple slope analyses confirmed this interpretation as the negative associations between these kinds of social support and delinquency trended in the positive direction at greater levels of ECV (i.e., IRRs were higher). Despite the many

benefits of social support found in the literature and the co-occurrence of high social support and low delinquency in our main effect analyses, adolescents' ECV should be considered to better understand the relationship between these constructs. As previously mentioned, ECV has been linked with PTSD symptomatology, demonstrating its severity and why it may affect the interplay between social support and delinquency. It may be especially important to examine the intensity of different kinds of ECV and how they influence these links (e.g., witnessing murder vs. witnessing a robbery). Johnson-Neyman intervals provided a more in-depth analysis of these moderations. Namely, adolescents who reported being exposed to about five different kinds of ECV were found to have experienced no significant negative association between family social support and delinquency. In other words, the main effect of more social support being linked to less delinquency was not present for these adolescents. Though a smaller subset of our sample reported exposure to more than five unique types of PECV or SECV, this groups still accounts for an important number of adolescents in the present sample and when scaled up to population levels if trends were to hold. Additionally, as youth from minoritized groups are more likely to experience ECV (Rubens et al., 2018; Lee at al., 2020; Santacrose et al., 2021; Schilling et al., 2007), these findings may be especially useful in highlighting the disproportionate effects of ECV on these vulnerable populations.

Though the co-occurrence of higher family and adult social support and lower delinquency was not observed at higher levels of ECV, friend social support was not affected in the same way. The association between higher levels friend social support and lower delinquency was consistently significant across levels of ECV. These findings can be used to guide future research that looks to establish causal pathways between moderators that can lessen the impact of ECV on adolescent delinquency. Though we must interpret our findings with caution, these findings may further outline the importance of peer-to-peer relationships for youth. As previously mentioned, adolescents increasingly value friendships during this phase, even superseding the importance of family and parent influences (Chen et al., 2016; Mercer et al., 2016; Rees & Zimmerman, 2016). Adolescents may be more likely to mirror their friends' behaviors regardless of exposure, emphasizing the importance of positive peer influences. Additionally, youth may be more willing to confide in their same-aged friends as they navigate salient problems, like ECV. Thus, these relationships may be more impactful in combating delinquency compared to family relationships or relationships with other adult role models. In all, more friend support may be a proxy for healthier relationships, indicating less delinquent engagement, subsequently neutralizing the effects ECV. That said, our interpretation and analyses are limited by the cross-sectional nature of our data and the lack of specificity in the intensity of delinquency and ECV. It could be that these results are specific to more severe kinds of ECV or delinquency rather than less severe kinds. Additional work would benefit from assessing how the intensity of these constructs may affect these results.

Implications

Though cross-sectional in nature, our findings extend an important but limited body of research that has linked ECV and delinquency. Our observed moderating effects also warrant further investigation that can better understand directionality, particularly, understanding if

ECV weakens the link between family and adult social support and delinquency. Regardless of causality, robust associations between ECV and delinquency and the possibility that ECV may moderate the link between social support and delinquency points toward the need to address these problems pre-emptively. Research has highlighted that programs that aim to reduce youth's exposure to community violence or provide youth with opportunities to foster friendships may be most beneficial (e.g., after-school and recreational programs). Youth who spend more time in enriching extracurricular programs are more likely to avoid unstructured, unsupervised time outside the home or school where ECV often occurs (Smith et al., 2016). Similarly, programs aimed at increasing adolescents' access to mentors and positive adult role models may also help to prevent delinquency in youth exposed to less severe forms of ECV. Though not a panacea, community investments may provide additional benefits to neighborhoods where ECV is common, such as an increased sense of community or new employment opportunities. More research is needed to fully understand how these approaches (e.g., place-based interventions) can be used to address the co-occurrence of ECV and delinquency (Hohl et al., 2019; McGowan et al., 2021).

Limitations

The current study was subject to limitations. Our sample lacked adequate demographic representativeness. White adolescents were overrepresented compared to 2021 United States demographic data (Annie E. Casey Foundation, n.d.). Additionally, our sample was largely affluent with most adolescents residing in households earning $75,000+annually. We posit our reported rates of PECV, SECV, and delinquency are skewed and theorize such rates would be higher with a more representative sample. Extant findings note that minority and low socioeconomic status adolescents are particularly vulnerable to PECV and SECV (Affrunti et al., 2018; Lee et al., 2020; Santacrose et al., 2021). Further, higher household income often translates into living in more affluent neighborhoods where crime rates are lower and protective factors against ECV and delinquency engagement, like neighborhood assets (e.g., employment opportunities, recreational programs and facilities), are abundant (Smith et al., 2016). We believe such is the case in our sample as our largest group of adolescents by family income ($n=891$, 55%; $75,000+annually) experienced the lowest levels of PECV *(*$M=2.09$, $SD=2.18$*)* and SECV ($M=1.91$, $SD=1.93$). Our rates of 69.4% exposure to PECV (reporting at least one incident) and 73.3% exposure to SECV (reporting at least one incident) are low compared to results of more than 90% of American youth reporting ECV (Davis et al., 2020), which could see observed effects become more pronounced.

Another limitation comes with our measurement of PECV, SECV, and delinquency. The frequency of exposure and delinquent engagement was limited to single incident per type of exposure. In other words, if an adolescent was repeatedly exposed to the same kind of violence or engaged in the same delinquent behavior numerous times, their score on each construct would remain as "1." Thus, our data did not fully reflect our respondents' experiences. Our ECV and delinquency measures also did not account for differing levels of intensity in such exposures or acts. Further, delinquent engagement data was only collected for the 12 months prior to interviews, ignoring the effects of exposure and delinquency outside this timeframe. Older adolescents who engaged in delinquency prior to being interviewed would therefore appear to engage in less delinquent behaviors than their true rates. This is

especially important considering age was a consistently positively associations of delinquent engagement. Collection initiatives for the NatSCEV III were carried out more than a decade ago, thus these data may not fully reflect the current state ECV and delinquency across the country. That said, the size and breadth of this dataset are strengths. Ongoing multidisciplinary work highlights the importance of ECV and delinquency in U.S.-based youth., consequently these findings remain timely and can help inform ongoing and future research and policy efforts. Finally, the observational and cross-sectional nature of this data also prevents us from making causal inferences.

Conclusions

The present study explored the potential moderating effects of family, friend, and adult social support on the association between ECV and delinquency in adolescents. Results suggest that higher levels of ECV are associated with higher levels delinquency, whereas access to more family, friend, and adult social support was associated with less delinquent engagement. After reframing the interpretation of our interaction terms, moderation analyses indicated that at higher levels of ECV, the co-occurrence of higher levels of family and adult social support and lower delinquency were no longer present. Efforts aimed at preventing ECV or addressing its consequences through family and friend social support for youth with lower levels of ECV may prove useful, but longitudinal work is needed to flesh out these hypotheses. The co-occurrence of higher friend social support and lower delinquent engagement did not vary across levels of ECV, potentially highlighting the importance of peer relationships during this stage. Resources that promote positive relationships in structured environments may foster relationships that promote positive behaviors and strengthen youths' access to emotional and instrumental support. Future research that samples racially/ethnically diverse adolescents from varied socioeconomic backgrounds would benefit the field's understanding of the interplay between these constructs. The cross-sectional nature of these data is important to consider when interpreting these findings.

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Declarations

Conflict of interests The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval Ethical approval was not required as our study met the criteria for IRB exemption per the Institutional Review Board of Loyola Marymount University.

Consent to participate The Institutional Review Board of Loyola Marymount University waived the need for ethics approval for the analysis and publication of the retrospectively obtained and anonymized data for this non-interventional study.

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